

FOCUS

A Platform For Young Researchers

PCACS STUDENT'S RESEARCH JOURNAL

VOL 8. ISSUE 3
APRIL, 2018
ISBN-978-81-926311-0-3



Mahatma Education Society's
Pillai College of Arts, Commerce and Science
NAAC Re-Accredited "A Grade"(3rd Cycle)
Awarded Best College by University of Mumbai
ISO 9001:2015 Certified

Patron:

Dr .K. M. Vasudevan Pillai
Chairman and C.E.O Mahatma Education Society

Dr. Daphne Pillai
Joint Secretary and Rector,
Mahatma Education Society

Mr. A. N. Kutty
Academic Advisor
Pillai College of Arts,Commerce & Science,New Panvel

Advisory Committee

Dr. Gajanan Wader
In-Charge Principal
Pillai College of Arts,Commerce & Science,New Panvel

Mrs. Deepika Sharma
Vice Principal
Pillai College of Arts,Commerce & Science,New Panvel

Dr. Aarti Sukheja
IQAC,Co-ordinator
Pillai College of Arts,Commerce & Science,New Panvel

Editorial Advisor

Dr.Abida Khan
Co-ordinator B.COM Accounting & Finance
Pillai College of Arts,Commerce & Science,New Panvel

Editor:**Asst. Prof.Kavita Kathare**

Pillai College of Arts,Commerce & Science,New Panvel

Editorial Committee

Dr. Kiran Deshmukh
Co-ordinator, B.COM
Asst .Prof .Prerna Sharma
Co-ordinator, B.M.S
Asst .Prof. Jenny Prajith
Co-ordinator, B.Com Financial Marketing
Asst. Prof .Ashwathi
Pillai College of Arts,Commerce & Science,New Panvel
Asst. Prof . Sujata Shabade
Pillai College of Arts,Commerce & Science,New Panvel
Asst. Prof . Meenakshi Johri
Pillai College of Arts,Commerce & Science,New Panvel
Prof Alpana Sharma
Pillai College of Arts,Commerce & Science,New Panvel

Graphics and Text Formatting:

Asst .Prof .Shubhangi Pawar
Pillai College of Arts,Commerce & Science,New Panvel

Student's Editorial Committee:

Anju Prasannan
Sanjana Nair
Aditi.S.Mhatre
Neha Katkar
Jyoti.S.Kushwaha
Abhishek Singh
Shivangi Choudhary
Jeffin Albert

Peer Review Committee:

Dr.Elizabeth Mathews
Associate Professor & H.O.D. of Commerce
Department,
C.K.T.College of Arts, Commerce & Science college,
New panvel

Dr. Sudhakar.B.Ingle
Dharampeth College of Commerce,Nagpur

Dr .Seema Somani
Associate Professor & H.O.D. of Commerce
Department,
Pillai College of Arts, Commerce & Science college,
New panvel

Dr.Remya Varadhrajan
Pillai College of Arts,Commerce & Science,New Panvel



Published by
Mahatma Education Society
www.pcacs.ac.in

Front Cover Photograph

Prof.Shubhangi Pawar
Abdullah Arif (Student)

Back Cover Photograph

Prof.Rashmi Vagadurgi

Acknowledgements:

The Editorial team would like to acknowledge the following staff:

Mr.Sanjay Singh & Mr. Sunil Karunakaran-DTP and Printing Support

Mr.Hanesh Mohan and Mrs.Saranya M –Technical support

Mr.Arun Radha Krishnan-Text formatting

Mr.Sandeep Mhatre-P.C.A.C.S support staff ,for dispatch and delivery

ISBN : 978-81-926311-0-3

P.C.A.C.S Student's Research Journal

April, 2018, Volume - 8, Issue - 3

Disclaimer: We do not warrant the accuracy or completeness of the Information, text, graphics, links or other items contained within these articles. We accept no liability for any loss, damage or inconvenience caused as a result of reliance on such content. Only the author is the authority for the subjective content and may be contacted. Any specific advice or reply to query on any content is the personal opinion of the author and is not necessarily subscribed to by anyone else.

Warning: No part of this book shall be reproduced, reprinted, or translated for any purpose whatever without prior written permission of the Editor. There will be no responsibility of the publisher if there is any printing mistake.

FOCUS

P.C.A.C.S STUDENTS RESEARCH JOURNAL

Focus is a student's research journal of Mahatma Education Society's, Pillai College of Arts, Commerce & Science, New Panvel, Navi Mumbai. It is published annually (April) in print form. The journal Focus provides a platform for young minds to express creative ideas on diversified topics in the field of science, commerce & humanities. The journal has become a forum for critical writings for young minds on diverse issues. This has helped in developing research culture among students contributing to knowledge resources.

VOLUME 8.Issue 3

APRIL 2018

ISBN -978-81-926311-0-3

Editorial



Kavita Kathare
kavitakathare@mes.ac.in

India is aiming to be a global super power. Investment in research and development becomes the key priority. As per former President A P J Abdul Kalam, India is still lurking behind developed nations due to its lack of research culture. According to him the nation needs to invest at least two per cent of its GDP in R&D. India is ranked 62 in the Global Innovation Index. While at the Global Competitive Index, it is placed at 56. In order for the nation to move up the ladder in the competitive index and be in the top 10, India needs to be in the top 5 of the innovative index,” It is observed that the number of publications and their citations are relatively less in India, in comparison with various developed countries. India lags behind its peers in terms of research and citations as per Times Higher Education World University rankings. A culture of research, innovation and entrepreneurship can help in triggering high economic growth in the country. It is necessary to develop research culture among students and academicians. Necessary measures have been initiated by the government at regular intervals.

Encouraging students to involve themselves in research helps them in expressing their creative thoughts and ideas. It helps them to have a detailed analysis of everything. Research enhances knowledge and gives proper understanding of the subject. It helps students in developing new understanding related to learning resulting in overall improvement of an individual.

In this issue of Focus we make an attempt to imbibe research culture among students and continue to provide them a platform for featuring their research papers and articles on diversified issues. We acknowledge the efforts of our peer review committee for providing the needed input and helping our students in coming up with better research output. We appreciate our Editorial committee for their dedicated efforts in making this edition of Focus a success.

INDEX

Sr.No	Title	Page No.
RESEARCH PAPERS		
1.	A study on consumer behavior on selected investment avenues among salaried employees	01
2.	Banking codes and commitment to customers	33
3.	Biochemical and microbial testing, processing, production and packaging of milk and ice- cream.	45
4.	Checking of milk quality by suitable microbiological and various biochemical test.	60
5.	Enzymatic hydrolysis of maize gluten using SEB digest.	73
6.	Green Banking in India: Problems and Prospects	86
7.	Preparation of nutrient filled gluten free granola bar and its comparison with commercially available granola bar.	94
8.	Quality analysis of food.	103
9.	Screening of antioxidant and antibacterial activity of watermelon rind.	114
10.	The study on cause and effects of stress among employees in corporate sector	128
ARTICLES		
11.	Avengers : infinity wars	148
12.	Block chain	150
13.	Data Analytics	154
14.	Era of Cryptocurrency.	158
15.	Impact of social media on today's youth.	162

16.	Kotlin to java,is this the right time?	164
17.	Partition:A big blunder?	166
18.	Souvenir : A tale	167
19.	The dark side of web.	168
20.	The Era of Cryptocurrency.	171
AVISHKAR: RESEARCH PAPERS & POSTERS		
21.	A Study on the communication skills among students in selected colleges in Navi Mumbai.	175
22.	Extraction and detection of zeatin from <i>Moringa oleifera</i> leaves and to check its crude extract's effect on plant growth	184
23.	Impact of GST on kirana merchants in Panvel region.	191
24.	Islamic Banking in India and its future prospects	197
25.	Isolation of PHB producing bacteria from soil.	204
26.	Research on Monitoring body postures using Sensors and developing a device to manage body posture(P.R.S)	210
27.	Study of Oxidative burst in neutrophils due to phagocytosis of metallic-nanoparticles	217
28.	Helping hands for the golden agers.	222
29.	Posture recognition system.	223
30.	Safety of children with peer	224
31.	Signal of stress/Save our soul	225
32.	To study the effect of iron nanoparticle on hydroponically grown plants	226
33.	Whisper	227
34.	Grow your loved ones	228

1. A STUDY ON CONSUMER BEHAVIOR ON SELECTED INVESTMENT AVENUES AMONG SALARIED EMPLOYEES

ANUSHREE TICKOO

TYBFM

INTRODUCTION

In the financial industry, there are two concepts that form the basis of most transactional activities. One is savings and the other is investments. There is a huge overlap between the two concepts though, in terms of execution.

Investment in terms of financial context means any money that is spent today in the hope of financial benefits that may be reaped in a future time frame. Any investment is the act of buying or creating assets with an expectation that the same would yield interest earnings or dividend or capital appreciation or any other return that is profitable as compared to the money put in initially. Almost all investments are differentiated from other kinds of transactions based on the aim of the money spent. Money spent on making investments is primarily with the aim of obtaining some sort of return in a specific period of time.

A lot of times people confuse savings with investments. Savings and investment are different from each other in their approach of utilizing the money involved. While saving may be understood as a passive way of accumulating wealth, investment can be seen as a more aggressive way of securing returns. Mostly, under savings, customers avail a savings account and stash away cash in that account. This cash can be used as and when required by the account holder.

In other words, the concept of investment has many meanings. Investment is the employment of funds with the aim of getting return on it. It is the commitment of funds which have been saved from current consumption with the hope that some benefit will receive in future. Thus, it is reward for waiting for money. Savings of the people are invested in assets depending on their risk and return.

The money one earns is partly spent and the rest is saved for meeting future expenses, instead of keeping savings idle one may like to use savings in order to get returns on it in the future, this is called as investment. In an economic sense, an investment is the purchase of goods that

are not consumed today but are used in the future to create wealth. In finance, an investment is a monetary asset purchased with the idea that the asset will provide income in the future or appreciate and be sold at a higher price. Mere earning will not help one to secure the future, so it becomes important to invest.

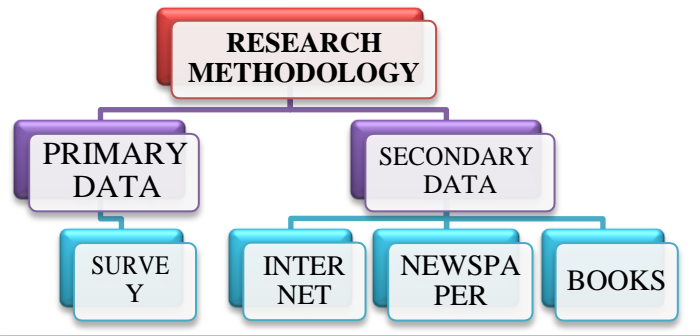
Investment avenues are the outlet of funds avenues. Investors can select any one or more avenues depending upon their needs. All categories of investors are equally interested in safety, liquidity and reasonable return on the funds invested by them. Investment avenues in India are continuously increasing along with the new developments in the financial market. Thus, a wide variety of investments or securities are available to the investors. However, the investors should be very careful about their hard-earned money. An investor can select the best avenues after studying the merits and demerits of the different investment avenues.

Before making any investment in any of the avenues, one must ensure to Obtain written documents explaining the investment, Read and understand documents, Verify the legitimacy of the investment, Find out the costs and benefits associated with the investment, Assess the risk return profile of the investment, Know the liquidity and safety aspects of the investment, ascertain if it is appropriate for your specific goals, compare these details with other investment opportunities available, examine if it fits in with other investments you are considering or you have already made, deal only through an authorized intermediary, seek all clarifications about the intermediary and the investment, explore the options available to you if something were to go wrong and then if satisfied make the investment.

OBJECTIVES OF STUDY

- To understand the concept of investments.
- To understand the importance of investments for salaried employees.
- To analyse the most preferred investment avenue among salaried employee / customers and the attitude towards investment.
- To explore if new / rare investments are known to salaried employees / customers.

RESEARCH METHODOLOGY



PRIMARY DATA

Data observed or collected directly from first-hand experience. it is an information that you collect specifically for the purpose of your research project.

SECONDARY DATA

Published data and the data collected in the past or other parties is called secondary data. it refers to data that was collected by someone other than the user. Common sources of secondary data for social science include censuses, information collected by government departments, organisational records and data that was originally collected for other research purposes.

PROFILE OF AN INVESTMENT COMPANY



INTRODUCTION TO KOTAK SECURITIES

Kotak Securities was founded in 1994 as a subsidiary of Kotak Mahindra Bank and is proud to be the nation's best broker* today. Kotak Securities has Rs 224 crore of Assets Under Management (AUM) as on 31st March 2016, 11.95 Lakh customer accounts, Over 5 Lakh trades per day, 1209 branches, franchisees and satellite offices, 359 cities across India. Kotak Securities are corporate members with the Bombay Stock Exchange and the National Stock Exchange. We are also a depository participant with National Securities Depository Limited (NSDL) and Central Depository Services Limited (CDSL). Kotak securities offer following services -

➤ **Stock broking services**

Trade in the Stock Market, invest in IPOs, Mutual Funds or Currency Derivatives using whichever mode that suits you best. Online, offline or even on our stock trading app, we offer stock trading at your fingertips.

➤ **Portfolio management services**

Not sure of what stocks to buy or sell? Unable to keep all your investments in one place? Don't know how to make your money work for you? Our Portfolio Management Service with expert advice is just the answer for your woes.

➤ **Dual benefit stock broker + depository services**

Kotak Securities is not just a stock broking firm. We are also participants with depositories like the NSDL and the CSDL. That means you can now execute transactions using our stock broking services and settle your trades using our depository services!

➤ **Research Expertise**

Benefit from in-depth stock market analysis thanks to our dedicated research division. We publish various sector-specific research, company-specific research, macroeconomic studies, fundamental and technical analysis of stocks that you can avail before investing your hard-earned money.

➤ **Updated Market Data**

Apart from research that we offer, you benefit from the street smart tips, up-to-the-minute market information and inside news that our extensive sales teams deliver on a daily basis.

➤ **International Reach**

Your financial interests go beyond India? Don't worry, so do ours! Kotak Securities has a well-entrenched presence in the Asia Pacific, European, Middle Eastern and American markets. You can trust us with your money in any part of the globe.

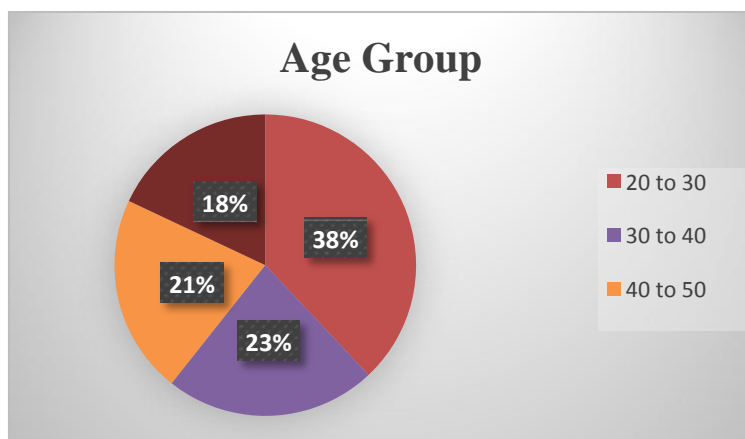
COLLECTION AND ANALYSIS OF DATA

SURVEY

Q.1) Age:

- 1) 20 to 30
- 2) 30 to 40
- 3) 40 to 50
- 4) 50 and above

Particulars	Number of respondents	Percentage (%)
20 to 30	57	38%
30 to 40	34	23%
40 to 50	32	21%
50 and above	27	18%
Total	150	100%



Comment

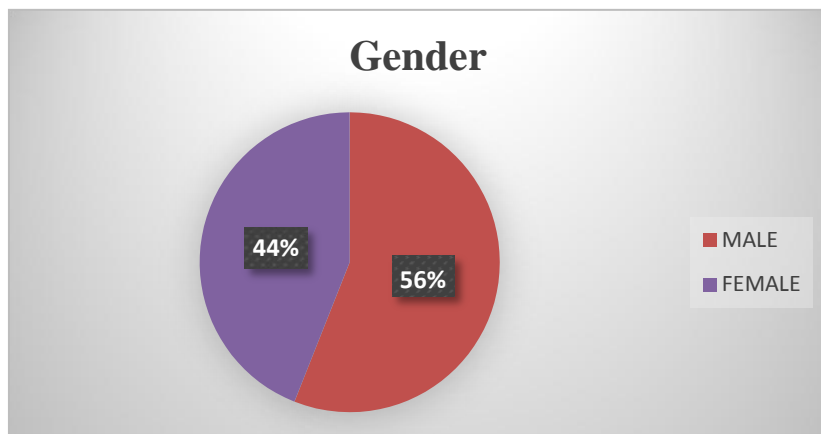
Out of 150 respondents, it shows that 38% of people are in group of 20-30, 23% of people are in group of 30-40, 21% of people are in group of 40-50 and remaining 18% is 50 and above. so most people are in group of 20-30 i.e. 38%.

Q.2) Gender:

1) Male

2) Female

Particulars	Number of respondents	Percentage (%)
Male	84	56%
Female	66	44%
Total	150	100%



Comment

Out of 150 respondents, it shows that 56% of respondents are male and remaining 44% of respondents are female.

Q.3) Educational qualification:

1) Hsc

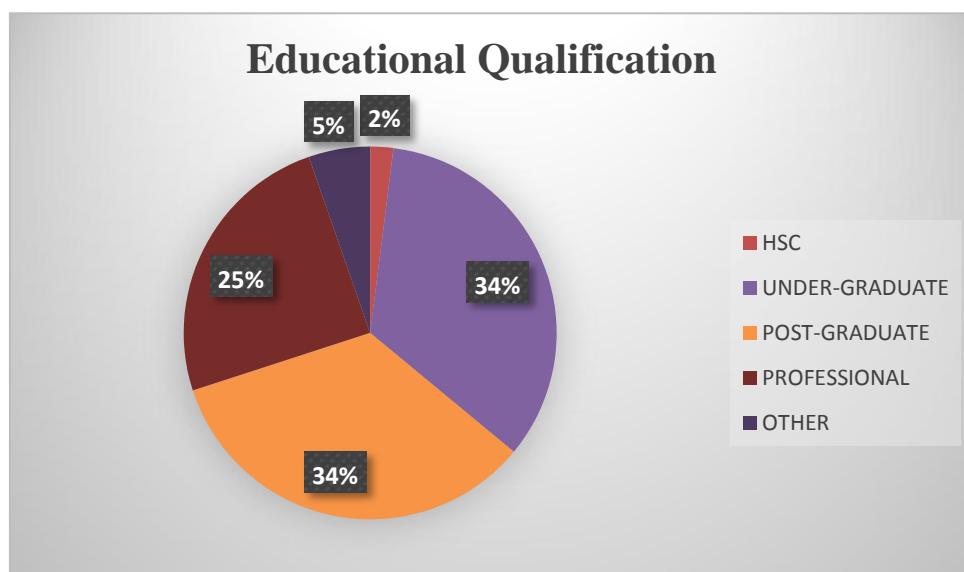
4) Professional

2) Under-Graduate

5) Other

3) Post-Graduate

Particulars	Number of respondents	Percentage (%)
HSC	03	2%
Under-Graduate	51	34%
Post-Graduate	51	34%
Professional	37	25%
Other	08	5%
Total	150	100%



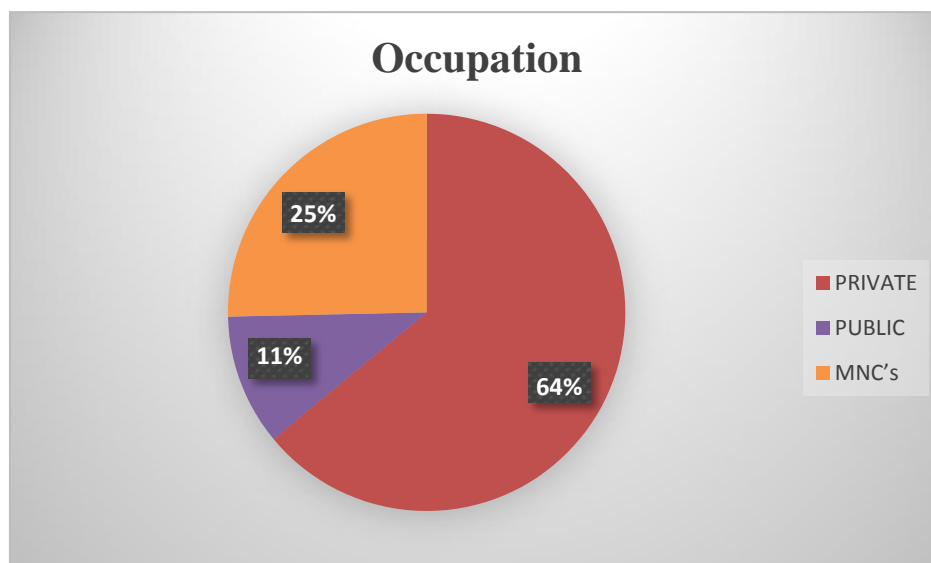
Comment

Out of 150 respondents, it shows that 2% had an educational qualification of hsc, 34% had an educational qualification of under-graduate, 34% had an educational qualification of post graduate, 25% had an educational qualification of professional and remaining 5% had an educational qualification of other

Q.4) Occupation:

- 1) Private
- 2) Public
- 3) MNC's

Particulars	Number of respondents	Percentage (%)
Private	96	64%
Public	16	11%
MNC's	38	25%
Total	150	100



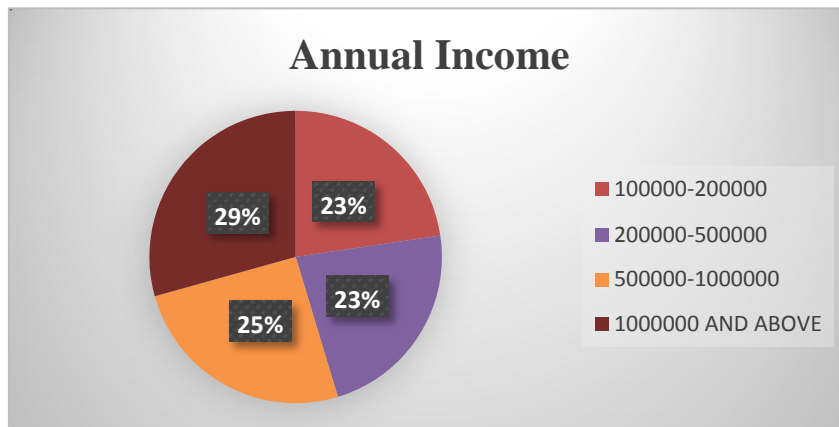
Comment

Out of 150 respondents, it shows that 64% of the respondent's occupation is private, 11% of the respondent's occupation is public and remaining 25% of the respondent's occupation is MNC's.

Q.5) Annual income:

- 1) 100000 to 200000
- 2) 200000 to 500000
- 3) 500000 to 1000000
- 4) 1000000 and above

Particulars	Number of respondent	Percentage (%)
100000 to 200000	34	23%
200000 to 500000	34	23%
500000 to 1000000	38	25%
1000000 and above	44	29%
Total	150	100%



Comment

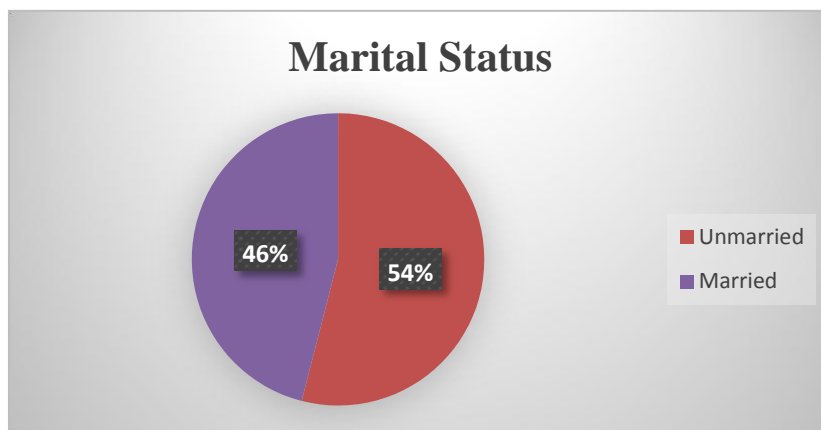
Out of 150 respondents, it shows that 23% of respondent’s annual income is between 100000-200000, 23% of respondent’s annual income is between 200000-500000, 25% of respondent’s annual income is between 500000-1000000 and remaining 29% of respondent’s annual income is 1000000 and above

Q.6) Marital status:

1) Unmarried

2) Married

Particulars	Number of respondents	Percentage (%)
Unmarried	81	54%
Married	69	46%
Total	150	100%



Comment

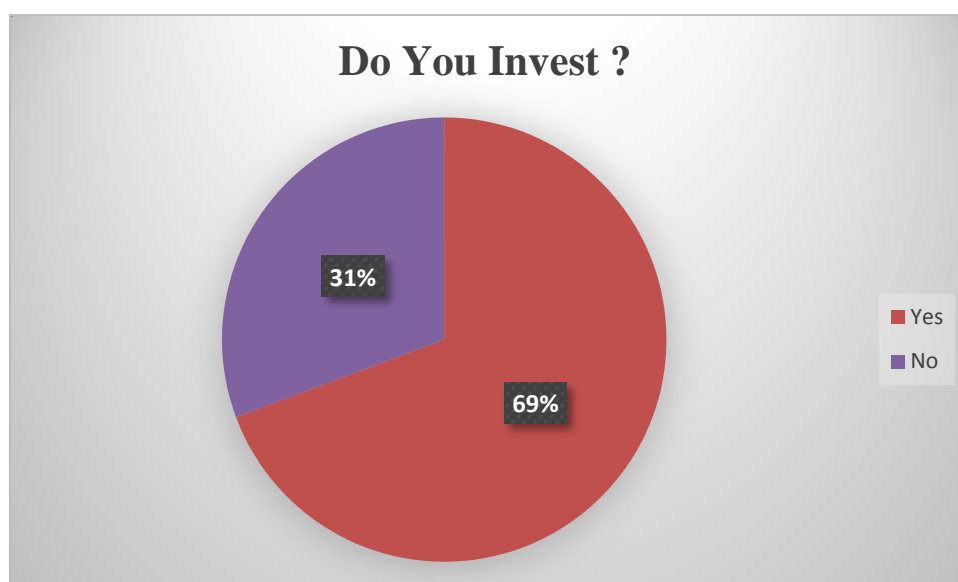
Out of 150 respondents, it shows that 54% of the respondents were unmarried and remaining 46% were married.

Q.7) Do you invest?

1) Yes

2) No

Particulars	Number of respondents	Percentage (%)
Yes	104	69%
No	46	31%
Total	150	100%



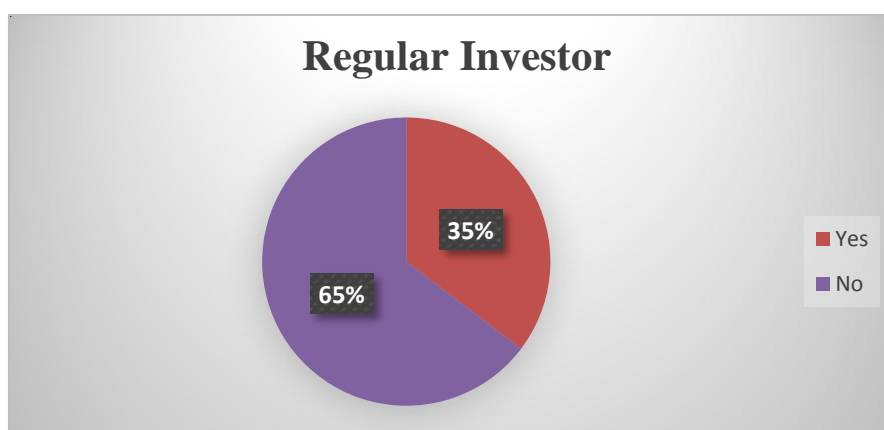
Comment

Out of 150 respondents, it shows that 69% of respondents invest and remaining 31% of respondents doesnot invest.

Q.8) Are you a regular investor?

- 1) Yes
- 2) No

Particulars	Number of respondents	Percentage (%)
Yes	53	35%
No	97	65%
Total	150	100%



Comment

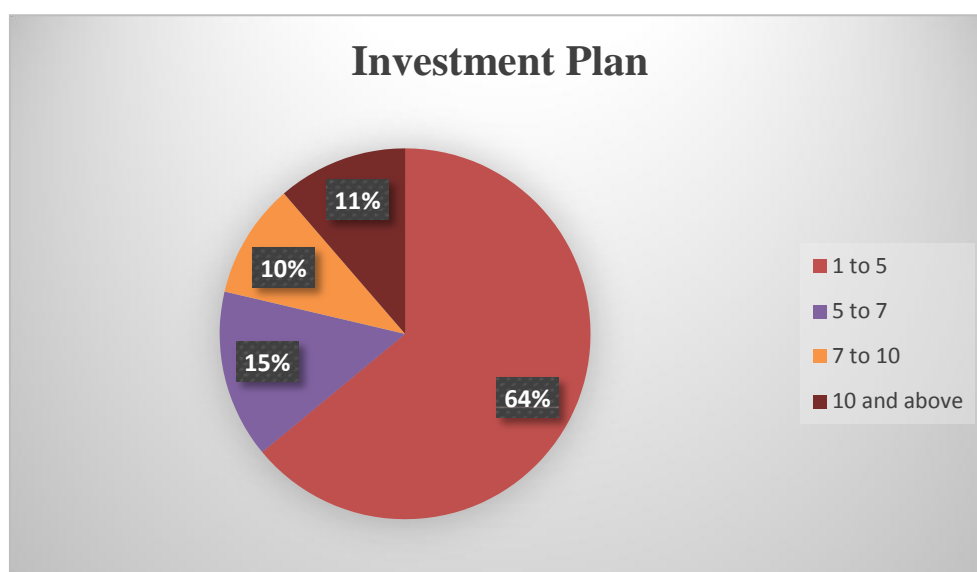
Out of 150 respondents, it shows that 35% of respondents are a regular investor and remaining 65% does not invest regularly.

Q.9) How many investment plans have you invested in?

- 1) 1 to 5 3) 7 to 10
- 2) 5 to 7 4) 10 and above

Particulars	Number of respondents	Percentage (%)
1 to 5	96	64%
5 to 7	22	15%

7 to 10	15	10%
10 and above	17	11%
Total	150	100%



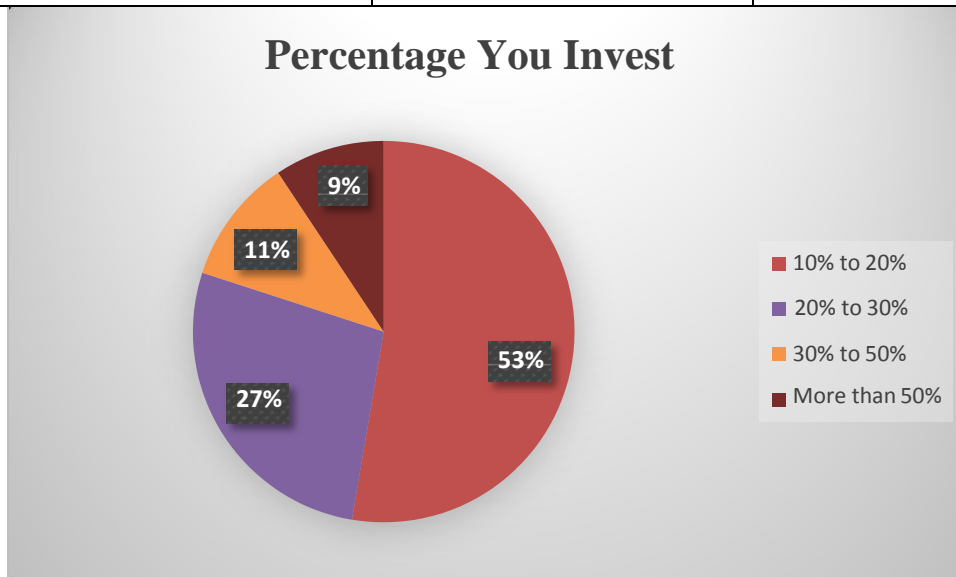
Comment

Out of 150 respondents, it shows that 64% of respondents have invested in 1to5 plans, 15% of respondents have invested in 5to7 plans, 10% of respondents have invested in 7to10 plans and remaining 11% of respondents have invested in 10 and above plans.

Q.10) What is the percentage you invest from your income?

- 1) 10% to 20%
- 2) 20% to 30%
- 3) 30% to 50%
- 4) More than 50%

Particulars	Number of respondents	Percentage (%)
10% to 20%	79	53%
20% to 30%	41	27%
30% to 50%	16	11%
More than 50%	14	9%
Total	150	100%



Comment

Out of 150 respondents, it shows that 53% of respondents have invested 10% to 20% of their income, 27% of respondents have invested 20% to 30% of their income, 11% of respondents have invested, 30% to 50% of their income and remaining 9% of respondents have invested more than 50% of their income.

Q.11) In which investment avenues do you prefer to invest in?

- 1) Mutual funds 8) Fixed deposits
- 2) Bonds 9) Gold
- 3) Public provident funds 10) Annuities

4) Stocks11) Post office monthly income account schemes

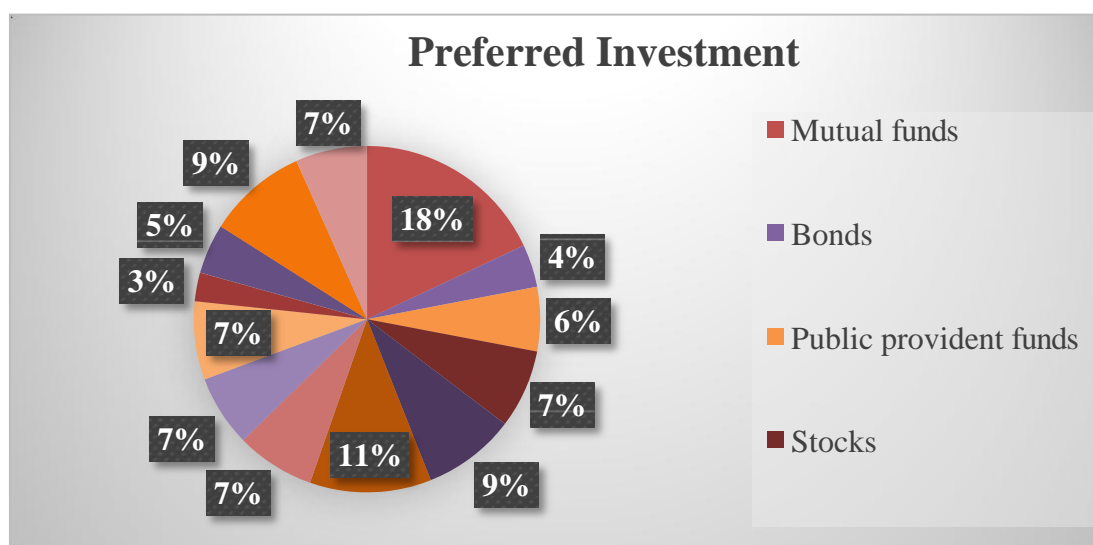
5) Equity shares12) All of the above

6) Insurance13) Others

7) Real estates

Particulars	Number of respondents	Percentage (%)
Mutual funds	27	18%
Bonds	06	4%
Public provident funds	09	6%
Stocks	11	7%
Equity shares	13	9%
Insurance	17	11%
Real estates	11	7%
Fixed deposits	10	7%
Gold	11	7%
Annuities	04	3%
Post office monthly income account schemes	07	5%

All of the above	14	9%
Others	10	7%
Total	150	100%



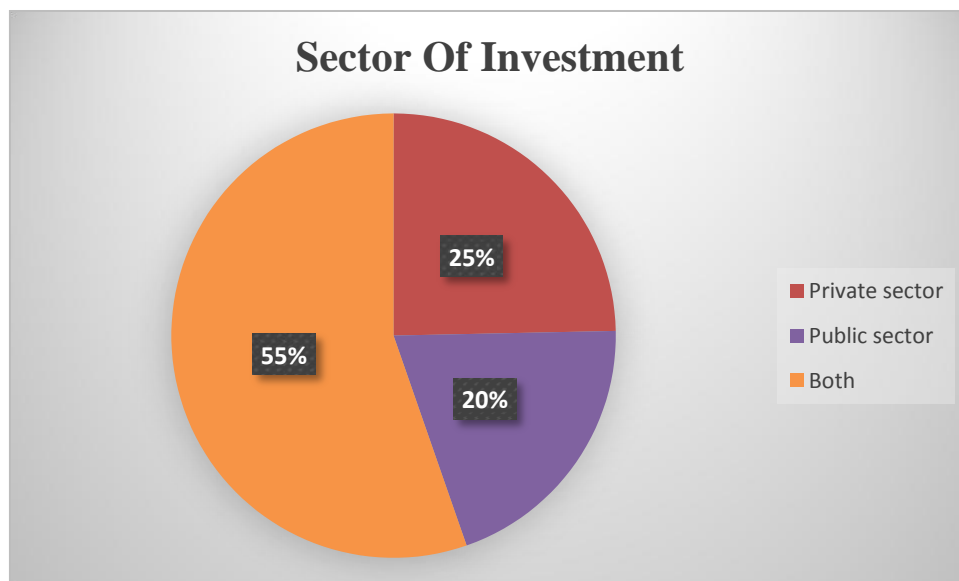
Comment

Out of 150 respondents, it shows that 18% of the respondents preferred to invest their money in mutual funds, 4% of the respondents preferred to invest their money in bonds, 6% of the respondents preferred to invest their money in public provident funds, 7% of the respondents preferred to invest their money in stocks, 9% of the respondents preferred to invest their money in equity shares, 11% of the respondents preferred to invest their money in insurance, 7% of the respondents preferred to invest their money in real estate, 7% of the respondents preferred to invest their money in fixed deposits, 7% of the respondents preferred to invest their money in gold, 3% of the respondents preferred to invest their money in annuities, 5% of the respondents preferred to invest their money in post office monthly income account schemes, 9% of the respondents preferred to invest their money in all of the above and remaining 7% of the respondents preferred to invest their money in other investments.

Q.12) In which sector do you prefer to invest your money?

- 1) Private sector
- 2) Public sector
- 3) Both

Particulars	Number of respondents	Percentage (%)
Private sector	37	25%
Public sector	30	20%
Both	83	55%
Total	150	100%



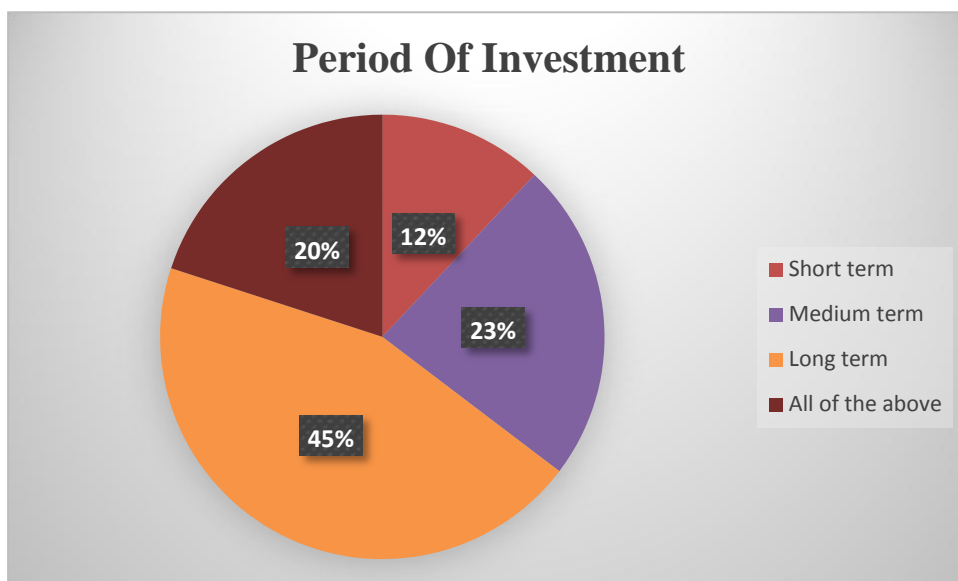
Comment

Out of 150 respondents, it shows that 25% of the respondents prefer to invest their money in privatesector, 20% of the respondents prefer to invest their money in public sector and remaining 55% of therespondents prefer to invest their money in both sectors.

Q.13) What type of investments you do?

- 1) Short term
- 2) Medium term
- 3) Long term
- 4) All of the above

Particulars	Number of respondents	Percentage (%)
Short term	18	12%
Medium term	35	23%
Long term	67	45%
All of the above	30	20%
Total	150	100%



Comment

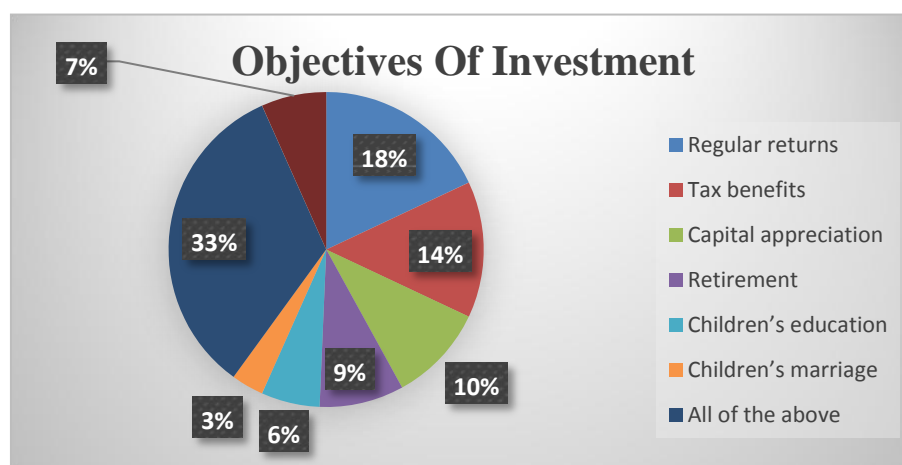
Out of 150 respondents, it shows that 12% of the respondents prefer to invest their money for shortterm, 23% of the respondents prefer to invest their money for medium term, 45% of the respondentsprefer to invest their money for long term and remaining 55% of the respondents prefer to invest theirmoney in all of the above.

Q.14) What is your main objectives of investment?

- 1) Regular returns5) Children’s education
- 2) Tax benefits6) Children’s marriage
- 3) Capital appreciation 7) All of the above
- 4) Retirement8) Others

Particulars	Number of respondents	Percentage (%)
Regular returns	27	18%
Tax benefits	21	14%
Capital appreciation	15	10%
Retirement	13	9%

Children's education	09	6%
Children's marriage	05	3%
All of the above	50	33%
Others	10	7%
Total	150	100%



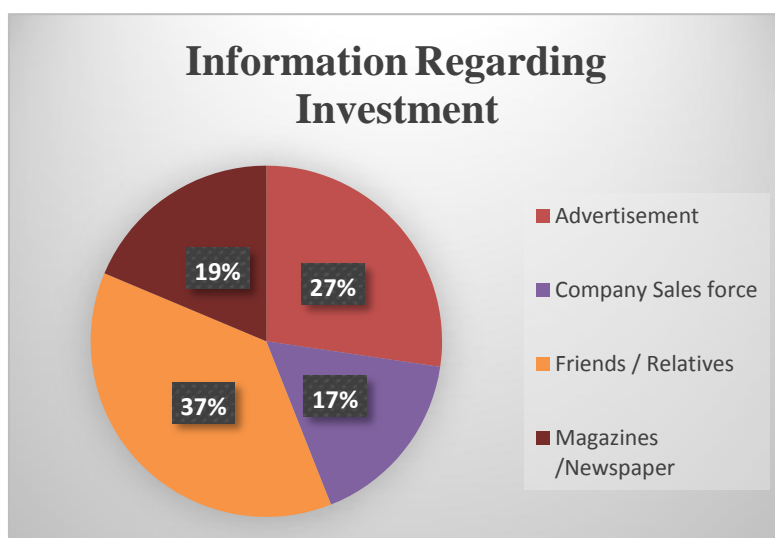
Comment

Out of 150 respondents, it shows that 18% of the respondent's main objective to invest their money is for regular returns, 14% of the respondent's main objective to invest their money is for tax benefits, 10% of the respondent's main objective to invest their money is for capital appreciation, 9% of the respondent's main objective to invest their money is for retirement, 6% of the respondent's main objective to invest their money is for children's education, 3% of the respondent's main objective to invest their money is for children's marriage, 33% of the respondent's main objective to invest their money is all of the above and remaining 7% of the respondent's main objective to invest their money is others.

Q.15) How do you get information regarding these investments?

- 1) Advertisement 3) Friends / Relatives
- 2) Company Sales force 4) Magazines / Newspaper

Particulars	Number of respondents	Percentage (%)
Advertisement	41	27%
Company Sales force	25	17%
Friends / Relatives	56	37%
Magazines /Newspaper	28	19%
Total	150	100%



Comment

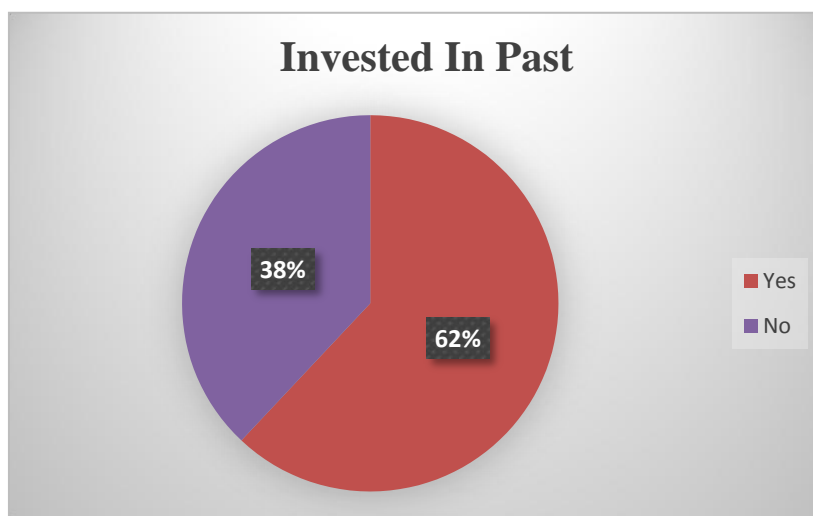
Out of 150 respondents, it shows that 27% of the respondents get information regarding investments through advertisements, 17% of the respondents get information regarding investments through company sales force, 37% of the respondents get information regarding investments through friends and relatives and remaining 19% of the respondents get information regarding investments through magazines and newspapers.

Q.16) Have you invested in past?

1) Yes

2) No

Particulars	Number of respondents	Percentage (%)
Yes	93	62%
No	57	38%
Total	150	100%



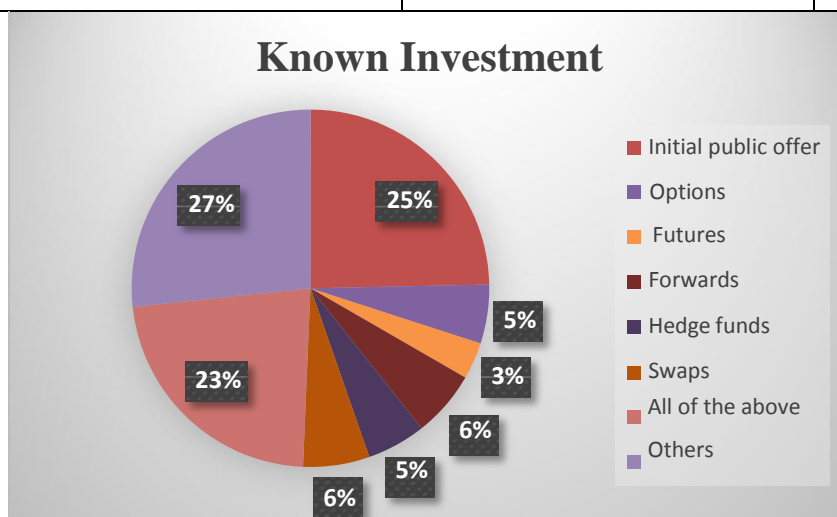
Comment

Out of 150 respondents, it shows that 62% of the respondents have invested in past and remaining 38% Of respondents have not invested in past.

Q.17) Do you know any of the following investments?

- 1) Initial public offer 2) Options 3) Futures
- 4) Forwards 5) Hedge funds 6) Swaps
- 7) All of the above 8) Others

Particulars	Number of respondents	Percentage (%)
Initial public offer	37	25%
Options	08	5%
Futures	05	3%
Forwards	09	6%
Hedge funds	08	5%
Swaps	09	6%
All of the above	34	23%
Others	40	27%
Total	150	100%



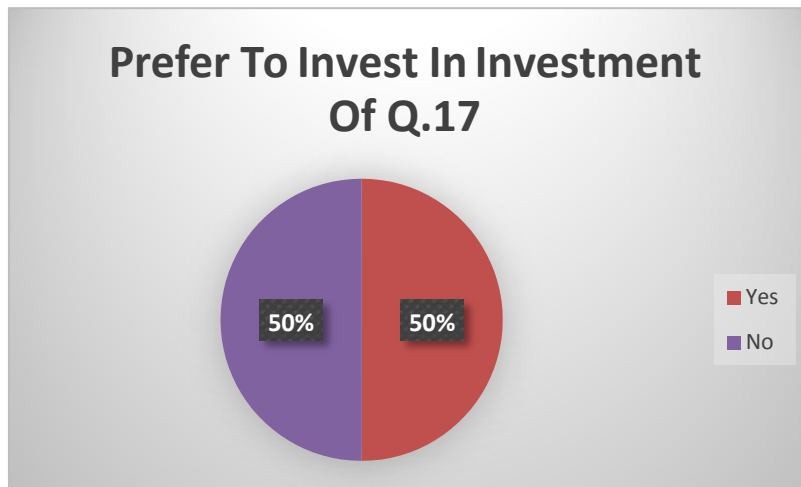
Comment

Out of 150 respondents, it shows that 25% of respondents are familiar with initial public offers, 5% of respondents are familiar with options, 3% of respondents are familiar with futures, 6% of respondents are familiar with forwards, 5% of respondents are familiar with hedge funds, 6% of respondents are familiar with swaps, 23% of respondents are familiar with all of the above and remaining 27% of respondents are familiar with others.

Q.18) Would you like to invest in any of the above investments (mentioned in Q.17)?

- 1) Yes 2) No

Particulars	Number of respondents	Percentage (%)
Yes	75	50%
No	75	50%
Total	150	100%



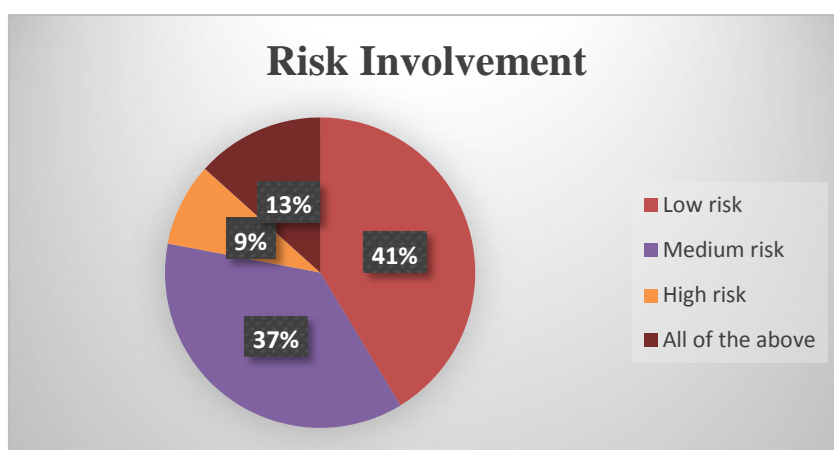
Comment

Out of 150 respondents, it shows that 50% of the respondents are willing to invest in investments mentioned in Q.17 and remaining 50% of the respondents are not willing to invest in investments mentioned in Q.17.

Q.19) Which type of risk factor would you consider while investing?

- 1) Low risk 3) High risk
2) Medium risk 4) All of the above

Particulars	Number of respondents	Percentage (%)
Low risk	62	41%
Medium risk	55	37%
High risk	13	9%
All of the above	20	13%
Total	150	100



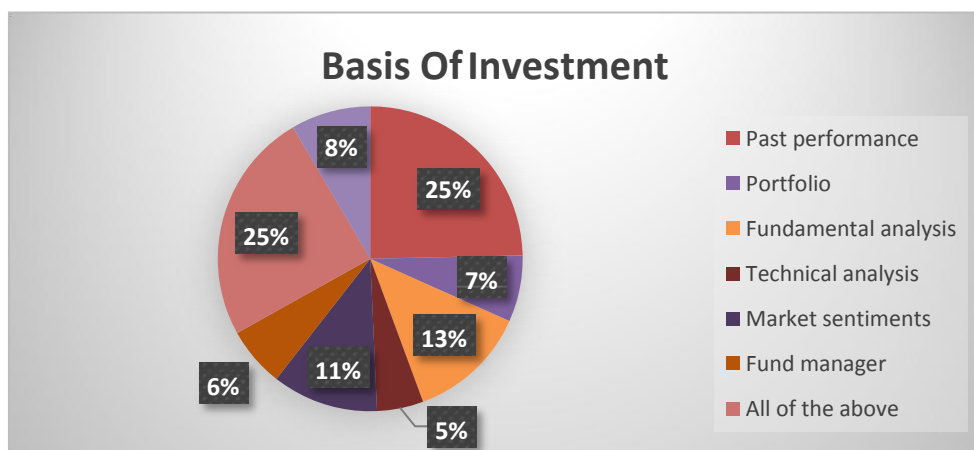
Comment

Out of 150 respondents, it shows that 41% of the respondents prefer to invest their money in low risk investments, 37% of the respondents prefer to invest their money in medium risk investments, 9% of the respondents prefer to invest their money in high risk investments and remaining 13% of the respondents prefer to invest their money in all of the above risks.

Q.20) On what basis would you like to invest in any particular investment?

- 1) Past performance
- 2) Portfolio
- 3) Fundamental analysis
- 4) Technical analysis
- 5) Market sentiments
- 6) Fund manage
- 7) All of the above
- 8) Others

Particulars	Number of investments	Percentage (%)
Past performance	35	25%
Portfolio	10	7%
Fundamental analysis	18	13%
Technical analysis	07	5%
Market sentiments	16	11%
Fund manager	09	6%
All of the above	35	25%
Others	12	8%
Total	150	100%



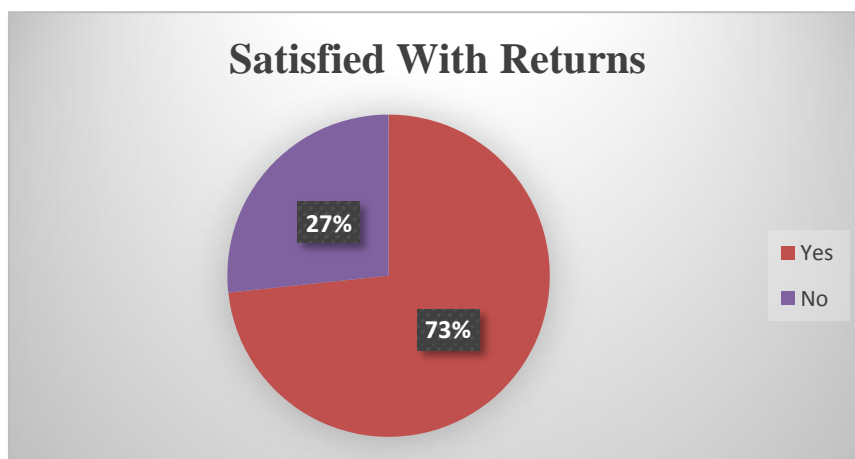
Comment

Out of 150 respondents, it shows that 25% of the respondents prefer to invest their money on the basis of past performance, 7% of the respondents prefer to invest their money on the basis of portfolio, 13 of the respondents prefer to invest their money on the basis of fundamental analysis, 5% of the respondents prefer to invest their money on the basis of technical analysis, 11% of the respondents prefer to invest their money on the basis of market sentiments, 6% of the respondents prefer to invest their money on the basis of fund manager, 25% of the respondents prefer to invest their money on the basis of all of the above and remaining 8% of the respondents prefer to invest their money on the basis of others.

Q.21) Are you satisfied with the returns you get through investments?

- 1) Yes
- 2) No

Particulars	Number of respondents	Percentage (%)
Yes	110	73%
No	40	27%
Total	150	100%



Comment

Out of 150 respondents, it shows that 73% of the respondents are satisfied with the returns they get and remaining 27% of the respondents are not satisfied with the returns they get .

INTERPRETATION OF DATA

To invest is to allocate money (or sometimes another resource, such as time) in the expectation of some benefit in the future. In finance, the expected future benefit from investment is called a return (to investment). The return may consist of capital gain and/or investment income, including dividends, interest, rental income etc. The economic return to an investment is the appropriately discounted value of the future returns to the investment.

Investment generally results in acquiring an asset, also called an investment. If the asset is available at a price worth investing, it is normally expected either to generate income, or to appreciate in value, so that it can be sold at a higher price (or both). Investors generally expect higher returns from riskier investments. Financial assets range from low-risk, low-return investments, such as high-grade government bonds, to those with higher risk and higher expected commensurate reward, such as emerging markets stock investments. Investors, particularly novices, are often advised to adopt an investment strategy and diversify their portfolio. Diversification has the statistical effect of reducing overall risk.

Investment is putting money into something with the expectation of profit. More specifically, investment is the commitment of money or capital to the purchase of financial instruments or other assets so as to gain profitable returns in the form of interest, dividends, or appreciation of the value of the instrument. Investment is involved in many areas of the economy, such as business management and finance whether for households, firms, or governments. Investment comes with the risk of the loss of the principal sum. The investment that has not been thoroughly analyzed can be highly risky with respect to the investment owner because the possibility of losing money is not within the owner's control.

Investing money is a stepping stone to manage spending habits and prepare for the future expenses. Most people recognize the need to put their money away for events or circumstances that may occur in future. People invest money to manage their personal

finances some of them invest to plan for retirement, while others invest to accumulate wealth. Every investor has certain specific objectives to achieve through his long term/ short term investment. Such objectives may be monetary/ financial or personal in character.

The objectives include safety and security of the funds invested (principal amount), profitability (through interest, dividend and capital appreciation) and liquidity (convertibility into cash as and when required). These objectives are universal in character as every investor will like to have a fair balance of these three financial objectives. An investor will not like to take undue risk about his principal amount even when the interest rate offered is extremely attractive. These objectives or factors are known as investment attributes.

Salaried persons receive a definite amount out of which they are to spend for maintenance and provident for future with the help of investment. It is very difficult to decide about investment because investment depends upon so many factors like gender, age, family background, profession, educations, health status, taxation, number of dependent members, number of other earning members, ancestral property, retirement age, type of employer, etc. So, the study aims to decide about investment by salaried persons and the problem is that how much amount, at what stage, at what income level, for what time period, in which portfolio assets, with what objective, with what risk assumption, should be invested in taking care of risk and return, maturity period, earnings and appreciations, safety and security, liquidity, lock in period, cost of transaction, return, capital appreciation, etc. In the field of behavioral finance investment is not done only on profit earning motive but it has inputs of psychological needs, aspirations and satisfactions.

CONCLUSION

The male investors dominate the stock market. After incurring losses most of the investors exit the market, consequently, the number of experienced investor's declines. There is waning interest of investors in the stock market. As the investors gain experience in the stock market operations, they can keep themselves away from the market during a crisis. Long run investing is the safe and sure path to wealth creation.

The study on preferred investment avenues among salaried people has been undertaken with the key objectives such as to find preferred investment avenues & also to know the awareness level of investors. Analysis of the study was undertaken with the help of survey conducted.

After the analysis & interpretation of data it is concluded that Investors are aware about investment avenues available in India but still investors are preferred to invest in lic, real estate, gold and silver. The data analysis reveals that the safety is important factor while doing investment so remaining avenues is less considerable while doing investment by investors.

Awareness programmes has to be conducted by stock broking firms, because most of the respondents are thinking these avenues are loss making & having no good return on it. „No Pain No gain' is the best principle of investment management and salaried investors are following this principle only.

Thus if you wish to reap substantial benefits from your various investment and want your small pile of investment to grow, the right information and analysis of market has to be done correctly

SUGGESTIONS AND RECOMMENDATIONS

Financial literacy among married class of persons and women, especially regarding investment, should be increased so that they are more inclined to invest. Importance of savings and investment should be explained through the curriculum of education, especially in or before higher secondary education and to persons of age groups of 30-40 and 40-50. Investment seeking companies may target to persons who are graduates. Postgraduates may also be targeted to be motivated towards investments. Persons falling in income brackets of 1-5 Lacs and 5-10 Lacs should be targeted by investment seeking organizations. Income tax provisions should be more relaxed regarding investment returns. more over first exemption limit of income should be increased and more relaxation is expected regarding filling of income tax return by salaried persons. Savings capacity of salaried persons should tried to be increased so that they may tend more towards investment after gaining feeling of secured against contingencies. Composite investment plan covering total investment between 1-2 Lacs and 2-4 Lac may be introduced. Customized portfolio of the ranges may be targeted by portfolio managers. For out performance of salaried investors, it is essential to make them more knowledgeable regarding investment, investment products, investment information and portfolio skills. Reason for investment suggest that people expect more tax benefit from government; it is further suggested that tax burden should be less on salaried persons so as to make investment for its other genuine reasons that are higher returns or safety or liquidity or

any other appropriate reason. Salaried persons should be made very clear about the risk impact upon their investment and its returns well before they really invest into any investment avenue; portfolio approach may be given priority.

It is suggested that investment should be made as per financial plans which usually differs from individual to individual taking into consideration once own specific need. After financial planning, investments plans are to be prepared to obtain capital growth and return appreciation. For safe and secured life and investment medium term investment should be done. People may take peer advice for it. Investments are instruments through which capital growth can be assured and inflation can be fought against with the help of financial advisors. To earn profit and to have profitability, investments may be done for long term also. One may take help of relatives while investing. Family needs should not be ignored out and one should be ready enough to dispose of investment against family needs because the investment are not meant for joy of seeing appreciating and increasing them only. Persons should invest according to their gender, marital status, age groups, educational level, annual income level, filing of income tax return, annual savings level, total annual investment, return on investment, reason for investment, etc. considering different factors that determine their personal investments decisions.

BIBLIOGRAPHY

WEBSITES

- www.bankbazaar.com
- www.kotaksecurities.com
- www.moneycotrol.com
- www.yourarticlelibrary.com

BOOK REFERENCE

- Fundamentals Of Investment Management - By V.K Bhalla - Published by S.Chand And CompanyLimited.
- Investments Analysis And Management - By Charles P. Jones- Published by Wiley India Private Limited.
- All About Investing - The Easy Way To Get Started - By Esme Faerber - Published by Tata McGraw-Hill Publishing Company Limited.
- Investments - By Bodie Kane Marcus - Published by Irwin/McGraw-Hill.

2. Banking Codes and commitment to customers.

MISS.AMALA V. DABHOLKAR

TYBFM

INTRODUCTION

Banking Codes and Standards are documented consensus agreements containing safety or technical specifications or other precise criteria to be used consistently as rules, guidelines, or definitions of characteristics for banking products and services.

Codes and Standards have been in existence for many years. At one time they were thought of as being the lowest common denominator, restrictive, and of little importance. That has changed. Today, codes and standards are recognized as being essential in improving customer services.

Banking codes and Standards will enable processes to run faster, more predictably, more efficiently, and be more cost effective by:

- Providing uniform, defined procedures and tools which help bank staff to give quality services for their customers.
- Enhancing service quality and reliability
- Increasing service rendering efficiency and ease of maintenance

BCSBI has brought out two codes, VIZ,

- 1) **Code of Bank's Commitment to Customers and**
- 2) **Code of Bank's commitment to micro and small enterprises.**

CODE OF BANK'S COMMITMENT TO CUSTOMERS

The IBA had brought out its 'BANKER'S FAIR PRACTICES' code in June 2004 and all member banks had adopted it voluntarily. The code was essentially a commitment to be fair and transparent in dealing with individual customers. The IBA had also separately come out with 'FAIR PRACTICE CODE FOR CREDIT CARD OPERATIONS' and 'MODEL CODE FOR COLLECTION OF DUES AND REPOSSESSION OF SECURITY' to address specific concerns voiced by customers about banking practices in these areas. The 'Code of Bank's Commitment to customer' was released by Dr. Y.V. Reddy, Governor, Reserve Bank of

India, in an inaugural function held at RBI on 1st July, 2006. The code has been revised in August 2009 in order to bring about greater transparency, further enhancements in banking practices relating to customer service, a more responsive grievance redressal system in banks and provide additional protection to customers.

Both the codes are voluntary and set minimum standards of banking practices for banks to follow when they are dealing with individual customers and Micro and Small enterprises in their day to day operations. The codes are not only meant to provide protection to the customers but are also expected to generate awareness in the common man about his rights as a consumer of banking services. The common man is, therefore, the *raison d'être* of the BCSBI.

The project is intended to understand these banking codes and standards and their commitment to following banking services:

- BANKING OMBUDSMAN SERVICE
- CLEARING CYCLE / COLLECTION SERVICES

The Scheme of Banking Ombudsman, which has been functioning for quite some time, does not look into systemic issues with a view to enforcing a prescribed quality of service. Ideally, such a function should be performed by a Self-Regulatory Organization (SRO) but in view of the existing framework of the banking sector in India, it was felt that an independent, autonomous Board will be best suited for the function. Therefore, Dr. Y.V. Reddy, Governor, Reserve Bank of India, in his Monetary Policy Statement (April 2005) announced setting up of the Banking Codes and Standards Board of India in order to ensure that a comprehensive code of conduct for fair treatment of customers was evolved and adhered to.

In banking and finance, **clearing** denotes all activities from the time a commitment is made for a transaction until it is settled. Clearing of payments is necessary to turn the promise of payment (for example, in the form of a cheque or electronic payment request) into the actual movement of money from one account to another. BCSBI in order to bring efficiency in this clearing cycle brought out code of conduct in dealing with collection services

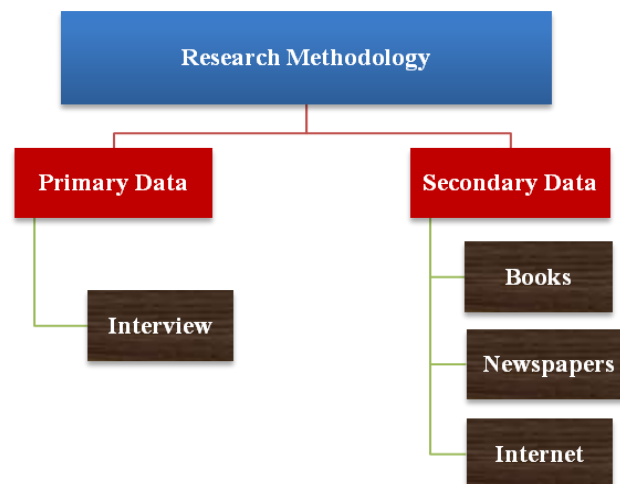
OBJECTIVES OF THE STUDY

1. To study objectives and application of the BCSBI codes.
2. To understand key commitments of codes to customers.
3. To study banking codes and their application in banking ombudsman scheme.
4. To study banking codes and their application in banking collection services.

RESEARCH METHODOLOGY

Primary Data: Data which has not been previously published i.e. the data is derived from a new or original research study & collected directly from first hand sources by means of surveys, observations, experiments or interviews is known as **Primary Data**.

Secondary Data: Data which has already been collected by someone or an organization for some other purpose or research study is known as **Secondary Data**.



METHOD OF DATA COLLECTION:

Primary Data: The data for the study has been collected by undertaking an interview.

Secondary Data: The data for this study has been collected from the following sources:

- Books
 1. Customer Service & Banking Codes and Standards IIBF, Mumbai.
- Newspapers
 1. The Economic Times
 2. Business Today

- Internet_

www.bcsbi.org.in

www.denabank.com

www.rbi.org.in

COLLECTION AND ANALYSIS OF DATA

INTERVIEW

QUE 1: What is grievance redressal mechanism of Dena Bank?

ANS: As per the directives of RBI, the bank has put in place following mechanism for redressal of grievances in respect of services rendered by business correspondents

It will be endeavor of the bank to redress the grievances of the customers within 7 days. The complainant may approach the branch manager of the base branch of the bank for redressal of his grievance. The branch manager of base branch shall ensure to resolve the grievance of the customer within stipulated time frame for redressal of grievances. In case, the complaint is not resolved within 7 days then he/she may approach the concerned zonal manager.

In case, zonal manager is not able to resolve it within a reasonable time, then the complainant may approach General Manager (Gujarat) in the state of Gujarat.

QUE 2: What is the procedure for filing the complaint before the banking ombudsman?

ANS: One can file a complaint with the Banking Ombudsman simply by writing on a plain paper. One can also file it online at (“click here to lodge a complaint”) or by sending an email to the Banking Ombudsman. There is a form along with details of the scheme in our website. However, it is not mandatory to use this format.

QUE 3: Is there any cost involved in filing complaints with Banking Ombudsman?_

ANS: No. The Banking Ombudsman does not charge any fee for filing and resolving customers’ complaints.

QUE 4: Is there any limit on the amount of compensation as specified in an Award?

ANS: The amount, if any, to be paid by the bank to the complainant by way of compensation for any loss suffered by the complainant is limited to the amount arising directly out of the act or omission of the bank or ₹ 20 lakhs (₹ Two Million), whichever is lower.

QUE 5: Can compensation be claimed for mental agony and harassment?

ANS: The Banking Ombudsman may award compensation not exceeding ₹ 1 lakh (₹ One Hundred Thousand) to the complainant for mental agony and harassment. The Banking Ombudsman will take into account the loss of the complainant's time, expenses incurred by the complainant, harassment and mental anguish suffered by the complainant while passing such award.

QUE 6: What details are required in the application?

ANS: Name and address of the complainant, the name and address of the branch or office of the bank against which the complaint is made, facts giving rise to the complaint supported by documents, if any, the nature and extent of the loss caused to the complainant, the relief sought from the Banking Ombudsman and a declaration about the compliance with conditions which are required to be complied with by the complainant under Clause 9(3) of the Banking Ombudsman Scheme.

QUE 7: Is there any time limit for filing an appeal?

ANS: One can file the appeal against the award or decision of the Banking Ombudsman rejecting the complaint within 30 days of the date of receipt of the Award. The Appellate Authority may, if he/she is satisfied that the applicant had sufficient cause for not making an application for appeal within time, also allow a further period not exceeding 30 days.

QUE 8: What are the most grounds of complaints received by the bank from the customers?

ANS: Most of the complaints received are mostly related to the deficiency in banking services such as:

- Non-payment or inordinate delay in the payment or collection of cheques, drafts, bills etc.
- Failure to issue or delay in issue of drafts, pay orders or bankers' cheques.
- Failure to provide or delay in providing a banking facility (other than loans and advances) promised in writing by a bank or its direct selling agents.

- Non-disbursement or delay in disbursement of pension (to the extent the grievance can be attributed to the action on the part of the bank concerned, but not with regard to its employees).

QUE 9: What are the grounds of complaints in respect of loans and advances?

ANS: Most of the complaints are related to:

- Non-observance of Reserve Bank Directives on interest rates.
- Delays in sanction, disbursement or non-observance of prescribed time schedule for disposal of loan applications;
- Non-acceptance of application for loans without furnishing valid reasons to the applicant; and
- Non-adherence to the provisions of the fair practices code for lenders as adopted by the bank or Code of Bank's Commitment to Customers, as the case may be.

QUE 10: What measures are taken by bank for the customer's grievance redressal?

ANS: To enable customers to voice their grievances or offer suggestions for improvement in customer service, 'Customer Day' is observed at all the offices of the bank across the organizations covering branches, Regional office and Head Office, on 15th of every month (next day if, 15th is holiday or half day). During specified hours on this day any customer can meet senior or top executive of the bank.

QUE 11: In case of any complaint where it will be launched initially?

ANS: In case of any complaint, the matter may be first brought to the notice of concerned bank manager for immediate redressal.

QUE 12: Which groups of customers are filing more complaints?

ANS: Younger populations (22-29 years) are filing more complaints. Less educated (illiterates, up to middle and higher secondary) customers also started filing of complaints and their proportion are significant over the years. Employed/Self-employed persons and persons with college degree or higher education accounted for over 80 per cent complaints. Persons with 5-10 years relationship with their banks had high share in the total complaints.

QUE 13: What are the reasons for spurt in complaints?

ANS: Most of the reasons are:

- Diversity and Socio-cultural differences in the population
- Speedy development, particular in peripheral areas
- Low technological and other awareness level in certain segments of the population
- Non registration of complaints involving small amount by law enforcing agencies
- Lack of proper co-operation in the dispute resolution (like, sharing ATM footage, etc.)

QUE 14: Which methods are used mostly for lodging the complaint?

ANS: Complaints can be lodged with the OBO by hand delivery, post, courier, fax or e-mail. It can also be lodged online from the complaint form placed on the website of RBI. Comparative position of complaints received through various modes during the last three years shows that most of the complaints were lodged through E-mails than that of others.

QUE 15: What is the target group of banking ombudsman scheme?

ANS: The main target group of the BOS is individual bank customers. The study shows that during the year 93.06% complaints were received from individual customers including senior citizens.

QUE 16: What is the contribution of Dena Bank in case of maintainable and non-maintainable complaints?

ANS: The bank has rejected total 774 complaints (disposal of complaints) during past 3 years. In which 382 complaints were maintainable and remaining 392 complaints were non-maintainable.

QUE 17: Why bank had adopted speed clearing mechanism?

ANS: The collection of outstation cheques, earlier required movement of cheques from the Presentation centre (city where the cheque is presented) to Drawee centre (city where the cheque is payable) which increases the realization time for cheques. Speed Clearing aims to reduce the time taken for realization of outstation cheques.

QUE 18: What was the process followed by bank for collection of outstation cheques before the introduction of Speed Clearing?

ANS: A person who had an outstation cheque with him/her use to deposit it with his/her bank branch. This bank branch is called the Presenting branch. The cheque was sent for collection to the city where it was payable / drawn called Destination centre or Drawee centre. The

branch providing the collection service is called the Collecting branch. On receipt of the cheque, the Collecting branch use to present the physical instrument in local clearing at the drawee bank branch location through its branch at the drawee bank branch location. Once the cheque was paid, the Collecting branch use to remit the proceeds to the Presenting branch. On receipt of realization advice of the cheque from the Collecting branch, the customer's account was credited. This, in short, is the process of Collection before the introduction of Speed Clearing.

QUE 19: How long does it take for getting credit of an outstation cheque sent on Collection basis?

ANS: Generally, it takes around a week to three weeks' time depending on the drawee centre and collection arrangements to get outstation cheques realized on a Collection basis.

QUE 20: How will a customer know whether a cheque can be cleared in Speed Clearing?

ANS: For facilitating customers to know CBS status of a branch, bank stamp / print 'CBS' on the cheque leaves. Account numbers (if length of account number is more than 10 digits) printed on the cheque leaves may give a broad indication regarding CBS status of the branch.

QUE 21: How does the Local Cheque Clearing work?

ANS: In Local Cheque Clearing in major Centre, cheques are processed by using Cheque Truncation Systems (CTS) through movement of images. Grid based CTS are in place in New Delhi, Chennai and Mumbai. In addition, Express Cheque Clearing Systems (ECCS) application package is used in small clearing houses.

QUE 22: What is the scope for local cheque clearing?

ANS: Local Clearing handles only those cheques that are drawn on branches within the jurisdiction of the local Clearing House. Generally, the jurisdiction is determined taking into account the logistics available to physically move to and from the Clearing House.

QUE 23: How customers get to know about collection services of banks?

ANS: For this bank follows BCSBI codes in respect of collection services. As per this codes we Tell customers about the clearing cycle for local instruments and the outstation instruments including details such as when they can withdraw money after lodging collection

instruments and when they will be entitled to earn delayed interest as per our Cheque Collection Policy.

QUE 24: What measures taken by bank in case of delay in collections?

ANS: Bank will pay them compensation, as per our Cheque Collection / Compensation Policy for any delay in collection of instruments, without waiting for a demand from customers.

QUE 25: If there are any changes in collection policy of the bank what measures are taken by the bank?

ANS: Bank will give customers all the relative information when they open their account and whenever they ask us. If there is any change in our policy, the revised policy will be displayed on our website and at all our branches and all the details will be provided.

INTERPRETATION OF DATA

After the entire analysis of interview and questionnaire, it found that

Bank follows BCSBI guidelines to promote good and fair banking practices by setting minimum standards in dealing with customers quickly and sympathetically.

Most of the complaints received are mostly related to the deficiency in banking services such as:

- Non-payment or inordinate delay in the payment or collection of cheques, drafts, bills etc.
- Failure to issue or delay in issue of drafts, pay orders or bankers' cheques.
- Failure to provide or delay in providing a banking facility (other than loans and advances) promised in writing by a bank or its direct selling agents.
- Non-disbursement or delay in disbursement of pension (to the extent the grievance can be attributed to the action on the part of the bank concerned, but not with regard to its employees).

Most of the complaints are related to:

- Non-observance of Reserve Bank Directives on interest rates.
- Delays in sanction, disbursement or non-observance of prescribed time schedule for disposal of loan applications;

- Non-acceptance of application for loans without furnishing valid reasons to the applicant; and
- Non-adherence to the provisions of the fair practices code for lenders as adopted by the bank or Code of Bank's Commitment to Customers, as the case may be.

Younger populations (22-29 years) are filing more complaints. Less educated (illiterates, up to middle and higher secondary) customers also started filing of complaints and their proportion are significant over the years. Employed/Self-employed persons and persons with college degree or higher education accounted for over 80 per cent complaints. Persons with 5-10 years relationship with their banks had high share in the total complaints.

Most of the reasons for spurt in complaints are as follow:

- Diversity and Socio-cultural differences in the population
- Speedy development, particular in peripheral areas
- Low technological and other awareness level in certain segments of the population
- Non registration of complaints involving small amount by law enforcing agencies

Bank follows BCSBI guidelines for the collection services or clearing cycle. Following factors are taken into consideration.

The banks always:

- Tell customers about the clearing cycle for local instruments and the outstation instruments including details such as when customers can withdraw money after lodging collection instruments and when they will be entitled to earn delayed interest as per our Cheque Collection Policy.
- Pay compensation to customers, as per our Cheque Collection / Compensation Policy for any delay in collection of instruments, without waiting for a demand from them.
- Provide details, if banks offer immediate credit for outstation cheques, including the applicable terms and conditions, such as the limit up to which instruments tendered by customers can be credited, operating accounts satisfactorily, etc.

- Proceed as per bank's Cheque Collection Policy and provide all assistance for customers to obtain a duplicate cheque/instrument in case a cheque/instrument tendered by them is lost in transit
- Give the above information when customers open their account and whenever they ask banks. If there is any change in bank's policy, the revised policy will be displayed on the website and at all branches.

Thus at the end bank follows BCSBI guideline in their customer services for providing them uniform, defined procedures and tools which help bank staff to give quality services for their customers.

CONCLUSION

After taking interview on commitments of banking codes towards customers it was concluded that:

- The Codes lay great emphasis on transparency and providing full information to the customer before a product or service is sold to him. The Codes are not only commitments of banks to their customers but also in a sense a Charter of Rights for the common person. By setting the minimum standards of customer service, the Codes make the customer aware of he can expect each bank to deal with the his/ her day-to-day requirements
- BCSBI codes helps in promoting good banking practices, Providing uniform, defined procedures and tools which help bank staff to give quality services for their customers, Enhancing service quality and reliability, Increasing service rendering efficiency and ease of maintenance, setting minimum standards, increasing transparency, achieving higher operating standards and above all, promoting a cordial banker-customer relationship which would foster confidence of the common man in the banking system.
- By following these codes banks can make fair and reasonable dealings with customers. They help them to understand how financial products and services work and also to deal quickly and sympathetically with things that go wrong.

- Thus at the end bank follows BCSBI guideline in their customer services for providing them uniform, defined procedures and tools which help bank staff to give quality services for their customers.

SUGGESTIONS AND RECOMMENDATIONS

- To enable customers to voice their grievances or offer suggestions for improvement in customer service, banks should conduct many campaigns or awareness programs such as Dena Bank have 'Customer Day' which is observed at all the offices of the bank across the organizations covering branches, Regional office and Head Office, on 15th of every month (next day if, 15th is holiday or half day). During specified hours on this day any customer can meet senior or top executive of the bank.
- Banks should give customers all the relative information about BCSBI guidelines towards customers whenever they have any query about code of conduct in the banks. If there is any change or amendments in guidelines, the revised policy should be displayed on website of the banks and at all branches and all the details should be provided.
- Many customers do not have any knowledge about BCSBI and guidelines provided by BCSBI for banks while dealing with customers. And it is important for every customer who has their account with bank to know about those rules and regulation which is specifically enforced for them. So for this purpose banks can make some posters containing short but informative data about those guidelines and display it to all branches so that customers will get to know about the same.
- Bank's staff can also play vital role in bringing awareness about BCSBI codes and standards among every customer of the bank. Bank's front staff should satisfy customers with their queries as well as they can give customers informative suggestions about these guidelines which will make customers aware about guidelines and ultimately makes cordial relations with banking staff.

3. **BIOCHEMICAL AND MICROBIAL TESTING, PROCESSING, PRODUCTION AND PACKAGING OF MILK AND ICE CREAM**

TANMAY JOSHI

TY BIOTECH

Abstract

Milk is a highly nutritive fluid and consumed globally. Also various dairy products are produced from milk and it is therefore important that it must be free from all sorts of contamination. It is necessary to understand standards to define milk contamination free and consumable. For the production of quality dairy products microbial quality of raw milk is crucial as different microorganisms can result in deterioration of milk by degrading carbohydrates, proteins and fats present in milk by their enzymes. Various microorganisms like *Coxiella burnetti*, *Pseudomonas florescens*, and *Pseudomonas fragi* produce lipolytic as well as proteolytic extracellular enzymes. Also species and strains of *Bacillus*, *Clostridium*, *Cornebacterium*, *Arthrobacter*, *Lactobacillus*, *Microbacterium*, *Micrococcus*, and *Streptococcus* can survive pasteurization and refrigeration temperature and can cause spoilage of milk. To avoid spoilage of milk by these organisms it is important to detect them in milk and milk products before they are packaged and distributed. For detection of these organisms various microbial and biochemical tests are performed. Prabhat being a reputed dairy industry performs all the tests required to check the quality of milk by suitable microbial and biochemical tests. Internship at Prabhat dairy was done to understand and learn more about the dairy industry and role of Biotechnology in it. Also various microbial and biochemical tests were performed to check the quality of milk

Review of literature

Transport and processing of milk from cattle house to Dairy and from Dairy to store

The dairy products are produced from milk in Dairy industries, and the source of this milk is mostly cows and buffaloes. The milk is drawn from these animals from cattle house, filled in containers and tanks and via vehicles transported to the dairy industries. After processing this milk is then transported to stores for distribution.

Various steps involved in transport and processing of milk and milk products can be explained as:-

1. Rearing

Dairy cows typically spend their days in close quarters known as confined animal feeding operations (CAFOs) some of which house thousands of animals. Here they are fed grains, hay, and silage (conserved forage). Also sanitary conditions are maintained here to keep the animal free from infections and away from disease (Yuni Suranindyah, et.al).

2. Harvesting

A cow is ready to be milked when her udder is full. Animals should be milked at the same time every day (Abebe Tessema and Markos Tibbo). Cows are normally milked at least twice a day. Most dairies have enough machines to milk more than 20 cows at one time. Milking machines mimic the action of young calf, by creating a pulsating vacuum around the teat, which causes the milk to be released from the udder.

3. Transportation

As milk is a very perishable product, transporters must ensure high levels of hygiene, speedy transport and careful handling (Abebe Tessema and Markos Tibbo). Milk is collected from the farm every 24 to 48 hours. The tankers that are used has special stainless steel bodies i.e. Aluminium, which are heavily insulated to keep milk cold during transportation to the processing factory. Milk tanker drivers are accredited milk graders who evaluate the milk prior to collection. A representative sample is collected from each farm prior to being pumped on to the tanker. After collection the milk is transported to the factory sides, and stored in the refrigerated silos before processing.

4. Lab testing

Milk testing and quality control is an essential component of any milk processing industry whether small, medium or large scale (FAO/TCP/KEN/6611, Volume 2). Sample of milk are taken from a farm vats prior to collection and from the bulk milk tanker upon the arrival at the factory. Samples from the bulk milk are tested for antibiotic, temperature, before the milk enters the factory processing area. Farm milk samples are tested for milk fat, proteins, bulk milk cell count, and bacterial count.

5. Processing of Whole milk

Once approved for use it is pumped to the storage silos, where it undergoes pasteurization, Homogenization, separation and further processing (Maneesha S. Mohan, et.al).

- **Pasteurization**

The primary purpose of pasteurization is to inactivate most pathogens (disease-causing bacteria) in milk to make it safer to consume at least reduction in five log cycles of population of *Mycobacterium paratuberculosis* (Stabel & Lambertz, 2004). Pasteurization consist of holding the milk in tanks at 63 to 84 degree Celsius for 30 minutes and immediately refrigerated, thus disinfection of milk is achieved. Different methods are employed for pasteurization like HTST and LTLT etc but HTST is mostly used as it is effective and less time consuming.

- **Homogenization**

Historically, homogenizers were developed early in the 20th century to prevent stealing of valuable fat by whole sellers (Trout 1948). It is the process that allows the complete mixture of fat globules in the milk to distribute in uniform manner, stopping the fat from floating to the top of the container.

- **Separation**

Separation of cream from milk is generally achieved to produce milk products with low fat content (ISEKI-Food, volume 5). Separation Involves process of spinning of milk through a centrifuge to separate the cream from the milk. After separation process the cream and the remaining milk are remixed to provide the desired fat content, for the different types of milk produced (High fat content, low fat content, skimmed milk, and whole milk.) Whole milk contains fat about 3.25 %, for low fat milk the fat content is 1%, and for skimmed milk it is 0.05%.

- **Packaging**

A package is defined to protect a food product and preserve its nutritional value (Maneesha S. Mohan, et.al). Now the milk is ready to be packed to deliver to the stores. The milk travels through pipe to the automatic packing machine. That fills and seals the milk into paper

cartons (Tetra pack.), milk bags as the assembly line a date is printed on each of them to show how long the milk can stay fresh.

Quality Assurance

Quality assurance is system oriented aspect, this “system “specifically means quality management system which assures quality of product throughout the food chain. Quality assurance systems for dairy farms are being developed and bacteriological schemes are being implemented in payment systems of farm raw bulk milk (IDF, 2006). In addition, hygienic milk production by dairy farmers is important with respect to animal welfare and the image of the dairy sector. Pathogenic microorganisms can infect cows (e.g. gastrointestinal tract, udder tissue), and result in reduced milk yields and even the death of animals. Thus, in summary, control of the microbial ecology at the dairy farm resulting in on-farm hygienic milk production is important for all elements of the dairy production chain.

In many countries, feed manufacturers have developed quality assurance systems, either individually or on a national level, aiming to control chemical and microbiological safety hazards in feed (Den Hartog, 2003).

Material and methods

A) Biochemical tests:- Biochemical tests include following tests :-

1. Alcohol test	2. Clot on boiling test
3. Caustic soda test	4. MBRT test
5. Hydrogen peroxide test	6. Urea test
7. Starch test	8. Salt test
9. Sugar test	10. Sucrose test
11. Ammonium compound test	12. Formalin

1) Alcohol test

Requirements

MILK SAMPLE, 55,60,65,70% Alcohol, Pipettes, Test Tube, Clean and dry Petri plates

Protocol

5ml milk sample + 5ml (70 %, 65%, 60%, and 55%) + mix the content properly and observe for flakes.

Positive result	Negative result
Flakes	Clear solution

2) Clot on boiling (C.O.B) test

Requirements

Milk sample., Pipettes., Test Tubes., Boiling water bath.

Protocol

5ml milk in test tube + place the tube in boiling water bath for 5 min + remove and observe flakes by rotating test tube.

Positive test	Negative test
Flakes formation	Clear solution

3) Caustic soda test (rosalic acid test)

Requirements

Milk sample, Pipettes, Test tubes, Rosalic acid, Ethyl alcohol.

Protocol

5 ml milk of sample + 5ml of ethyl alcohol + add few drops of 1% rosalic acid + mix well.

Positive test	Negative test
Rose red	Orange

4) **MBRT Test**

Requirements

Milk, sample, .Pipettes, Test tubes, Chilled MBRT solution, Boiling water bath at 37 degree Celsius.

Protocol

10 ml milk sample in sterile MBRT test tube + 1 ml MBRT dye solution (dye concentration 0.005%) + stopper the tubes with sterilized rubber stopper and carefully place them in a test tube stand dipped in a water bath maintained at 37°C and Record time at the beginning of the incubation period.

Grading of raw milk based on MBRT test.

Time of Discoloration	Grade
5 Hours and above.	Very good
3 to 4 hours.	Good
1 to 2 hours.	Fair
Half an hour (30 min.)	Poor

5) **Hydrogen peroxide test**

Requirements

Milk sample, Pipette, Test tubes, Paraphenylene diamine(vanadium pentaoxide),Dropper

Protocol

Take 10 ml milk sample + 10-20 drops vanadium pentaoxide + mix well.

Positive test	Negative test
Pink/red color	White color

6) **Urea test**

Requirements Milk sample, 1.6 % D.M.A.B solution, Test tube, Pipette

Protocol

2 ml milk sample + 2 ml 1.6% D.M.A.B (1,6dimethyl amino benzaldehyde) solution + Mix well.

Positive test	Negative test
Yellow color	White color

7) **Starch test**

Requirements ,Milk sample, Iodine solution, Test tube, Pipette

Protocol

3ml milk sample + bring it to boiling water bath + cool in ice water + 2-8 drops of 1% iodine solution.

Positive test	Negative test
Blue color	Light yellow color

8) **Salt test**

Requirements Milk sample, Glassware: - pipettes, Test tubes, 0.134% silver nitrate solution,

Potassium chromate

Protocol

5ml 0.1346% silver nitrate solution + 1ml milk sample + mix well.

Positive test	Negative test
Yellow color	Brown color

9) Sugar test

Requirements Milk sample Glassware: - pipettes Test tubes 0.5% resorcinol Boiling water bath

Protocol

1 ml milk sample + 1% 0.5ml resorcinol solution + Mix well + place in boiling water bath for 5 min.

Positive test	Negative test
Red color	White color

10) Sucrose test

Requirements Milk sample. Pipettes. Test tubes. Alpha-naphthol. Concentrated Hcl. Boiling water bath.

Protocol

2 Drops of milk sample + 1 drop of alpha- naphthol + 3 ml Conc. Hcl + Boiling Water Bath for 10 sec + cool.

Positive test	Negative test
Pale violet/deep violet color	Clear color

11) Ammonium compound test

Requirements Milk , sample, .Nestler's reagent, Test tube.

Protocol

1 ml of milk sample + 5 ml of nestler's reagent.

Positive test

Negative test

Brown color

Light yellow color

12. Formalin test

Requirements Milk, sample., Ferric chloride, Concentrated Hcl, Test tube.

Protocol

10 ml of milk sample + 0.5 ml of ferric chloride + 5 ml of Conc. Hydrochloric acid.

Positive test	Negative test
Purple color ring at the junction.	Brown ring formation at the junction.

Ice cream Production

Ice cream is the milk product which is sweet and frozen food made with milk and cream typically flavoured with different flavours like vanilla, chocolate, Basundi, or other ingredients.

The production of ice cream is done in two important steps which are:-

- 1) Mixing in "Mixing Room" and
- 2) Production in "Production Hall"

A) Mixing room

The "MIXING ROOM" is an area where mixing of all the ingredients needed for ice cream batch production is done. Here all the required ingredients along with stabilizers, flavours, food colours, etc are mixed together. The ingredients and their amount vary with respect to variety of ice cream being produced. Factors that play an important role while mixing the ingredients are:

- 1) Ingredients.
- 2) Amount of ingredients.
- 3) Mixing vat or mixing tank temperature.

- 4) Amount of water
- 5) Temperature of water.
- 6) Pasteurization. And
- 7) Homogenization

1) **Ingredients**

Generally the ingredients that are use for batch preparation are :- 1) water, 2) skimmed milk powder(SMP),3) Butter, 4) Cremodan and 5) Additives like a)stabilizers and b) emulsifiers. The stabilizers are added to maintain the structure stability and to maintain the smooth texture of ice cream. And the emulsifiers are added to maintain the inter linkage between fat molecules. It acts like a fat binding agent. The flavours like chocolate and vanilla are also added to impart taste.

2) **Amount of ingredients**

The amount of ingredients depends upon the batch being produced. Generally two types of batches are produced which are 1) High fat and 2) Medium fat. For High fat batch preparation the ingredients added are

<u>Ingredients</u>	<u>Amount</u>
1) SMP (skimmed milk Powder)	75 kg
2) Sugar	100 Kg
3) Butter	100 Kg
4) Cremodan	260 Kg

- For Medium Fat batch preparation the ingredients added are

<u>Ingredients</u>	<u>Amount</u>
1) SMP (skimmed milk powder)	75 kg
2) Sugar	100 Kg
3) Butter	60 Kg
4) Cremodan	210

3) **Mixing vat or Mixing tank temperature**

The initial temperature of mixing vat is maintained at 48 degree Celsius to just warm the water so that the skimmed milk powder can be mixed properly in it. It is further increased to allow proper mixing of all ingredients.

4) **Amount of water**

The amount of water differs in accordance with batch and type or variety of ice cream being produced. For e.g. For 300 litres batch 100 litres of water is added with skimmed milk powder (SMP) and for production of Medium fat Batch the amount of water added is 412 litres. The amount of water depends upon type and variety of ice cream being produced.

5) **Temperature of water**

While preparing the batch the initial temperature of water in mixing tank is maintained at 48 degree Celsius. Further while heating the contents in HTST the temperature is maintained at 84(+ or -) 2 degree Celsius. While cooling the temperature of water is maintained to round about 6 degree Celsius. Temperature of water varies with respect to process being conducted.

6) **Pasteurization**

Ice cream mix is pasteurized at 155°F (68.3°C) for 30 minutes or for 84°C for 15 sec. The conditions used to pasteurize ice cream mix is greater because of increased viscosity from the higher fat, solids, and sweetener content, and the addition of egg yolks in custard products. Many harmful bacteria like *Mycobacterium tuberculosis*, *Coxiella burnetti* etc get killed in the process of pasteurization.

7) **Homogenization**

Homogenization is important step as it uniformly distributes the fat content throughout the mixture of batch ingredients. Here the large fat globules are broken down into smaller ones and the fats are homogenized.

Machines used in mixing room

Various machines or equipments are used in “MIXING ROOM” to achieve proper mixing of all the ingredients needed for batch production. The machines used for mixing purpose along with their role are:-

1) **Mixing vat or Mixing tank**

It is a vessel used to mix components with the help of stirrer in Vat. All the ingredients are added to the tank at the beginning along with water. The initial temperature maintained is 48 °C and then gradually increased to achieve proper mixture.

2) **Ventury**

It is used to achieve proper mixture of water and SCP (skimmed milk powder). The skimmed milk powder is added from ventury and is mixed slowly with water in mixing tank.

3) **HTST (High Temperature Short Time) Tank**

In HTST tank process of pasteurization is accomplished. After mixing the mixture is sent to the pasteurization tank. It works on the principle of pasteurization which is heating of liquid (Here milk or mixture of ingredients) for complete destruction of unwanted microorganisms. Theoretically the pasteurization temperature for HTST is 71.66 °C for 15 seconds, but for ice cream batch due to thickness variations the temperature of HTST is set to 84 °C (+ or – 2).

4) **Homogenizer**

The mixture is sent to homogenizer once the pasteurization is achieved in HTST tank. In Homogenizer the large fat globules are broken down into smaller ones and the uniform distribution of fat is achieved so that it doesn't float on the surface. Homogenization is achieved at the pressure 2200 to 3000 psi.

5) **Transport system**

Once the homogenization is achieved the batch is then transported to the aging tanks placed in the production hall via pipeline transport system. The temperature maintained during transport is below 5°C. The mesh filters are used for filtration during transport of batch from mixing room to production halls aging tanks.















B) Production hall

Production Hall is an area where the ice cream is produced from the mixture aged in aging tanks.

Aging and aging tank

In this process the mixture of ingredients of ice cream are aged or are kept in tanks for particular time interval which allows the milk fat to partially crystallize and the gives the proteins stabilizers time to hydrate. The aging tank's batch holding capacity varies (300 litres to 600 litres).

Result

<u>Sr.No</u>	<u>Test</u>	<u>Observation</u>	<u>Inference</u>	<u>Positive test</u>	<u>Negative test</u>
1)	Alcohol test	No flakes formation	Mineral balance of milk		
2)	Clot on	No coagulation.	Acidity of milk is in		
	Caustic soda	No rose red color	No neutralizers are added		
4)	MBRT test	No discoloration	The milk is of very good		
5)	Hydrogen	No pink color	Hydrogen peroxide is		
6)	Urea test	No yellow color	Urea is absent		
7)	Starch test	No blue black	Milk is not adulterated		

8)	Salt test	No yellow coloration	Milk is not adulterated		
9)	Sugar test	No red colored	Milk is not adulterated		
10)	Sucrose test	No deep violet color	Milk is not adulterated		
	Ammonium		Milk is not adulterated		
12)	Formalin test	No purple color ring	Milk is not adulterated		

Conclusion

From the project done it can be concluded that dairy industries play a major role in maintaining the quality of milk by eliminating the unwanted organisms from it by various processes like pasteurization, HTST, UHT etc. Also various microbial and biochemical tests help to understand about the quality of milk, which helps to ensure that milk which is going to be distributed in the people for consumption is safe for that purpose. In Prabhat dairy, the milk is processed and packed with utmost care. After treatment of milk with processes like pasteurization the microbial tests and biochemical tests showed values within the standards and acceptable range and from this it can be concluded that milk processed and distributed by Prabhat dairy is of Grade A quality.

Bibliography

- 1) Ogier JC1, Son O, Gruss A, Tailliez P, Delacroix-Buchet A.(Aug 2002), 68(8):3691-701). Identification of the bacterial microflora in dairy products by temporal temperature gradient gel electrophoresis.
- 2) Mahari T, Gashe BA. (1990 May; 57(2):233-8.). A survey of the microflora of raw and pasteurized milk and the sources of contamination in a milk processing plant in Addis Ababa, Ethiopia.

- 3) H.H.Sommer,T.H.Binney (May 1923), volume 6. A Study of the Factors that Influence the Coagulation of Milk in the Alcohol Test.Department of Dairy Husbandry, College of Agriculture, University of Wisconsin Madison, Wisconsin.
- 4) Tanzina, Azad and Shoeb Ahmed (5 December 2016). Common milk adulteration and their detection techniques.International Journal of Food Contamination20163:22.
- 5) Subir, Kumar, Nandy and K. V. Venkatesh (29 October, 2009). Application of methylene blue dye reduction test (MBRT) to determine growth and death rates of microorganisms. Department of Chemical Engineering, Indian Institute of Technology, Bombay, Powai, Mumbai - 400 076, India.
- 6) M.M.M. Vissers and F. Driehuis. 1 On-Farm Hygienic Milk Production. Milk processing and quality management.Pdf.
- 7) N.Uma, Maheswari, and K.Sabitha. (December 2015), Microbiological analysis of milk samples. <http://dx.doi.org/10.18782/2320-7051-2115> ISSN; 2330_7051.
- 8) Muhammad Nasser abbas ,baharullah khattak,abdul sajid,taiseer ul Islam,qaiser jamal,shahzad munir,department of microbiology ,kohat university (august 2013) biochemical and bacteriological analysis of cow's milk samples.
- 9) Öste .R. M. et.al. Vitamins **in milk and milk products**, in: **Advanced Dairy Chemistry, Vol. 3 Lactose, water, salts and vitamins.** (1997) 2nd Ed. Fox, P. F., ed. Chapman & Hall, London.
- 10) N.F. Bazin and M. Gueguen.1997. Microbiological composition of raw milk fromselected farms in the Camembert region of Normandy. J. Appl. Microbiol. 83:53-58.

4. CHECKING OF MILK QUALITY BY SUITABLE MICROBIOLOGICAL AND VARIOUS BIOCHEMICAL TEST

TUSHAR ATWAD

(T.Y. BSc BIOTECH)

Abstract

The microbial quality of raw milk is crucial for the production of quality dairy products and food spoilage is a term used to describe the deterioration of a food's texture, colour, odour or flavour to a point where it is unappetizing or unsuitable for human consumption. Microbial spoilage of food often involves degradation of proteins, carbohydrates and fats by the microorganisms or their enzymes. In milk, the microorganisms that are principally involved in spoilage are psychrotrophic organisms. Most psychrotrophs are destroyed by pasteurization temperatures, however some like *Pseudomonas fluorescens*, *Pseudomonas fragi*, *Coxiella Burnetti* can produce lipolytic and proteolytic extracellular enzymes which are heat stable and capable of causing spoilage. Some species and strains of *Bacillus*, *Clostridium*, *Cornebacterium*, *Arthrobacter*, *Lactobacillus*, *Microbacterium*, *Micrococcus*, and *Streptococcus* can survive pasteurization and grow at refrigeration temperatures, which can cause spoilage problems. Hence, it is very important to detect these organisms in milk before it is further packaged and distributed. The various tests performed are microbiological and biochemical tests. Prabhat, being a reputed dairy, also performs all the tests required to detect the spoilage-causing organisms in milk. Prabhat Dairy provided the opportunity to learn more about the dairy industry and the role of Biotech in dairy. The importance of various biochemical and microbiological tests to detect microorganisms in dairy was studied.

Review of literature

Basically the production of milk involves the following steps:-

- 6. Rearing:**- Dairy cows typically spend their days eating, sleeping, ruminating, or chewing their cud in other farms. They are fed grains, hay, silage (conserved forage) and remain all

the day in close quarters known as confined animal feeding operations (CAFOs) some of which house thousands of animals. .(West, J. W. 2003).

7. **Harvesting**:-A cow is ready to be milked when her udder is full. Cows are normally milked at least twice a day. Milking time takes about five minutes per cow depending upon the type of machine and amount of milk the cow is producing. Most dairies have enough machines to milk than 20 cows at one time. Milking machines mimic the action of young calf, by creating a pulsating vacuum around the teat, which causes the milk to be released from the udder.
8. **Transportation**:-Milk is collected from the farm every 24 to 48 hours. The tankers that are used has special stainless steel bodies i.e. aluminium, which are heavily insulated to keep milk cold during transportation to the processing factory. Milk tanker drivers are accredited milk graders, qualified to evaluate the milk prior to collection. Tanker drivers grade and if necessary reject milk base on temperature, sight, and smell. A representative sample is collected from each farm prior to being pumped on to the tanker. After collection the milk is transported to the factory sides, and stored in the refrigerated silos before processing.
9. **Lab testing**:-Sample of milk are taken from a farm vats prior to collection and from the bulk milk tanker upon the arrival at the factory. Samples from the bulk milk are tested for antibiotic, temperature, before the milk enters the factory processing area. Farm milk samples are tested for milk fat, proteins, bulk milk cell count, bacterial count; we are going to learn about these tests further.
10. **Processing Whole milk**:-Once approved for use it is pumped to the storage silos, where it undergoes pasteurization, homogenization, and separation and further processing.
.(Walstra, P., T. J. Geurts, A. Noomen, A. Jellema, and M. A. J. S. van Boekel.1999. Marcel Dekker, Inc., NY).
- **Pasteurization**:-Pasteurization consist of holding the milk in tanks at 63 to 84 degree Celsius for 30 minutes and immediately refrigerated, thus disinfection of milk is achieved. Different methods are employed for pasteurization like HTST and LTLT etc but we use HTST as it is less time consuming process.

- **Homogenization**:-It is the process that allows the complete mixture of fat globules in the milk to distribute in uniform manner, stopping the fat from floating to the top of the container.
- **Separation**:-Involves spinning milk through a centrifuge to separate the cream from the milk. After separation the cream and the remaining milk are remixed to provide the desired fat content, for the different types of milk produced (High fat content, low fat content, skimmed milk, and whole milk.) whole milk contains fat about 3.25 %, for low fat milk the fat content is 1%, and for skimmed milk it is 0.05%.

Quality assurance:-

Quality assurance is system oriented aspect this “system “specifically means Quality management system which assures quality of product throughout the food chain.

Milk testing and quality control is an essential component of any milk processing industry whether small, medium or large scale. Milk is made up of 87 % of water and has high nutritional value which make an ideal medium for rapid multiplication of bacterias.

Milk quality control is the use of of approved tests to ensure the application of approved practices, standards, and regulations concerning the milk and milk products. The tests are designed to ensure that milk products meet accepted standards for chemical composition and purity as well as levels of different microorganisms.

Materials and Methods

Biochemical tests: - biochemical tests include following tests :-

1. **Alcohol Test**: It is based on the tendency of milk protein to get unstable as a result of mineral balance of milk.

Requirements:-

- Milk sample
- 55,60,65,70% Alcohol
- Glassware's :- Pipettes

- Test Tubes
- Clean and dry Petri plates

Protocol:-

1. 5ml of milk + 5 ml (55,60,65,70)% Alcohol
2. Mix contents by inverting several times
3. Note an flakes or clots.
4. Repeat the same procedure with different percentage of alcohol.

2. **Clot on Boiling(C.O.B):**

Requirements:-

- Milk sample
- Glassware's :- Pipettes
- Test Tubes
- Boiling water bath

Protocol:-

1. Take 5 ml of milk sample in a test tube and heat it.
2. If acidity is high, clots or flakes are observed in the milk.
 - To determine the stability of milk for heat processing. If milk is kept as such at room temperature, there will be increased in the acidity which is called as developed acidity. If acidity is increased to more than 0.2 percent, there is coagulation due to heat treatment, which is the result of dissociation of calcium caseinate salt. Hence it is essential to know the heat stability of incoming raw milk for further processing.
 - N.O.T.E- Avoid direct heating of milk. Use hot water bath.
 - Note any acid smell or precipitated particles on the sides of the test tube.
 - Sample showing precipitated particles are recorded as positive C.O.B. test. Such milk is rejected on the platform.

3. Caustic Soda Test (Rosalic Acid Test):

Requirements:-

- Milk sample
- Glassware's :- Pipettes
- Test Tubes
- Roslaic acid
- Ethyl alcohol.

Protocol:-

- 1) 5ml milk sample + 5ml ethyl alcohol drop wise.
- 2) 1% rosalic acid.
- 3) Mix well

4. MBRT Test:

Requirements:-

- Milk sample
- Glassware's :- Pipettes
- Test Tubes
- Chilled MBRT Solution
- Boiling water bath at 37 degree Celsius.
- Grading of raw milk base on Mbrt:

Protocol:-

The test has to be done under sterile conditions. Take 10 ml milk sample in sterile MBRT test tube. Add 1 ml MBRT dye solution (dye concentration 0.005%) stopper the tubes with sterilized rubber stopper and carefully place them in a test tube stand dipped in a water bath maintained at 37degree Celsius. Record this time as the beginning of the incubation period.

5. Hydrogen peroxide test:

Requirements:-

- Milk sample
- glassware's :- Pipettes
- Test Tubes
- Paraphenylene diamine(vanadium pentaoxide)
- Dropper

➤ Protocol:-

1. Take 5ml of milk in a test tube and then add 5 drops of paraphenylene diamine and shake it well.
2. Change of the colour of milk confirms that the milk is added with hydrogen peroxide. Change of the colour of milk confirms that the milk is added with hydrogen peroxide.
 - $\text{H}_2\text{O}_2 + \text{phenolic derivate} \longrightarrow \text{Pink complex}$

6.

Urease Test:

• Protocol :-

- 1) 2ml of milk +2ml of DMAB. (1,6dimethyl amino benzaldehyde)+mix well.
- 2) Then observe for colour. The urea content in raw milk is related to the amount of protein in the animal feeding and allows you to define an adequate diet. This analysis also helps to identify any additions of urea in milk, introduced in order to increase, fraudulently, the protein content of milk.

7. Starch test:

- The test to detect starch in milk uses iodine solution addition of which turns the milk solution to blue black colour due to the formation of starch iodo complex, in the presence of starch.
- Protocol:- 3 ml milk sample bring it to boil in boiling water bath+ cool in ice water bath+ 2- 3 drops of 1% iodine solution.

8. Salt:

- Requirements :-
- Milk sample

- Glassware's :- Pipettes
- Test Tubes
- 0.134% silver
- Potassium Dichromate.

Protocol:-5 ml of silver nitrate (0.134%) is taken in a test tube and added with 2 -3 drops of 1% potassium dichromate and 1ml of milk and thoroughly mixed .

9. Sugar Test:

- Requirements :-
- Milk sample
- Glassware's :- Pipettes
- Test Tubes.
- 0.5% Resorcinol.
- Boiling water bath.
- Protocol:-

1ml milk sample +1ml 0.5% Resorcinol solution +mix well, place in boiling water bath for 5 min.

10. Formalin Test:

PROTOCOL:-

- 10 ml milk sample + 0.5 ml of ferric chloride + 5 ml of Conc. Hydrochloric acid.

Results and Discussion

1) Alcohol Test:

Test	Result	Inference
Milk+55% Alcohol	Clear solution	Negative
Milk+60% Alcohol	Clear solution	Negative
Milk+65% Alcohol	Clear solution	Negative
Milk+70% Alcohol	Clear solution	Negative

It is based on the tendency of milk protein to get unstable as a result of mineral balance of milk. Alcohol test is used as an indication for the mineral balance of milk the test aids in abnormal milk. E.g. Milk in which mineral balance has been disturbed. Also alcohol is added as a preservative for milk as this test can be performed to check if the level of alcohol used as preservative is within the prescribed limits presence of clots or flakes after addition of alcohol denotes a positive test.

2) Clot on boiling:

Test	Result	Inference
Milk+Heat in BWB	If , Flakes formation	Positive
Milk+60% Alcohol	No Flakes formation	Negative

It is performed to check the acidity of milk. High acidity of milk causes its curdling. Such milk with high acidity cannot be processed or pasteurized. To determine the stability of milk for heat processing.If milk is kept as such at room temperature, there will be increased in the acidity which is called as developed acidity. If acidity is increased to more than 0.2 percent, there is coagulation due to heat treatment, which is the result of dissociation of calcium caseinate salt. Hence it is essential to know the heat stability of incoming raw milk for further processing.

3) Caustic soda test:

Test	Result	Inference
5ml milk sample + 5ml ethyl alcohol drop wise.	Rose Red Colouration	Positive
5ml milk sample + 5ml ethyl alcohol drop wise.	Orange Colouration	Negative

In milk neutralizers like hydrated lime, sodium hydroxide, sodium carbonate, sodium bicarbonate, which are added, are strictly prohibited. If the colour of milk changes to pinkish red, then it is inferred that the milk is adulterated with sodium carbonate / sodium

bicarbonate and hence unfit for human consumption. This test will be effective only if the neutralizers are present in milk. If the added neutralizers are nullified by the developed acidity, then this test will be negative. In that case, the alkaline condition of the milk for the presence of soda ash has to be estimated.

4) MBRT test:

TIME OF DECOLOURIZATION	GRADE
5 AND ABOVE HOURS.	VERY GOOD
3 TO 4 HOURS.	GOOD
1 TO 2 HOURS.	FAIR
HALF AN HOUR [30 MIN.]	POOR

Methylene blue dye reduction test, commonly known as MBRT test is used as a quick method to assess the microbiological quality of raw and pasteurized milk. This test is based on the fact that the blue colour of the dye solution added to the milk gets decolourized when the oxygen present in the milk gets exhausted due to microbial activity. The sooner the decolourization, more inferior is the bacteriological quality of milk assumed to be.

5) Hydrogen Peroxide test

Test	Result	Inference
5ml of milk in a test tube and then add 5 drops of paraphenylene diamine and	Pink/Red Colouration	Positive
5ml of milk in a test tube and then add 5 drops of paraphenylene diamine and	White Colouration	Negative

Peroxide test strip detects the H₂O₂ in raw milk at levels affecting the bacterial load. The uses of H₂O₂ to activate the inheritant lactoperoxidase enzyme system as dramatically

improve the quality of raw milk and dairy products in areas in which cooling is not widely available.

6) Urease test:

Test	Result	Inference
2ml of milk +2ml of DMAB. (1,6dimethyl amino benzaldehyde)+mix well	Yellow Colouration.	Positive
2ml of milk +2ml of DMAB. (1,6dimethyl amino benzaldehyde)+mix well	White colouration.	Negative

- Urea is generally added in the preparation of synthetic milk to raise the snf (solid non fat) value if the solution turns yellow in colour, then the given sample of milk is added with urea. The urea content in raw milk is related to the amount of protein in the animal feeding and allows you to define an adequate diet. This analysis also helps to identify any additions of urea in milk, introduced in order to increase, fraudulently, the protein content of milk.

7) Starch test

Test	Result	Inference
3 ml milk sample bring it to boil in boiling water bath+ cool in ice water bath+ 2- 3	Blue Colouration	Positive
3 ml milk sample bring it to boil in boiling water bath+ cool in ice water bath+ 2- 3	Light Yellow Colouration	Negative

- The test to detect starch in milk uses iodine solution addition of which turns the milk solution to blue black colour due to the formation of starch iodo complex, in the presence of starch.

Test	Result	Inference
5 ml of silver nitrate (0.134%) is taken in a test tube and added with 2 -3 drops of 1% potassium dichromate and 1ml of milk and thoroughly mixed	Yellow Colouration	Positive
5 ml of silver nitrate (0.134%) is taken in a test tube and added with 2 -3 drops of 1% potassium dichromate and 1ml of milk and thoroughly mixed	Brown Colouration	Negative

8) Sugar test:

Test	Result	Inference
1ml milk sample +1ml 0.5% Resorcinol solution +mix well, place in boiling water bath for 5 min.	Red colouration	Positive
1ml milk sample +1ml 0.5% Resorcinol solution +mix well, place in boiling water bath for 5 min.	White Colouration	Negative

The

sugar is added to the milk to increase the carbohydrates content in the milk and density of milk is increase. Ketose sugar will react with resorcinol to give a red colour precipitate indicating the presence of sugar in milk.

9) Formalin test:

Test	Result	Inference
10 ml milk sample + 0.5 ml of ferric chloride + 5 ml of Conc. Hydrochloric acid.	Ring at the junction of the two liquids, Blue and Violet Colouration.	Positive
10 ml milk sample + 0.5 ml of ferric chloride + 5 ml of Conc. Hydrochloric acid.	Brown Ring Formation at the Junction.	Negative

Formalin is a preservative and can preserve milk for a long period of time due to its high toxicity it can cause liver and kidney damage. Formalin reacts with sulphuric acid and ferric chloride to give a purple colour ring at the junction of the milk, thereby indicating the presence of formalin adulterated milk.

Conclusion

Causative factors for spoilage of milk are spoilage organisms which can be detected using certain procedures. After performing various biochemical and microbial tests the number of organisms was almost negligible. Hence it can be concluded that the milk processed and distributed by Prabhat dairy is of GRADE A quality

References

- Ogier JC1, Son O, Gruss A, Tailliez P, Delacroix-Buchet A.(2002 Aug;68(8):3691-701.), Identification of the bacterial microflora in dairy products by temporal temperature gradient gel electrophoresis.
- [Mahari T¹](#), [Gashe BA](#). (1990 May; 57(2):233-8.). A survey of the microflora of raw and pasteurized milk and the sources of contamination in a milk processing plant in Addis Ababa, Ethiopia.
- H.H.Sommer, T.H.Binney (May 1923) volume 6. A Study of the Factors that Influence the Coagulation of Milk in the Alcohol Test. Department of Dairy Husbandry, College of Agriculture, University of Wisconsin Madison, Wisconsin.
- Tanzina Azad and Shoeb Ahmed (5 December 2016) Common milk adulteration and their detection techniques. *International Journal of Food Contamination*20163:22.
- N.Uma Maheswari and K.Sabitha(December 2015) Microbiological analysis of milk samples. <http://dx.doi.org/10.18782/2320-7051-2115> ISSN ;2330_7051.
- Muhammad Nasser abbas ,baharullah khattak,abdul sajid,taiseer ul Islam,qaiser jamal,shahzad munir,department of microbiology ,kohat university (august 2013) biochemical and bacteriological analysis of cow's milk samples.
- Ogier JC1, Son O, Gruss A, Tailliez P, Delacroix-Buchet A.(2002 Aug; 68(8):3691-701.). Identification of the bacterial microflora in dairy products by temporal temperature gradient gel electrophoresis.
- [Mahari T](#), [Gashe BA](#). (1990 May;57(2):233-8.). A survey of the microflora of raw and pasteurized milk and the sources of contamination in a milk processing plant in Addis Ababa, Ethiopia.

5. Enzymatic Hydrolysis of maize gluten using SEB Digest

- CHARANJEET SODHI

(T.Y. BSc BIOTEHNOLOGY)

ABSTRACT

Issues like inflammatory bowel disease, exocrine pancreatic insufficiency and allergies due to protein have now become a great issue in animals to which attention needs to be paid. Some animals have become allergic to the proteins provided in their diet, while some are unable to digest it properly due to their complex conformations. This problem can be effectively solved if pre-hydrolyzed protein are included in the diet. There are various methods of hydrolyzing a protein out of which enzymatic methods are more preferable. In this experiment, Maize gluten is used as the source of protein while SEBDigest B69 p is used as an alkaline protease. In a shake flask or a Stir tank reactor, under varying conditions of pH and temperature the substrate was made to react with the enzyme. Constant stirring was provided. After fixed interval of time the sample was collected, enzyme was deactivated using boiling water bath, centrifuged and the soluble protein present in the supernatant was estimated using Bradfords method. BSA was also used to make a standard to which our results could be compared and optimized.

INTRODUCTION

Importance of hydrolyzing Maize gluten.

Over the last decades, the use of plant proteins hydrolysate in human nutrition has broadly expanded. They are used in different formulations, such as supplementation of drinks to enhance their nutritional and functional properties, or special medical diets.

One such source for animals that can be used is Maize gluten which can be used as a diet for cattle, fish poultry and pet animals. Because of poor dissolvability, coarse-feeling and, moreover, lack of essential amino acids such as lysine and tryptophan in other proteins, maize gluten is now mainly used as animal feed. Since proteins like Maize gluten exist complicated forms as explained above they need to be broken down into its monomers either amino acids or into small peptides in order to be absorbed and utilized by the cells of animals with weak

digestive systems. Proteins naturally undergo hydrolysis in the by various enzymes and acids present. The digestive tract secretes enzymes such as proteases that help in hydrolysis. Pepsin in stomach and trypsin, Chymotrypsin in pancreas are amongst important protein digesting enzymes. But animals some may not be able to do so therefore hydrolyzed proteins are provided in the diet.

The enzymolysis of maize gluten can be a very important because it transforms the proteins into amino acids and oligopeptides which makes it easier to be digested. Also some in some animals proteins may cause allergies therefore hydrolyzed proteins are used which tricks the immune system of the animal and the protein is no longer recognized as it is broken down into its monomers. But Maize gluten has a major drawback, that it is very insoluble in water. therefore its solubility should be increased.

- Hydrolyzing helps in the utilization of Maize gluten in food products by improving the solubility of protein hydrolysate in body.
- Hydrolyzing proteins into small peptides or amino acids reduces the chances of triggering an allergy in the animal. therefore a hydrolyzed protein can also be called as hypoallergenic.

Hydrolyzing protein using enzymes.

Although the proteins can be hydrolyzed using acids, bases and other methods, enzymatic methods are more preferable since it provides milder process condition and little or no undesirable side reactions or products. In addition the final hydrolysate contains less amount of salts and also the functionality of the product can be controlled by the enzymes and conditions. such as alkaline methods are irreversible but enzymatic reactions can be reversed.

Enzymes are proteins that catalyze various biochemical reactions. They are widely classified into 3 types that help to sustain life.

Among these enzymes, protease is one of the digestive enzymes which splits protein into their monomers. They are physiologically necessary for living organisms and are ubiquitous being found in a wide diversity of sources such as plant, animals, microorganisms.

Plant protease

Papain, bromelain and ficin are well known proteases of plant origin. Papain is a traditional plant protease and is isolated from latex of *Carica papaya* fruits.(active at pH 5-9 and stable upto 90C.

Bromelain is extracted from the stem and juice of pineapple, also known as cystine protease.

Others like neutral protease(*Raphanus sativus* leaves), aspartic leaves(potato leaves), thiol protease(pineapple crown leaf), serine protease(parsley leaves), endoprotease (alfalfa, oat and barley leaves).

Animal protease

The most common protease of animal origin are pancreatic trypsin, chymotrypsin, pepsin and renins. Trypsin, a serine protease is a intestinal digestive enzyme which is responsible for hydrolysis of food proteins. Chymotrypsin trypsin is used for diagnostic and analytical application. Pepsin is an acidic protease present in stomach of vertebrates. Rennets is a pepsin like protease(rennin, chymosin) which is present in its inactive precursor pro-renin, in the stomach of all ruminants and is used in dairy industries.

Microbial protease

It accounts for about approx. 40% of total worldwide enzymes sales as they posses almost all characteristics desired for biotechnological application. It is produced from high yielding strains like *Bacillus spp.*, *Alcaligenes faecalis*, *Pseudomonas fluroscens* and *Aeromonas hydrophilia* grown under submerged culture condition. Among these, *Bacillus spp.* Is the most imp. Group of bacteria that are involved in enzyme industry.

Based on the site of cleavage they are classified into 2 groups exopeptidases and endopeptidases. Exopeptidases act on the terminal ends of the proteins while endopeptidases target within the proteins and they employ various catalytic mechanisms. Cystine endopeptidase, Serine endopeptidase, Glutamic endopeptidase, Metallo endopeptidase, Threonine endopeptidase are the types of endopeptidases

SEB Digest B69 P-The enzyme used in this work is SEB Digest B69 P. It is an alkaline protease. Obtained from advanced enzyme.

REVIEW OF LITERATURE

The use of protein hydrolysates as an important nutrient for growth and maintenance has been increasing in animal nutrition. Although animal proteins and protein hydrolysates are widely used however, recently vegetable protein hydrolysates are gaining importance. The primary aim

of hydrolyzing proteins for specialized diets is to sufficiently disrupt the protein structure within the diet to remove any existing allergens and allergenic epitopes and thereby prevent immune recognition by patients already sensitized to the intact protein. A secondary aim might be to disrupt the proteins to such an extent that there are no antigens capable of eliciting an immune response and leading to sensitization in a naive individual. An “antigen” is defined as a substance capable of stimulating antibody production.

Antigens are usually, although not always, proteins. An “allergen” is an antigen that is capable of eliciting and binding to specific immunoglobulin E (IgE) antibodies and inducing mast cell degranulation after binding to IgE on the cell surface. Ideally, protein hydrolysis prevents mast cell degranulation that would occur in response to the intact protein and enables a patient hypersensitive to the protein to ingest the hydrolysate without clinical signs. Thirdly In addition to helping alleviate food allergy symptoms, hydrolyzed protein diets can also help treat: colitis, idiopathic diarrhea, inflammatory bowel disease, otitis externa, short bowel syndrome

Maize Gluten can be used to overcome these problem, it is a highly digestible protein concentrate rich in sulfur amino acids (methionine cystine) and a source of natural efficient and stable pigments.

MATERIALS AND METHODS

A) Preparation of standard using BSA(bovine serum albumin):

1. Take 25 mg of BSA, mix it and make up the volume till 25ml double distilled water and vortex it.
2. The concentration of above stock solution is 1mg/ml and the desired conc. is 0.1mg/ml thus to achieve this concentration we dilute the solution by 10x.
3. To make 10x solution, take 2.5ml from initial stock solution and make the volume up to 25ml.
4. From this sub stock make dilutions as per the given table.
5. Add 1ml of Bradford's reagent to the varying conc. and incubate it at room temperature for 10 mins.
6. Using a spectrophotometer the hydrolysis of proteins in maize glutein is then analyzed at absorbance 595nm. And the graph for the same is plotted

Sr. no.	Conc. of BSA	Vol. of BSA	Vol. of diluent	Total Volume
	(μg)	(μl)	(μl)	(μl)
Blank	0	0	200	200
1	4	40	160	200
2	8	80	120	200
3	12	120	80	200
4	16	160	40	200
5	20	200	0	200

B) Optimization at shake flask level:

• **Screening of different substrate concentration:**

1. Required amounts of Maize Gluten was weighed for 2.5, 5, 7, 10, 30, 70 and 100 g/L. The slurry is made using distilled water in conical flask and is kept on shaker.
2. 1N NaOH is used to adjust the pH of slurry to 7.5 which is monitored using a pH meter.
3. After maintaining the pH and temp, the 1st sample is withdrawn (that is considered as zero hr reading for the protein analysis).
4. Add 2.5ml of enzyme.
5. For the first 2 hours samples are collected in different eppendorfs at the interval of 15 minutes. For the remaining next two hours the sampling is done after every half an hour.
6. After collecting samples the eppendorfs are placed immediately in the boiling water bath to ensure the hydrolysis has stopped.
7. Centrifuge the eppendorfs after they have been kept in Boiling Water Bath for 10 minutes, so that we obtain clear supernatant containing the hydrolyzed proteins.
8. Perform Bradfords assay of the supernatant

- **Bradford's Assay:**

1. Pipette out 200ul of supernatant from the sample using a micropipette.
2. Add 1ml of Bradford's reagent to it and incubate it at room temperature for 10 mins.
3. Using a spectrophotometer the hydrolysis of proteins in maize gluten was analyzed at absorbance 595nm
4. Plot graph for the same.

- **Optimizing the pH :**

The entire procedure is same as experiment 1 except pH of the flasks were set as 6,7,7.5 and 8 at 45⁰C and another flask was set at 37C with pH 7.5.

Protein conc. (g/L)	Maize gluten (gm)	PH	Temperature
10g/L	1.67	6	45 ⁰ C
		7	
		7.5	
		8	

- **Temperature:**

The entire procedure is same as experiment 1 except that the temperatures are taken to be 37⁰C, 45⁰C, 55⁰C. While taking pH 7.5 constant.

C) Stirred Tank Reactor:

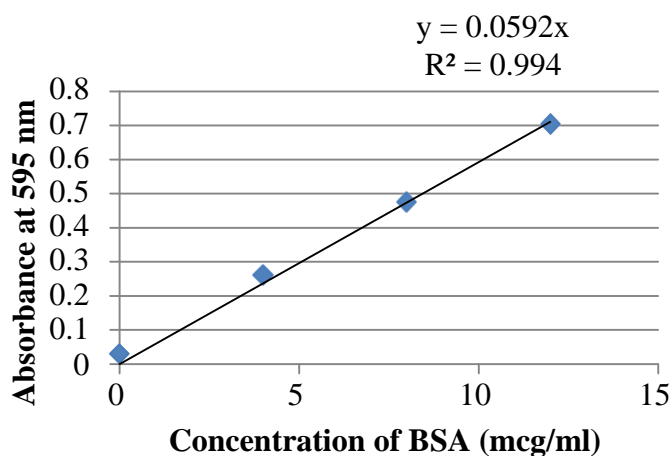
1. Weigh 6.68gm of maize gluten.
2. Transfer 400ml d/w into a Stir Tank Reactor to prepare a slurry.
3. Optimize the temperature at 55 C by circulating water of the same temp.
4. Make the Ph 7.5 by adding 1N NaOH.
5. Set the magnetic stirrer at 55 rpm to carry out the reaction. Mix 0.5gm of enzyme in 100ml of phosphate buffer(10mm).
6. From this solution add 1ml in the slurry. After particular interval of time (15 mins for the 1st 2hrs) the sample from the reactor withdraw the sample.
7. Note, the dropdown of Ph each time and then maintain again after the withdrawal of the sample by adding 1N NaOH to the reaction.

8. Centrifuge the sample collected for 10-15 mins to obtain the supernatant.
9. Perform Bradford's method by using the supernatant and Bradford reagent. Plot a graph for the Same.

RESULT AND DISCUSSION

1. Preparation of a Standard using BSA (Bovine Serum Albumin)

Sr. No	Conc. of BSA (μg)	Abs at 595 nm
Blank	0	0.03
1	4	0.26
2	8	0.474
3	12	0.703
4	16	0.803
5	20	0.906



slope of 0.059 with R2 value as 0.994.

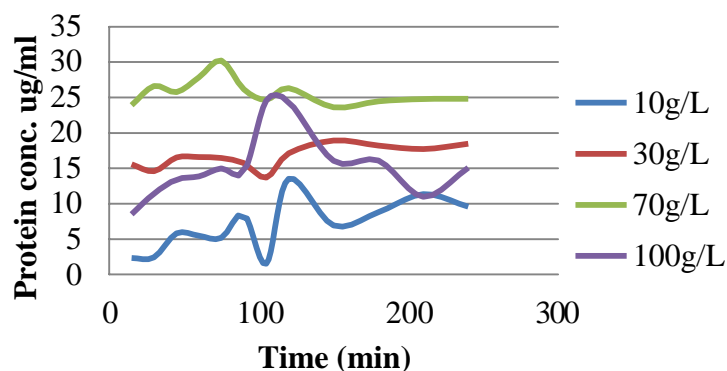
BSA was used to plot a standard curve of concentration vs. absorbance which was used for further soluble protein analysis. The graph so obtained provided the

2. Optimization at shake flask level:

2.1. Screening of different substrates at high concentrations.

Time	10g/L	30g/L	70g/L	100g/L
15	0.139	0.921	1.412	0.502
30	0.144	0.863	1.573	0.675
45	0.344	0.978	1.522	0.793

60	0.324	0.981	1.645	0.818
75	0.306	0.973	1.785	0.885
90	0.504	0.931	1.545	0.852
105	0.091	0.81	1.457	1.451
120	0.798	1.012	1.555	1.443
150	0.41	1.119	1.395	0.948
180	0.52	1.077	1.445	0.95
210	0.67	1.048	1.464	0.648
240	0.566	1.092	1.466	0.89



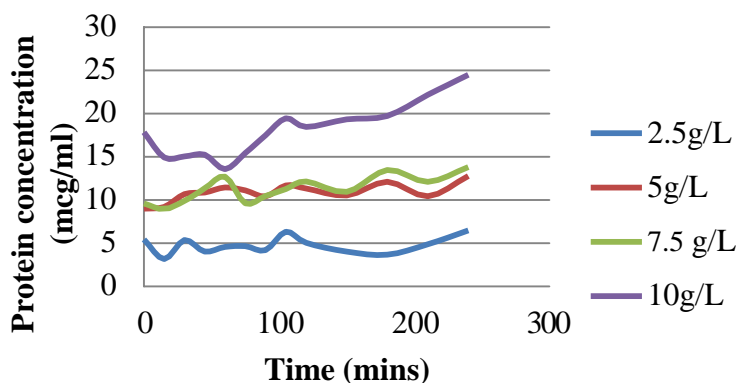
For optimizing the concentration of the substrate initially four concentrations were chosen, i.e., 10 g/L, 30 g/L, 70 g/L and 100 g/L. It was observed that the rate of hydrolysis of the soluble protein concentration increased steadily for the first 45-50 minutes after which there were fluctuations in the graph, this may be due to the following reasons-

- Feedback inhibition because of large amount of substrate. Due to high amount of substrates, interaction between the active site and substrate is reduced, thus inhibiting further hydrolysis.
- Due to the formation of some inhibitory substances during reaction.
- Changes in buffering conditions either lowering of pH during the reaction.

Thus, it is seen that high concentrations of substrates seems to be problem in hydrolyses. Therefore, further experimentation is carried out at concentration 10 g/L or below.

2.2. Screening of different substrates at low concentrations.

Time	2.5 g/L	5 g/L	7.5 g/L	10 g/L
0	0.321	0.531	0.567	1.052
15	0.187	0.543	0.528	0.88
30	0.317	0.63	0.584	0.887
45	0.238	0.641	0.668	0.899
60	0.27	0.675	0.749	0.8
75	0.275	0.655	0.568	0.91
90	0.248	0.614	0.618	1.031
105	0.373	0.689	0.665	1.147
120	0.298	0.668	0.716	1.088
150	0.238	0.621	0.646	1.14
180	0.217	0.714	0.794	1.163
210	0.288	0.615	0.714	1.307
240	0.382	0.753	0.814	1.444



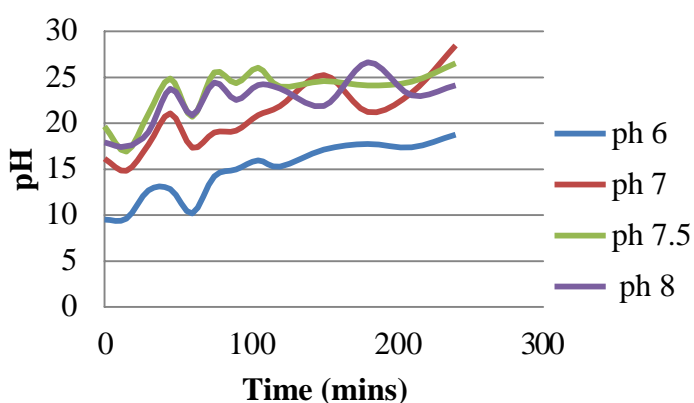
From the above graph, it can be understood that at concentration 10 μ g the rate of hydrolysis is highest. At concentration below 10, there is rate of hydrolysis observed but it is comparatively lower than that of the 10 g.

And hence it can be concluded that our enzyme, that is SEBDigest B69 p works only at low concentrations of substrates. Here the optimum concentration of substrate was found to be 10 g

2.2. Optimizing pH

Time	pH 6	pH 7	pH 7.5	pH 8
0	0.56	0.952	1.16	1.058
15	0.566	0.874	0.998	1.03
30	0.748	1.042	1.24	1.124
45	0.756	1.244	1.468	1.402
60	0.6	1.022	1.222	1.232
75	0.838	1.12	1.508	1.442
90	0.882	1.132	1.438	1.33
105	0.94	1.232	1.538	1.426

120	0.9	1.29	1.416	1.404
150	1.01	1.49	1.452	1.292
180	1.046	1.252	1.424	1.572
210	1.024	1.376	1.448	1.36
240	1.106	1.68	1.566	1.424

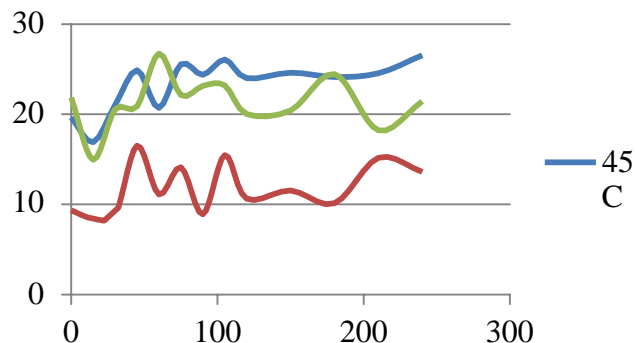


At constant substrate concentration (10 g/L), temperature (45°C) and varying pH (6,7,7.5,8) it was observed that the rate of hydrolysis was maximum at pH 7.5.

Hence it can be concluded that the optimum pH required for the reaction to place is 7.5.

2.3. Optimizing temperature.

Time	45°C	37°C	55°C
0	19.66102	9.322034	21.83051
15	16.91525	8.40678	14.94915
30	21.01695	8.779661	20.54237
45	24.88136	16.50847	20.84746

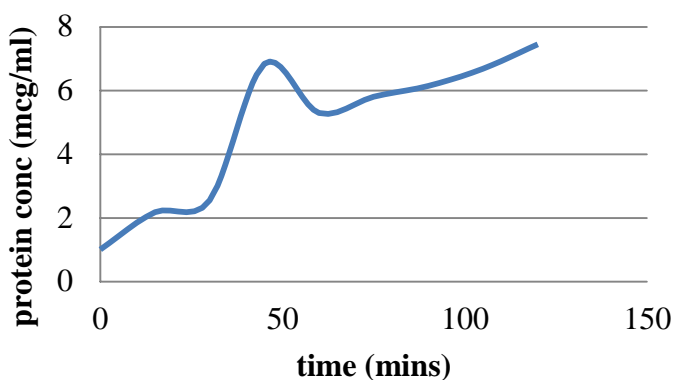


60	20.71186	11.08475	26.71186
75	25.55932	14.10169	22.10169
90	24.37288	8.881356	23.11864
105	26.0678	15.45763	23.18644
120	24	10.61017	20
150	24.61017	11.52542	20.40678
180	24.13559	10.10169	24.44068
210	24.54237	15.15254	18.20339
240	26.54237	13.59322	21.42373

Time(Mins)

At lower temperatures either at 45°C and 37°C the hydrolysis was increasing only for first 45 minutes after which it remained steady. But at higher temperature such as 55°C, hydrolysis was observed for 60 mins. Therefore the optimum Temperature for the given reaction is between 45°C to 55°C

3. Optimization in stir tank reactor.



A steady increase in rate of hydrolysis was observed at substrate concentration 6.68g/L for the first 50 minutes after which fluctuations were observed. This may be due to the following reasons.

- Substrate itself inhibiting further conversion.

- b) Due to the formation of some inhibitory substances during reaction.
- c) Changes in buffering conditions either lowering of pH during the reaction.

CONCLUSION

As the substrate and the enzyme are allowed to react at different concentrations of substrate, pH and temperature, instances of maximum hydrolysis were obtained through which optimization of all these respective conditions were done. Through these experiment the optimum concentration of substrate was found to be 10g/L, other concentrations were neglected as the enzyme was unable to react steadily at higher concentrations due to feedback inhibition. The optimum pH was found to be 7.5, and optimum temperature was found to be lying between 45°C and 55° C. Some fluctuations were observed in graph and drop down of absorbance at some points during Bradfords assay because of the lowering of pH during the reaction. Therefore it can be concluded from the above work that the hydrolysis of Maize Gluten using SEBDigest B69 p was maximum at optimum conditions found.

BIBLIOGRAPHY

1. Nicholas J. Cave, 2006, Hydrolyzed protein diets for dogs and cats, Journal of veterinary clinics Small animal practices, volume 36, Issue 6, Pages 1251-1268.
2. R.A.Garcia, D.J.Pyle, G.J.Piazza, Z.Wen, Hydrolysis of animal protein meals for improved utility in non-feed applications, vol. 27(2): 269-275
3. Nchienzia HA, et al, 2010, Enzymatic hydrolysis of poultry meal with endo- and exopeptidases, Poultry science, Volume 89, Issue 10, 2273-2280.
5. Julie E. Hardwick and Charles E. Giatz ,1989, Enzymatic Hydrolysis of Corn Gluten meal, J. Agric. Food chem, 37(4), pp 1188-1192
6. Dong-Eun Sung, Jeongok Lee, Jeong-Ryong Do, 2015, Effect of enzymatic hydrolysis of buckweed protein on antigenicity and allergenicity, Nutr Res Pract. 8(3): 278-283.
7. Xiang Dong Sun, 2011, Enzymatic hydrolysis of soy protein and hydrolysate utilization, Internal journal of food science and technology, Volume 6, Issue 12, Pages 2447-2459.
8. Ekta tiwari, 2012, Rapid conversion of Chicken feather to feather meal, Journal of bioprocessing and biotechniques, Volume 2, Issue 4
9. Jens Alder-Nissen, 1976, Enzymatic hydrolysis of proteins for increased solubility, Journal of Agriculture of food chemistry, 24(6), Pages 1090-1093.

6. GREEN BANKING IN INDIA: PROBLEMS AND PROSPECTS

Ms. Shubhangi Pandey

T.Y.B.Com Financial Markets

ABSTRACT:

Green Banking is defined as promoting environmental-friendly practices and reducing carbon footprint from banking activities. The term green banking means developing inclusive banking strategies which will ensure sustainable economic development. Green banking focuses on the green transformation of internal operations of all banks. The banks adopt appropriate ways of utilizing renewable energy, automation and other measures to minimize carbon footprint from banking activities. The banks adopt environmentally responsible financing; weighting up environmental risks of project, before making financing decisions; and in particular supporting and fostering growth of upcoming “green” initiatives and projects. The purpose of the study is to highlight the green banking initiatives being taken by the Indian Banking Sector, consumer’s perception towards Green banking and the challenges faced by Indian banking sector in the implementation of Green Banking.

Keywords: Green banking, sustainable economic development, ethical banking

INTRODUCTION:

Green banking is a new concept that considers environmental and socially responsible investing. Green banking is defined as promoting environmental-friendly practices and reducing the carbon footprint from banking activities. In simple words, green banking is a banking that benefits the environment. The green banking is also known as ethical banking. The bank can minimal the use of paperwork by promoting paperless banking through online banking. To initiate sustainable development, there is a need to promote green banking practices so that we can tackle the problems like global warming, natural calamities, and disaster.

REVIEW OF LITREATURE:

Jeucken and Bouma (1999) in their study identified four stages or attitudes of banking toward sustainability. The first stage is defensive banking, in which bank is non-active and tries to delay or oppose the new legislation as it may damage the interest of banks directly or indirectly. The Second stage is preventive banking in which bank has to comply with legislation to avoid any constraint on its activities. The third stage is offensive banking in which banks are concerned about internal as well as external activities. The final stage is sustainable banking, which is, a win-win solution. Banks under this stage looks for highest sustainable rate of return not for highest financial rate of return. Getzner and Kra'uter (2004) in their research paper tested the respondents' willingness to invest in green shares. Authors found education; income, environmental awareness and the expected profit are the main explanatory variables.

The study by Bhardwaj and Malhotra (2014) linked the performance of bank with the green banking adoption. They found a positive relationship between adoption of green banking and bank profitability. On the other hand, similar study by Rajput, Arora, and Khanna (2014) found no relationship between green banking initiatives and bank's profitability. Sudhalakshmi and Chinnadorai (2014) studied the green banking adoption status of Indian banks. Their study showed that not many initiatives have been taken by banks in India as far as green banking is concerned. They concluded that banks have to play a proactive role in order to take environmental and ecological aspect as a part of their lending process, which would force industries to go for mandated investment for environmental management.

OBJECTIVE OF THE STUDY:

- i. To understand the concept of Green Banking in India.
- ii. To study the effect of Green banking in Indian Banking Sector
- iii. To describe the importance of Green Banking in India.

LIMITATION AND IMPLICATIONS:

First limitation is shortage of time because of which much data could not be collected. But this paper will provide as base work for beginners in the area of green banking. It provides basic understanding about how green banking concept is adopted by the Indian Banking sector.

WHAT IS GREEN BANKING?

Green banking promotes environmental friendly practices and reduces carbon footprints from banking activities. This comes in many forms. Using online banking instead of branch banking, paying bills online, instead of mailing them open up CDs and money market accounts at online banks, support green initiatives. Green Banking helps to create effective and far reaching market based solutions to address a range of environmental problems, including climate change, deforestation, air quality issues and biodiversity loss, while at the same time identifying and securing opportunities that benefit customers.

GREEN BANKING IN INDIA:

State Bank of India has become the first bank in the country to venture into generation of green power by installing windmills for captive use. As part of its green banking initiative, 1184 Ravi Meena has installed 10 windmills with an aggregate capacity of 15 MW in the states of Tamil Nadu, Maharashtra and Gujarat. It has planned to install an additional 20 MW capacity of windmills in Gujarat soon and touch 100 MW power generation through windmills within five years, windmills are set up with a definite objective of reducing the dependence on the polluting thermal power and not on purely economic or business considerations. At present, the bank consumes 100 MW of power per year. So, SBI will try to be energy neutral and reduce its carbon footprints. The total cost of installation of a windmill of 1.5 MW is around Rs 10 crore. The operation cost is close to zero and it is expect to recover the initial investment in four years. "Our mission is to make all Indian banks go green and we are already discussing with 25 banks," said Suzlon CMD Tulsi R Tanti. He said, "Suzlon, which currently holds 55% market share in the country is now more focused on wind power development. Of the 11,000 MW installed wind energy in India, 6,000 MW has been installed by Suzlon. He said the credit growth will be much better than the 18% registered last fiscal and it might even touch 23% as against RBI expectation of around 20% this year. According to him, retail and agriculture sectors will pick up in the second quarter, while the third quarter will see huge build up in infrastructure front and increase in capex and working capital. "The industry is working at 80% capacity now, which is close to its peak of 85% and so the credit growth will be fairly good this year," he added.

BENEFITS OF GREEN BANKING:

1. Avoids Paper Work:

Paperless banking almost all banks in India are computerized or operate on a core banking solution (CBS). Thus there is ample scope for the banks to adopt paperless or less paper for office correspondence, audit, reporting etc. these banks can switch over to electronic correspondence and reporting thereby controlling deforestation.

2. Creating Awareness to Business People about Environment:

Many NGOs and environmentalists are propagating environment consciousness among the public in general by arranging awareness programs and organizing seminars etc. Banks may associate themselves by sponsoring such programs. Besides, many corporate bodies are organizing similar program in their own line of business such as “free pollution check program” organized by a car manufacturer. Banks may tie with such corporate. These will help to brighten the image of the bank.

3. Loans at Comparatively Lesser Rates:

Banks can also introduce green bank loans with financial concessions for environment friendly products and projects such as fuel efficient vehicles, green building projects, housing and house furnishing loans to install solar energy system etc.

4. Environmental Standards for Lending:

Banks follow environmental standards for lending, is really a good idea and it will make business owners to change their business to environmental friendly which is good for our future generations.

STEPS IN GREEN BANKING

1. Go online

Online banking is the thriving concept in young and corporate India. Online banking helps in additional conservation of energy and natural resources. Online banking includes:

- a. Paying bills online,
- b. Remote deposit,
- c. online fund transfers

It helps in savings paper, energy, and expenditure of natural resources due to banking activities. Customers can save money by avoiding late payments of fees and save time by avoiding standing into queues and paying the bill.

2. Use green loans for home improvements

The Ministry of Non-renewable Resource in association in India undertook an initiative to go green by allowing low interest loans to the customers who would like to buy solar equipment; the rate of interest is as low as 4% p.a. The new Green Home Loan Scheme from SBI, for instance, supports environmental friendly residential projects and offers various concessions. These loans are sanctioned for projects rated by the Indian Green Building Council (IGBC) and offer several financial benefits –5 percent concessions in margin, 0.25 percent concession in interest rate and processing fee waiver.

3. Use green credit cards

Banks are promoting different schemes of using plastic money rather than currency notes in order to save environment. Use of solar and wind energy. Using solar and wind energy is one of the noble causes for going green. State Bank of India (SBI) has become the first bank in the country to venture into generation of green power by installing windmills for captive use. As part of its green banking initiative, SBI has installed 10 windmills with an aggregate capacity of 15 MW in the states of Tamil Nadu, Maharashtra and Gujarat.

4. Mobile banking

Mobile banking saves time and energy of the customers. It also helps in reducing use of energy and paper of the bank. Most of the Indian banks have introduced this paper-less facility in order to be eco-friendly.

5. Power savings equipment

Banks directly contribute to controlling climate change and as an initial step they intend to start a campaign to replace all fused GSL bulbs, in all owned premises offices and residential. Banks have also initiated a feasibility study to make rain water harvesting mandatory in all the Bank's owned premises. In December 2009 Indusind Bank inaugurated Mumbai's first solar-powered ATM as part of its 'Green Office Project' campaign titled 'Hum aur Hariyali'.

PRODUCTS OF GREEN BANKING:

- ✓ Green mortgages
- ✓ Green loans
- ✓ Green credit cards
- ✓ Green savings accounts
- ✓ Green checking accounts
- ✓ Green CDs
- ✓ Green money market accounts
- ✓ Mobile banking
- ✓ Online banking
- ✓ Remote deposit (RDC)

SWOC ANALYSIS:

Strengths:-

1. Green banking practice save time of customer as well as bank also.
2. It reduces the cost of bank operation and cost to the customer too.
3. Transaction can be done any time and at any place.
4. By financing in solar energy and wind energy program the bank is reducing carbon footprint from the environment.

Weaknesses:-

1. Lack of knowledge among the employee has been noticed.
2. There are some geographical barriers for the implementations of green banking practices.
3. All banks are not coming equally for the practice of green banking.
4. Problem of security is always with green banking practices.

Opportunities:-

1. People are becoming more computer literate so it's easy to start green banking practice and grape the customer toward the activities.
2. Most of the customers are using ATM card only. So it is a time to start all the initiatives for green banking practices.
3. Mobile banking and internet banking is increasing day by day so it's a time to spread the green banking practice.

Challenges:-

1. It's a new concept and customer will take time to adopt this.
2. Green banking requires a technology which will highly costly.

CONCLUSION:

Banks are responsible corporate citizens. Banks believe that every small "GREEN" step taken today would go a long way in building a greener future and that each one of them can work towards better global environment. "Go Green" is an organization wide initiative that is moving towards banks, their processes and their customers. The purpose is to provide cost efficient automated channels and to build awareness and consciousness of environment, nation and society. Green banking is really a good way for people to get more awareness about global warming; each businessman will contribute a lot to the environment and make this earth a better place to live. Thanks to green banking. Until a few years ago, most traditional banks did not practice green banking or actively seek investment opportunities in environmentally-friendly sectors or businesses. Only recently have these strategies become more prevalent, not only among smaller alternative and cooperative banks, but also among diversified financial service providers, asset management firms and insurance companies. Although these companies may differ with regard to their stated motivations for increasing green products and services (e.g. to

enhance long-term growth prospects, or sustainability principles on which a firm is based), the growth, variation and innovation behind such developments indicate that we are in the midst of a promising drive towards integrating green financial products into mainstream banking.

Possible policy measures and initiative to promote green banking in India has become the need of the hour. In a rapidly changing market economy where globalization of markets has intensified the competition, banks should play a pro-active role to take environmental and ecological aspects as part of their lending principle which would force industries to go for mandated investment for environmental management, use of appropriate technologies and management systems. The banking and financial sector should be made to work for sustainable development. As far as green banking is concerned, India's banks are running behind time and it is the need of the hour to think it seriously for the sustainable growth of the nation.

REFERENCE:

<http://citeseerx.ist.psu.edu>

<http://www.cwejournal.org/vol10no3/green-banking-for-environmental-management-a-paradigm-shift>

<http://www.ibmrdjournal.com>

www.academicjournals.org/article/article1421311185

granthaalayah.com/Articles/Vol4Iss8/10_IJRG16_C08_91.pdf

[https://www.researchgate.net/publication/305547284 GREEN BANKING INITIATIVES BY INDIAN PUBLIC AND PRIVATE SECTOR BANKS](https://www.researchgate.net/publication/305547284_GREEN_BANKING_INITIATIVES_BY_INDIAN_PUBLIC_AND_PRIVATE_SECTOR_BANKS)

7. PREPARATION OF NUTRIENT FILLED GLUTEN FREE GRANOLA BAR & ITS COMPARISON WITH COMMERCIALY AVAILABLE GRANOLA BAR

PRIYA J.P TIWARI

(T.Y.BSc BIOTECH)

ABSTRACT

Gluten is a general name for the proteins found in wheat, rye, barley etc. Gluten helps foods maintain their shape, acting as a glue that holds food together. The gluten-free (GF) products market represents one of the most prosperous markets in the field of food and beverages in the immediate future. Historically, counseling for celiac disease has focused on the absence of gluten in foods; however, the nutritional quality of GF foodstuffs is an important aspect to consider. The aim of this study to make a comparison between the diet including GF products and the same diet with equivalent products with gluten. For individuals with celiac disease, the GF database provides a helpful tool to identify the food composition of their medical diet. There are varieties of nutritional deficiencies associated with celiac disease, primarily caused by the inability of the damaged small intestine to properly absorb enough of the nutrients our bodies need. After treatment with a strict gluten-free diet, most patients' small intestines recover and are able to properly absorb nutrients again and therefore do not require supplementation. Patients however, nutrient supplements may be beneficial. For healthy consumers, Gluten is a general name for the proteins found in wheat, rye, barley etc. Gluten helps foods replacing gluten-containing products with GF foods are aligned with substantial cost differences but GF foods do not provide additional health benefits from a nutritional perspective.

Background: Life-long gluten-free diet (GFD) is the only recognized treatment for celiac disease (CD). The present study aimed to determine the nutritional adequacy of the 'no detectable gluten' diet. Methods: Seven-day prospective food intake was assessed in 55 patients who were adherent to a GFD for more than 2 years and in 50 newly-diagnosed age- and sex-matched

patients (18–71 years, 24% male) studied prospectively over 12 months on GFD. Historical preceliac intake was also assessed in the latter group. Intake was compared with Australian Nutritional Recommendations and the Australian population data

REVIEW OF LITERATURE

Gluten-rich foods such as oat, barley, rye, and wheat cause an inflammation of the villi in the small intestine with subsequent villous atrophy and low absorption of nutrients in affected individuals (Fasano *et al.*, 2008). The development of gluten-free foods requires ingredients with high nutritional value such as amaranth, quinoa, and linseed. Amaranth and quinoa have similar compositions, mainly in terms of protein and ash contents (Palombini *et al.*, 2013). High levels of crude fiber and total lipids, 8.3 and 43.9%, respectively, have also been found in linseed (Gutiérrez *et al.*, 2010).

Celiac disease is a hereditary autoimmune intestinal disorder that affects both children and adults. When an individual with this disorder consumes gluten (proteins found in the grains wheat, barley and rye), an immune reaction is triggered in the small intestine.

Tiny finger-like projections or villi in the small intestine become inflamed and eventually damaged from continued exposure to gluten. This process, called “villous atrophy,” may occur rapidly or gradually over time. As a result, the body is unable to adequately absorb nutrients, especially iron, calcium, vitamin D and folic acid. Also, malabsorption of carbohydrates (e.g., lactose [the carbohydrate in milk]), protein and other nutrients may occur. (Shelly Case, RD, Case Nutrition Consulting, Canada, 2005.)

Gluten free food products such as gluten free crackers or granola bars are made with refined grains. As a result, they have less fiber and act more like a simple sugar in your child’s body. This can cause a rise in blood sugar and make your child feel even hungrier. Some overweight children may have insulin resistance, pre-diabetes, or diabetes. This means that insulin is not working properly and sugar stays in the blood too long. Since many gluten free foods are low in fiber, it can be even harder for these children to stay at a healthy blood sugar level when following a gluten free diet.

The ingredients used in this experiment were bought from normal grocery and from food store, other material like quinoa, amaranthas, were provided from the Nutrahelix company itself. The sugar used was nature's organic sugar, the dark brown jaggeries were used, other ingredients and flavoring agents were taken from the other stores.

The comparison of these granola bars is done by the Nature Valley granola bar, the nature valley is a brand of granola bars by General Mills. Its slogan is "The Energy Bar Nature Intended". They produce a variety of granola bars, cereals and related snacks. Common bars include: 'Oats and Honey', 'Fruit and Nut', and 'Peanut'. Their selection includes crunchy bars, protein bars, nut and fruit bars, and various nut bars

MATERIAL & METHODOLOGY

(A) MATERIALS

Dates, Rolled oats, Brown sugar, Honey, Almond, quinoa, jaggery, Chocolate chips.

(B) METHODS

FORMULATION PREPARATION

Formulation of ingredients

Ingredients	Formulation A	Formulation B	Formulation C	Formulation D
Rolled oats	20g	20g	20g	15g
Jaggery	20g	-	10g	15g
Honey	15g	20g	15g	10g
Brown sugar	5g	15g	10g	5g
Almond	10	15g	-	-
Dates	10g	15g	10g	15g

choc chips		5g	5g	10g
Dry fruit mix.	10g	10g	10g	10g
Peanut	-		10g	10g

Formulation C was found to be good in all variants' i.e. in taste, conc. Texture etc hence the further test is performed on formulation C with the following concentration mention above and the making process of formulation C is discuss below.

Temperature and refrigerator time

Sample	Oven time	Refrigerator time
Formulation A	130c for 30min	30min
Formulation B	140c for 15min	15min
Formulation C	150c for 15min	20min
Formulation D	140c for 20min	30min

2.3 Protocol

1. Pre heat the pan on induction
2. Place the oats in the pan stir properly till it gets crispy
3. Do the same for other nut's (almond, peanut etc)
4. Roast all the ingredients till it get's crispy and light brown
5. Mix the sugar, honey, jaggery, grind dates in a bowl together
6. Add the toasted ingredients and the remaining ingredients to a pot (along with shredded coconut, choc chips & few raisins)
7. Mix the ingredients until you have thoroughly combined the flavors'
8. Put the mixture in a 9×12inch baking pan

9. Cover the pan with a sheet of baking paper &press down firmly

10. Put the pan in the oven at 130C for 15min

11. Remove the pan and keep in fridge for10min

12. Cut the granola bar into bar or squares

13. Return it to the fridge for more 30 min

14. The bar is ready to eat

Nutritional Analysis

1. Estimation of total carbohydrate

Reagents: 1. Glucose stock standard: 100 mg of glucose was dissolved in 100 ml of water in a standard flask.

2. Working standard: 10 ml of the stock was diluted to 100 ml. 1.0 ml of this solution contains 100µg of glucose.

3. Anthrone reagent: 0.2% anthrone was dissolved in ice cold concentrated sulphuric acid. Prepared fresh before use

4. 2.5 N HCl.

5. Glasswares: Test tubes, pipettes

Procedure: weighed 100mg of the sample into a boiling tube, hydrolysed by keeping it in a boiling water bath for three hours with 5.0 ml of 2.5 N HCl and cooled to room temperature.

Neutralized it with solid sodium carbonate until the effervescence ceases made up the volume to 100 ml and centrifuged, collected the supernatant and take 0.2 to 1.0 ml for analysis.

Prepared the standards by taking 0.2-1.0 ml of the working standards. 1.0 ml of water serves as a blank made up the volume to 1.0 ml in all the tubes with distilled water, and then added 4.0 ml of anthrone reagent, heated for eight minutes in a boiling water bath, cooled rapidly and read the green to dark green color at 630 nm.

2. Estimation of proteins

Method: Folin Lowry's method

Reagents: I. folins reagent

ii. Protein Solution (Stock Standard

iii. Working Standard Solution

iv. Glassware's: test tubes, pipettes

v. Colorimeter 660nm

Procedure Extraction of protein from Sample:

Extraction is usually carried out with buffers used for the enzyme assay. Weigh 500mg of the sample and grind well with a pestle and mortar in 5-10mL of the buffer. Centrifuge and use the supernatant for protein estimation.

Estimation of Protein:

1. Pipette out 0.2, 0.4, 0.6, 0.8 and 1.0ml of the working standard into a series of test tubes.
2. Pipette out 0.1 ml and 0.2 ml of the sample extract in two other test tubes.
3. Make up the volume to 1.0 ml in all the test tubes. A tube with 1.0ml of water serves as the blank.
4. Add 5.0 ml of reagent C to each tube including the blank. Mix well and allowed to standing for 10mins.
5. Then add 0.5 ml of reagent D, Mix well and incubate at room temperature in the dark for 30min, blue color is developed. Take the reading at 660nm.

Draw a standard graph and calculate the amount of protein in the sample.

RESULTS

a) Carbohydrate test:

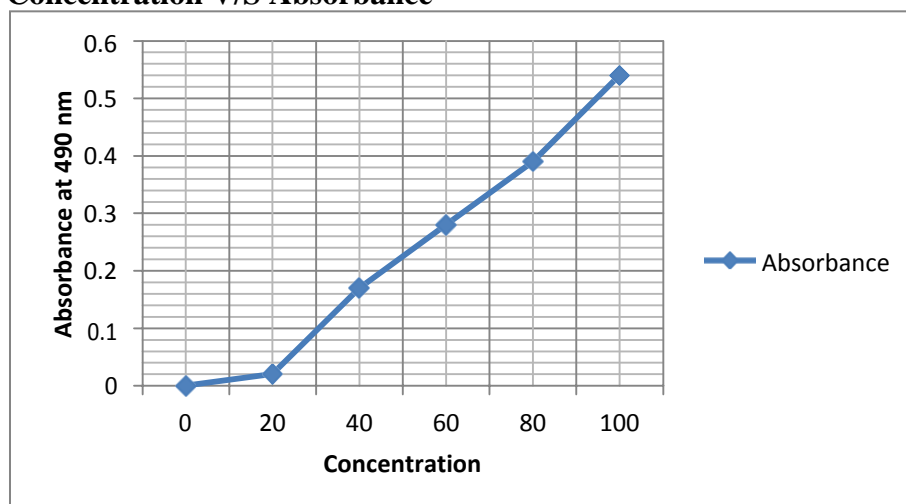
The carbohydrate test was done on the prepared granola bar. By plotting the graph, the concentration of Carbohydrate on x axis and the absorbance on y axis, the concentration of carbohydrate in the granola bar was found to be 37g/100gm by Hedge and horfiter method.

Observation table:

Conc. Of stock(BSA)	Volume of stock(ml)	Volume of diluents(ml)	Alk. Cuso ₄		Folins reagent		Absorbance at 670nm
2	0.2	0.8	5		0.5	Keep	0.15
4	0.4	0.6	5	Keep	0.5	At RT	0.20
6	0.6	0.4	5	At RT	0.5	For	0.25
8	0.8	0.2	5	For	0.5	30	0.33
10	1.0	0.0	5	30	0.5	Min.	0.39
Unknown	-	-	5	Min.	0.5		0.22

Graph

Concentration V/S Absorbance



b) protein test:

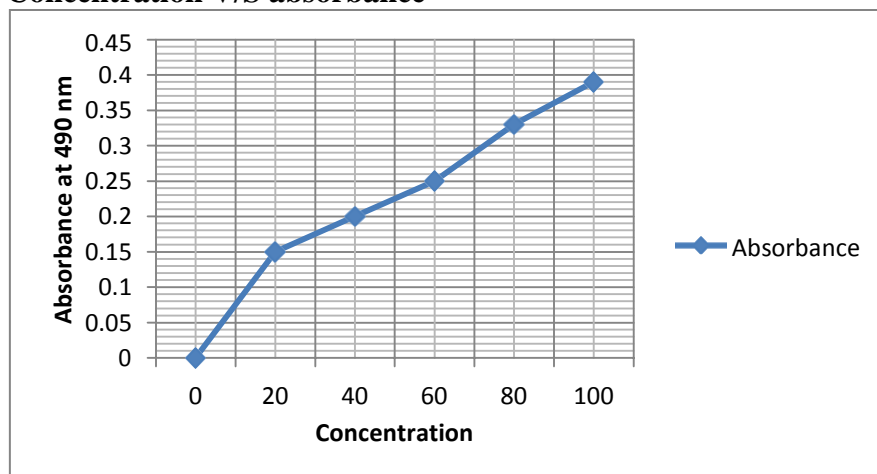
The protein test was done on the prepared granola bar. By plotting the graph, the concentration of protein on x axis and the absorbance on y axis, the concentration of protein in the gluten free granola bar was found to be 5.3g/100g by using Folin Lowry's method.

Observation table:

Conc. Of stock(BSA)	Volume of stock(ml)	Volume of diluents(ml)	Alk. CuSO_4		Folin reagent		Absorbance at 670nm
2	0.2	0.8	5		0.5	Keep	0.15
4	0.4	0.6	5	Keep	0.5	At RT	0.20
6	0.6	0.4	5	At RT	0.5	For	0.25
8	0.8	0.2	5	For	0.5	30	0.33
10	1.0	0.0	5	30	0.5	Min.	0.39
Unknown	-	-	5	Min.	0.5		0.22

Graph

Concentration V/S absorbance



CONCLUSION

The use of naturally gluten-free ingredients allowed the development of a granola formulation for celiac disease patients. Grains such as amaranth, quinoa, contributed to an increase in the protein, contents in the product. It's an excellent source of breakfast in the morning and can also be used as snacks for children's as well. This bar can be consumed by people of any age group. the crunchiness and color of the bar can attract children and young people will love the bite of dry fruits and nuts.

The study and making of granola bar was done using different formulation and biochemical test were also performed. When this bar was compared with commercially available bar it was found to be good in their nutritional content but for further quality checking and their analysis other test should be examined. Due to shortage of time, the life span and various other tests were remaining to perform hence for commercial purpose the remaining tests should be performed.

BIBLIOGRAPHY

- Multivariate study and regression analysis of gluten-free granola 127Food Sci. Technol, Campinas, 34(1): 127-134, Jan.-Mar. 2014
- Gluten Free Diet: A Comprehensive Resource Guide. Shelly Case, RD, Case Nutrition Consulting, Canada, 2005.
- Hamilton Health Sciences, 2015 PD 9003 – 03/2016 WPC\PtEd\CH\GlutenFreeDietChildRightChoice.docx dt/March 4, 2016
- S. J. Shepherd, Department of Gastroenterology and Central Clinical School, Monash University, Alfred Hospital, Melbourne, Victoria 3181, Australia.
- Department of Food Technology, Federal University of Ceará, Av. Mister Hull, 2977, Campus do Pici – Zip Code: 60356-000- Fortaleza – CE, Brazil
- Laboratory of Food Biochemistry, State University of Maringá, Av. Colombo, 5790.
- In vitro antioxidant activity of Entada pursaetha, Toddalia aculeata, and Ziziphus mauritiana February 2010 | Vol 2 | Issue 6
- "Nature Valley-Granola Bars,Snacks,Nut Bars, Granola, and Protein Bars". www.naturevalley.com. Retrieved 2017-05-04.

8. QUALITY ANALYSIS OF FOOD

DIVYA. P

(T.Y. BIOTECH)

INTRODUCTION

Food quality is the quality characteristics of food that is acceptable to consumers. This includes external factors as appearance (size, shape, colour, gloss, and consistency), texture, and flavour; factors such as federal grade standards (e.g. of eggs) and internal (chemical, physical, microbial).

The Food Safety Act 1990 enforces food quality in the United States. Members of the public complain to trading standards professionals [specify], who submit complaint samples and samples used to routinely monitor the food marketplace to public analysts. Public analysts carry out scientific analysis on the samples to determine whether the quality is of sufficient standard.

Food quality is an important food-manufacturing requirement, because food consumers are susceptible to any form of contamination that may occur during the manufacturing process. Many consumers also rely on manufacturing and processing standards, particularly to know what ingredients are present, due to dietary, nutritional requirements (kosher, halal, vegetarian), or medical conditions (e.g., diabetes, or allergies).

Besides ingredient quality, there are also sanitation requirements. It is important to ensure that the food processing environment is as clean as possible in order to produce the safest possible food for the consumer. A recent example of poor sanitation recently has been the 2006 North American E. coli outbreak involving spinach, an outbreak that is still under investigation.

Food quality also deals with product traceability, (e.g., of ingredient, and packaging suppliers), should a recall of the product be required. It also deals with labeling issues to ensure there is correct ingredient and nutritional information.

There are many existing international quality institutes testing food products in order to indicate to all consumers, which are higher quality products. Founded in 1961 in Brussels, The international

Sampling by manufacturers:-

Food manufacturers and producers would need to satisfy themselves that any sample taken for analysis is sufficiently representative of the food for the analytical result to be meaningful. This is true whether the data are to be used as the basis of labelling declarations, assurance of compliance with legislative or other standards, monitoring of production as part of [HACCP](#) (Hazard Analysis and Critical Control Points), or for routine quality control.

In the United Kingdom although various guidance is available, either from manufacturers associations or from sources of standards such as [British Standards Institution](#) (such as British Standard BS6001), some of which may be relevant to certain food types. It is largely down to manufacturers to make their own evaluations of need and suitability. This must be translated into an assessment of both sample portion size and number, and the frequency of taking samples.

Food law enforcement:-

In the United Kingdom, enforcement is under the Food Safety Act 1990. Food sampling is undertaken primarily by local authorities and port health authorities for submission to public analysts for analysis. Much of the legislation relates to food as supplied to a consumer, meaning that every portion of a size of perishable food and foods at risk as may be supplied to a consumer has to comply, so that in such cases the sample submitted for analysis could simply be an entire consumer-sized portion. There are exceptions, however, such as the sampling of nut products for the presence of aflatoxins, which stipulate a primary sample size related to the size of the consignment – with associated requirements for initial homogenisation to produce a smaller sample to be sent for analysis.

The Food Safety Act 1990 affords a right for defence analysis, and for analysis in case of disputed analytical results, by stipulating that except where to do so would prevent effective analysis the sample must be divided into three parts. The UK Food Standards Agency provides

supplementary guidance to the enforcement authorities to assist with the sampling process and associated decisions by sampling officers.

There is no set frequency or rate for the sampling of food for law enforcement in the UK. Between the 1930s and 1990s there had been a guideline minimum rate for sampling for chemical analysis (not including samples for microbiological examination) of 2.5 samples per annum per 1000 head of population, however that was an arbitrary figure and more recent thinking suggested that the selection of a frequency for sampling should be based on risk. In this context risk includes all 'consumer protection' issues such as pecuniary disadvantage from substandard or counterfeit products, as well as risk to health. The Association of Public Analysts was commissioned by the Food Standards Agency to look into this, culminating in a scheme for Risk Based Sampling, though it has not yet been adopted by the enforcement authorities.

REVIEW OF LITERATURE

Food Analysis:-

A Brief Historical Perspective Analysis of foods is continuously requesting the development of more robust, efficient, sensitive, and cost-effective analytical methodologies to guarantee the safety, quality, and traceability of foods in compliance with legislation and consumers' demands. The old methods used at the beginning of the 20th century based on the so-called "wet chemistry" have evolved into the current powerful instrumental techniques used in food laboratories. This improvement has led to significant enhancements in analytical accuracy, precision, detection limits, and sample throughput, thereby expanding the practical range of food applications. As mentioned by McGorin "the growth and infrastructure of the modern global food distribution system heavily relies on food analysis (beyond simple characterization) as a tool for new product development, quality control, regulatory enforcement, and problem-solving." Besides, currently, there is also a huge interest in the health-related properties of foods as a result of an increasing public concern on how to improve health through the so-called functional foods, functional ingredients, and nutraceuticals. Thus, there is no doubt on the importance and current need of analytical techniques developments able to face all these demands.

Food Analysis: Current State of the Art, Methodologies, and Applications-

A large number of works have directly focused on the analytical technique used in food analysis, while others have focused on the type of food, compound, or process investigated. Regarding specific analytical techniques applied to solve different problems in food analysis, one of the more active areas is the development of sample preparation techniques, in good agreement with the complex nature of foods. Sample preparation is one of the key steps for the development of any new analytical methodology; as a result, research on new sample preparation procedures is one of the most active areas in analytical chemistry.

Present Challenges in Food Analysis

Currently there are a good number of challenges to be solved in food analysis. The variety of toxic residues in food is continuously increasing as a consequence of industrial development, new agricultural practices, environmental pollution, and climate change. A critical issue will be how to detect untargeted compounds and determine their identity in foods, for which the development of advanced analytical techniques is expected to play a crucial role. This increasing number of food contaminants is bringing about the development of everyday more powerful, sensitive, and fast analytical methodologies able to detect emerging contaminants in food-like industrial organic pollutants, nanomaterials, pharmaceutical residues antibiotics, and coccidiostats or emerging groups of marine biotoxins. In spite of these important developments, still hundreds of foodborne infection cases occur around the world, and up to one third of the population in industrialized nations suffers from foodborne illness each year. Microbiologists have developed over the last decades reliable culture-based techniques for pathogens detection in foods.

MATERIALS & METHODS

DETERMINATION OF MOISTURE CONTENT USING TOLUENE METHOD:-

Toluene, also known as toluol, is an aromatic hydrocarbon. It is a colorless, waterinsoluble liquid with the smell associated with paint thinners. It is a monosubstituted benzene derivative, consisting of a CH₃ group attached to a phenyl group.

Formula: C_7H_8 , Boiling point: 110.6 °C , Density: 867 kg/m³ , Molar mass: 92.14 g/mol

PRINCIPLE:-

The amount of water is determined by distilling the material with an organic liquid not miscible with water and collecting the distillate in a graduated tube.

REAGENTS:-

Toluene - Saturate with small quantity of water and distill. Use the distillate for determination of moisture.

APPARTUS:-

Moisture Distillation Apparatus - consists of a 500 ml short neck round bottomed flask heated using a heating mantle and provided with a reflux condenser discharging into a trap connected to the flask. The trap serves to collect and measure the condensed water and to return the condense solvent to the flask (See figures below) and a copper wire long enough to extend throughout the condenser with one end twisted into a spiral. The diameter of the spiral should be such that it fits snugly within the graduated portion of the receiver and yet it can be moved up and down.

PROCEDURE:-

Clean the entire apparatus with chromic acid cleaning solution to minimize adherence of water droplets to the sides of the condenser and the receiver.

Rinse thoroughly with water and dry completely before use. Weigh to the nearest 0.01 gm about 20-40 gm of prepared sample (or enough to yield 2 -5 ml water in the trap) and note down the exact weight.

Transfer to the distilling flask with toluene. Add enough toluene to cover test portion completely (about 75 ml). Fill receiving tube with toluene pouring it through top of the condenser until it begins to overflow into the distillation flask.

Insert loose cotton plug in top of the condenser to prevent condensation of atmospheric moisture in the tube.

Add a few pumice stones to avoid bumping. Bring to boil and distill slowly about 2 drops per second (about 100 drops per minute) until most of water distills over, then increase rate of distillation to 4 drops per second.

Continue distilling until 2 consecutive readings 15 minutes apart show no change. Dislodge any water held up in the condensed with wire loop

Rinse condenser carefully with 5 ml toluene. Continue distillation 3-5 minutes, cool receiver to room temperature allowing it to stand in air or cooling it in water.

Solvent and water layers should now be clear, if not, let stand until clearing occurs.

Read volume of water estimating to nearest 0.1 ml and calculate percentage.

Calculation: Percent Total Moisture:

% Total Moisture = 100 - % Total DM

DETERMINATION OF FATS USING SOXHLET METHOD:-

Fat plays an important role in many foods. Fat contribute to the flavour of food as well as it gives texture and also mouthfeel to the food. It is an important component which gives us maximum energy. Approximately 9 Kcal energy per gram. Extra intake of fat mostly leads to obesity and below the level lead to malnutrition. It nourishes the body with all the essential fatty acid that body cannot synthesize and also help in building the body.

Hence there comes the need to measure the amount of fat present in food, so that we will have an idea of its amount and accordingly we can manage our diet. It also helps in extracting all the oil present in food.

There are two ways to find out the fat present in food, either by acid hydrolysis or by solvent extraction. The solvent extraction method is more pronouncedly known as Soxhlet method. It

came into the scene in 1897. This method is widely used in almost all food industries and primarily used in oil extraction industries.

PRINCIPLE – SOXHLET EXTRACTION METHOD:-

Lipid in food present in various forms like monoglycerides, diglycerides, triglycerides and sterol and free fatty acid and phospholipid and carotenoids and fat-soluble vitamins. Lipid is soluble in organic solvent and insoluble in water, because of this, organic solvents like hexane, petroleum ether have the ability to solubilize fat and fat is extracted from food in combination with the solvent. Later the fat is collected by evaporating the solvent. Almost all the solvent is distilled off and can be reused.

PREPARING THE SAMPLE:

First, we have to dry the product and remove moisture in order to facilitate entry of the organic solvent, because moisture restricts the entry of organic solvent. Then size reduction is there to increase the surface area and due to it, there is larger exposed surface. After this, we go for acidic hydrolysis, which helps in breaking of protein fat emulsion and increases the availability of fat for the solvent. Furthermore, we can collect the solvent by distillation.

REQUIREMENTS:

Weighing balance, soxhlet apparatus, drying oven, Thimble ,Heating mantle , Glass rod, Desiccator with silica gel, Petroleum ether (Boiling temperature 60°-80°c), Cotton Plugs.

PROCEDURE:-

First, rinse all the glass apparatus by petroleum ether, dry it in the Oven at 102°c, and after removing it keep in the desiccator. Weigh 5 gram of grounded and dried sample and place it in the thimble. Place the thimble in the soxhlet extractor. Take a 150ml round bottom flask, clean it,

fill the flask with 90-ml petroleum ether. Place the whole setting on a heating mantle, allow the petroleum ether to boil. Continue the extraction process for several hours, almost 6 hours. Remove the condensing unit from extraction unit, and allow the sample to cool down. Finally, it removes all the lipid. Collect almost all the solvent after distillation. Place the sample in the oven and after removing it place in the desiccator. Take the weight of the sample. As a result, we get a sample.

OBSERVATIONS AND RESULTS

3.1 Moisture:-

a) Banana chips:-

Weight of empty petriplate = 89.1118 gms

Weight of petriplate + sample = 94.4544 gms

Weight of sample taken = 5.3426 gms

Weight of petriplate + sample (after drying) = 94.2368 gms

Moisture percentage = 4.09 %

b) **Hot and sweet sauce:-**

Weight of empty petriplate = 60.8820 gms

Weight of petriplate + sample = 60.1080 gms

Weight of sample taken = 5.2270 gms

Weight of petriplate + sample (after drying) = 63.1150 gms

Moisture percentage = 57.28 %

c) **Balarino sachet:-**

Weight of empty petriplate = 50.0812 gms

Weight of petriplate + sample = 55.8728 gms

Weight of sample taken = 5.7916 gms

Weight of petriplate + sample (after drying) = 55.8527 gms

Moisture percentage = 0.36

FAT:-

a) Banana chips:-

Weight of the sample = 5.9679 gms

Weight the RBF = 102.3750 gms

Weight of RBF + fat = 104.3795 gms

Percentage of fat = 33.59 %

b) Hot and sweet sauce:-

Weight of the sample = 5.3736 gms

Weight the RBF = 109.6482 gms

Weight of RBF + fat = 109.65219 gms

Percentage of fat = 0.06 %

C) Balarino sachet:-

Weight of the sample = 2.0882 gms

Weight the RBF = 117.0318 gms

Weight of RBF + fat = 117.0397 gms

Percentage of fat = 0.35%

DISCUSSION

In the United Kingdom, enforcement is under the Food Safety Act 1990. Food sampling is undertaken primarily by local authorities and port health authorities for submission to public analysts for analysis. Much of the legislation relates to food as supplied to a consumer, meaning that every portion of a size of perishable food and foods at risk as may be supplied to a consumer has to comply, so that in such cases the sample submitted for analysis could simply be an entire consumer-sized portion. There are exceptions, however, such as the sampling of nut products for the presence of aflatoxins, which stipulate a primary sample size related to the size of the consignment – with associated requirements for initial homogenisation to produce a smaller sample to be sent for analysis.

There is no set frequency or rate for the sampling of food for law enforcement in the UK. Between the 1930s and 1990s there had been a guideline minimum rate for sampling for chemical analysis (not including samples for microbiological examination) of 2.5 samples per annum per 1000 head of population, however that was an arbitrary figure and more recent thinking suggested that the selection of a frequency for sampling should be based on risk. In this context risk includes all 'consumer protection' issues such as pecuniary disadvantage from substandard or counterfeit products, as well as risk to health. The Association of Public Analysts was commissioned by the Food Standards Agency to look into this, culminating in a scheme for Risk Based Sampling, though it has not yet been adopted by the enforcement authorities

CONCLUSION

Adequate nutrition is one of the pillars of public health. Before developing and implementing effective intervention programs to improve nutrition at the population level, it is important to know the nutritional situation of the target group. The estimation of nutrient intake from food consumption requires reliable data on food composition. These data are also the fundamentals of food-based dietary guidelines for healthy nutrition, containing the necessary information on food sources for different nutrients. Further more, food composition tables can provide information on chemical forms of nutrients and the presence and amounts of interacting components, and thus provide information on their bioavailability. For some nutrients such as vitamin A, vitamin E and niacin, the concept of equivalence has been introduced to account for differences in the

availability and biological activity of different chemical forms. **NON-NUTRITIVE FOOD COMPONENTS:** Although most food composition tables focus on energy, macro- and micronutrients, interest in non-nutritive components is increasing. Considering the beneficial effects of biologically active secondary plant cell compounds such as polyphenols and carotenoids, more data on these are needed. On the other hand, there are a number of naturally occurring or 'man-made' non-nutritive substances with negative effects, and to control exposure, the main dietary sources must be known. Another aspect is contaminants, which could have detrimental effects on consumers' health. Information about food composition is necessary for the assessment of diet quality and the development and application of food-based dietary guidelines, providing a useful tool for the field of public health nutrition. In this regard, more attention should be paid to the preparation, extension and maintenance of FCBs.

BIBLIOGRAPHY

- ASTA Method No.2.0, Official Analytical Methods of the American Spices Trades Association, Fourth Edition, 1997
- Official Methods of Analysis of AOAC International, 16th Edition, Vo II, 1996
- The reaction was first observed 1833: Ferdinand Rose (1833) "Über die Verbindungen des Eiweiss mit Metalloxyden" (On the compounds of albumin with metal oxides)
- Ninfa, Alexander; Ballou, David; Benore, Marilee (2009). Fundamental Laboratory Approaches for Biochemistry and Biotechnology.
- Wastewater Engineering: Treatment and Reuse, Metcalf & Eddy, McGrawHill Higher Education; 4th edition, 1 May 2002.

9. SCREENING OF ANTIOXIDANT AND ANTIBACTERIAL ACTIVITY OF WATERMELON RIND (*Citrullus lanatus*).

POOJA MUGUNDAN, ADITHI PEDGAONKAR, SHIVANI GHARAT,
PRATIKSHA DEORE, VRUSHALI PATIL
TY BIOTECH

ABSTRACT

In this study, screening of *Citrullus lanatus* rind for various parameters like phytochemical content, anti-oxidant activity and anti bacterial potential was carried out. Ethanolic extract of watermelon rind was assessed for its antioxidant and antibacterial activity. The antioxidant activity was evaluated based on the ability of plant extract to scavenge 1, 1-diphenyl-2-picrylhydrazyl radical (DPPH) at concentrations of 0.5, 1.0, 1.5, 2.0 mg/ml. Antibacterial screening was done using disc diffusion method against Gram positive (*Staphylococcus aureus*) and Gram negative (*Escherichia coli*) bacteria at the concentration of 2,5,10 mg/ml. Techniques like TLC with Bioautography were performed for antibacterial screening.

INTRODUCTION

Food processing industry, including fruit and vegetable processing is the second largest generator of wastes into the environment only after the household sewage. The waste obtained from fruit processing industry is extremely diverse due to the use of wide variety of fruits and vegetables, the broad range of processes and the multiplicity of the product. A huge amount of waste in the form of liquids and solids is produced in the fruit and vegetable processing industries which are valuable, biodegradable natural resources with large economic potential.

Fruit and vegetable peels, rinds, seeds are thrown into the environment as agro waste which can be utilized for the same. The entire tissue of fruits and vegetables is generally considered to be rich in bioactive compounds, such as phenolic compounds, carotenoids, vitamins. Depending on plant species, variety and tissue, high levels of health protecting antioxidants, such as vitamin C and E, phenolic compounds including phenyl-propanoids and flavonoids, and or carotenoids such as lycopene can be found. The waste materials such as peels, seeds and rinds produced by fruit and vegetable processing can also be successfully used as a source of phytochemicals. One such food waste generated from household and food processing industry is watermelon rinds.

Watermelon rind or peel is a thick and firm outer white colored coating or covering that has a crunchy texture similar to that of a cucumber. Watermelon rind prevents the sweeter red flesh of the fruit from spoiling and contains additional vitamin C, fiber, potassium and a small amount of vitamin B-6. Watermelon rind contains very few calories. Watermelon rinds may have additional medical benefits. Research has discovered that watermelon rinds contain citrulline. Citrulline creates arginine, an amino acid that makes proteins for your body and plays a role in the relaxation of your blood vessels. Apart from these benefits, this project aimed to screen watermelon rind (by using its extract as study sample) for any anti-oxidant and anti-bacterial activity using a variety of techniques and analyse its phytochemical constituents.

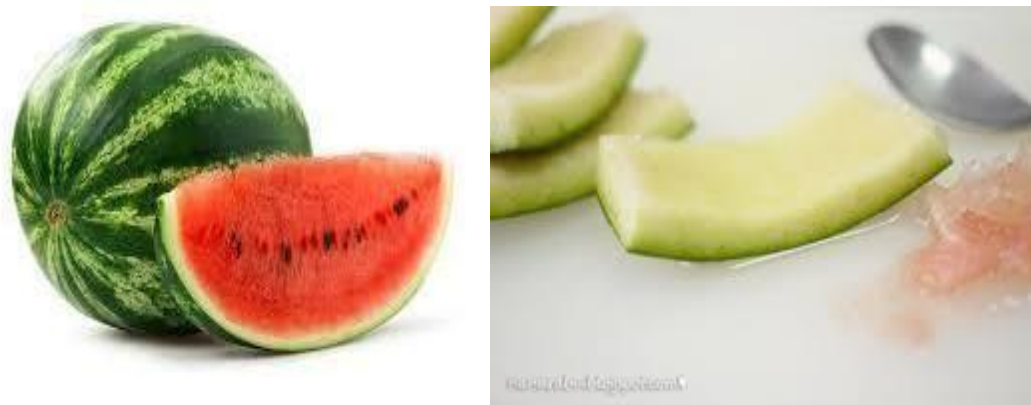


FIG:1 A Ripe Watermelon (left), Separated Rind (right)

Phytochemicals are non nutritive chemical constituents of plants which occur naturally and are derived from it. Phytochemical analysis of the plants belonging to Cucurbitaceae family confirms the presence of various phytochemicals like tannins, terpenoides, saponins, carotenoids.

Anti –oxidant activity of a natural extract indicates presence of molecules that stop oxidation reaction by termination of free radicals. Oxidation is a naturally occurring process in our cells that can lead to detrimental health consequences. Examples of anti oxidants are vitamin c, melatonin, vitamin e, glutathione and such. Regular consumption or administration of such anti oxidants can effectively tackle health issues caused by oxidative stress.

Anti bacterial activity, as the name suggests, involves inhibition or destruction of bacteria by interfering in the organism’s ability to grow and reproduce. The problem of resistance of

microorganisms to antimicrobial drugs is one of the world's current challenges. On the other hand, plant-based antimicrobials are attractive as they are often devoid of the many side effects associated with synthetic antimicrobials. The search for new antimicrobial compounds from natural sources is, thus, an ongoing one.

REVIEW OF LITERATURE

Sharma *et al* (2017) investigated on the possibility of using fruit peel wastes as a source of low-cost antioxidants and natural anti bacteria. Some of the fruit peels, usually a waste product, that are thrown into the environment have a great antioxidant and antimicrobial potential.

Michael Ndikau *et al* (2017) successfully developed a one-step green synthesis protocol that utilizes *Citrullus lanatus* fruit rind as a reductant and a capping or stabilizing agent in the synthesis of AgNPs through green chemistry.

Studies conducted by Babaiwa *et al* (2016) demonstrate the antimicrobial action of the ethyl acetate extract of *C. lanatus* seeds against some bacteria and fungi.

Rajasree.R.S *et al* (2016) found that apart from biological profile Cucurbitaceae family possesses many therapeutically important chemical constituents which required further research to explore the medicinal value of this species. Seeds or fruit parts of some cucurbits are reported to possess purgative, emetic and antihelmintic properties due to the secondary metabolite cucurbitacin content.

C. Egbonu Anthony Cemaluk *et al* (2015) demonstrated the antimicrobial action of the ethyl acetate extract of *C. lanatus* seeds against some bacteria and fungi.

Hannah *et al* (2015) showed that the abundance of phytoconstituents in watermelon rind extracts provides them with an excellent source of antioxidants that has an ability to be used as an indigenous folk medicine by traditional healers. This can further be investigated in a wide scale for the purpose of drug development against various diseases.

STUDY SAMPLE

A fully ripe watermelon fruit, weighing around a kilogram was selected to acquire the rind. The rind was appropriately treated and the extract was obtained by soxhlet extractor, using ethanol as the solvent. The so obtained ethanolic extract was further used for analysis in all assays.

PROTOCOL

The red flesh of the watermelon was separated and the rind was thinly sliced, after peeling off the exocarp. The finely sliced strip of rind was then sundried for 48 hours.



50 gms of the dried rind sample were filled into the extraction chamber of the soxhlet extractor to obtain natural extract, using ethanol as the solvent.



After complete extraction, the extract and solvent mixture was run through a rotary evaporator to separate the solvent.



The crude extract after solvent separation was then subjected to air drying for another 48 hours- the so obtained final extract was further used as the study sample.



Fig 2 Final Ethanol Extract

(A) PHYTOCHEMICAL SCREENING

Phytochemicals are non nutritive chemical constituents of plants which occur naturally and are derived from it. Phytochemical analysis of the plants belonging to Cucurbitaceae family confirms the presence of various phytochemicals like tannins, terpenoides, saponins, carotenoids.

Terpenoids: sometimes called as isoprenoids. Terpenoids have membrane disruption and inhibitory effect against fungi and bacteria. It also has antineoplastic activity.

Flavonoids: They have been reported to possess many useful properties, including anti-inflammatory activity, estrogenic activity, enzyme inhibition, antimicrobial activity, antiallergic activity, antioxidant activity, vascular activity and cytotoxic antitumor activity

Phenols: Some of the simplest bioactive phytochemicals consist of a single substituted phenolic ring. Phenolic compounds containing no oxygen are classified as essential oils and often cited as antimicrobial as well as bacteriostatic.

Tannins: have astringent properties; hasten the healing of wounds and inflamed mucous membrane. Tannins are potential metal ion chelators, proton precipitating agent and biological antioxidant.

MATERIALS AND METHODS

1. Test for Flavonoids:-10 mg of crude extract + few drops of NAOH solution. Formation of an intense yellow color, which turns to colorless on addition of few drops of dil.H₂SO₄ indicates the presence of flavanoids.

2. Test for Saponin:-10 mg crude extract +5 ml distilled water (shake vigorously).The formation of stable foam was taken as an indicator for the presence of saponins.

3. Test for Tannins:-10 mg crude extract in Distilled water +4 ml FeCl₃. Formation of green color indicates that presence of condensed tannin.

4. Test for Terpenoids:-10 mg crude extract +2 ml chloroform + 3 ml conc. Sulphuric acid (drop wise).Formation of reddish brown color indicates the presence of terpenoids.

5. Test for phenols:-10 mg crude extract +few drops of FeCl₃ solution. Blue or green coloration indicates positive reaction.

5.3 RESULTS AND DISCUSSION

Phytochemical screening

Test	Results
Saponin	-
Flavonoid	+
Tannin	+
Terpenoid	+
Phenol	-

Table:Phytochemical observation

KEY: + = Present, - = Absent

Table indicates the presence of flavonoids, tannin, terpenoid but absence of saponin, phenol.



FIG: 3 Results of phytochemical tests.

(B) ANTI OXIDANT ASSAY

Anti oxidant activity was estimated by using DPPH assay

MATERIALS AND METHOD

Concentration(mg/ml)	Sample (ml)	Methanol(ml)	Total volume(ml)	DPPH(ml)
0.5	0.25	0.75	0.5	0.5
1.0	0.5	0.5	0.5	0.5
1.5	0.75	0.25	0.5	0.5

Table 01: Dilution table

Test and control tubes were incubated at room temperature for 30 minutes in dark and absorbance was taken at 517 nm in UV-VIS spectrophotometer.

OBSERVATIONS

Methanolic extract of *Citrullus lanatus*: - Stock 2mg/ml

Absorbance of Control = 3.4361

Absorbance of Test and Control Blank at 517 nm

Concentrations (mg/ml)	Test	Color Blank	Final Absorbance
0.5	3.3342	0.0260	3.3082
1.0	3.2457	0.0232	3.2225
1.5	3.1843	0.0188	3.1655

Table 02: Observations

CALCULATIONS

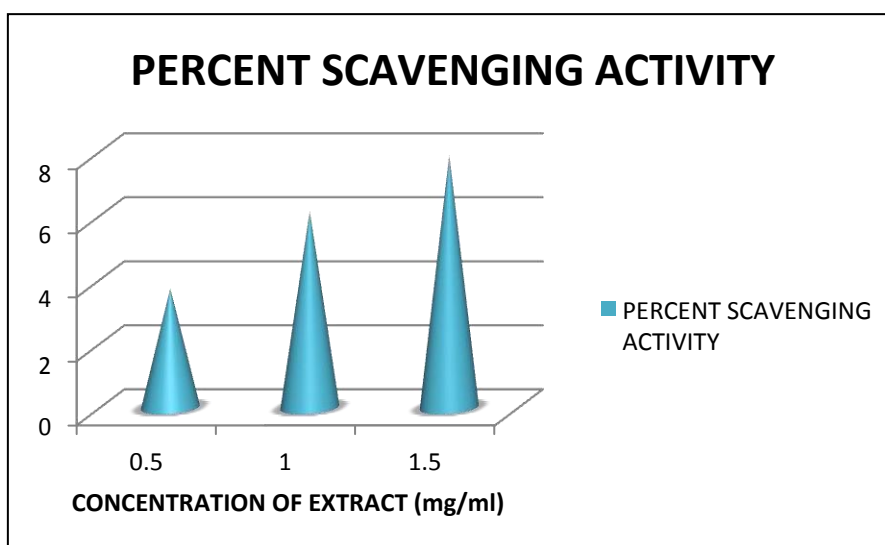
Percent Scavenging Activity was calculated using formula:-

Percent Scavenging Activity= 100-[Test- Blank/control] x100

RESULTS AND DISCUSSION

Concentrations (mg/ml)	Percent scavenging activity
0.5	3.72
1.0	6.14
1.5	7.88

Table 03: Results



ANTI BACTERIAL ACTIVITY

Anti bacterial activity was estimated using disc diffusion method. The assay was performed using various concentrations of the extract against *Staphylococcus aureus* and *Escherichia coli*.

(C) DISC DIFFUSION METHOD

PROTOCOL

A strain of gram negative (*Escherichia coli*) and gram positive (*Staphylococcus aureus*) bacteria were used to carry out this assay.

↓
Soya bean casein digest agar was used as the culture media. Stocks of these bacterial solutions were revived in tryptic soy broth by incubating at 37°C for 24 hrs.

A single disk diffusion method was used to assess the presence of antimicrobial activities of the above mentioned ethanolic extracts.



The revived test organisms were spread onto media plates by glass spreader.



The discs, impregnated with the various concentrations, were then placed on all plates. Two media plates seeded with the organisms were used as culture control.



After incubation at 37⁰C for 48 hours, the antimicrobial activity of the test agents was determined by measuring the diameter of zone of inhibition expressed in mm.

RESULTS

Antibacterial Activity

Concentrations (mg/ml)	<i>E. coli</i> (zone of inhibition in mm)	<i>S. aureus</i> (zone of inhibition in mm)
2	-	-
5	10	-
10	10	-
Control (Triclosan)	11	-
Control (Ethanol)	8	-

(Size of filter paper disc = 6mm.) Table 04: Observations



FIG: 6 – Media Plates of *S.aureus* with discs. No zone of inhibition observed around disc.

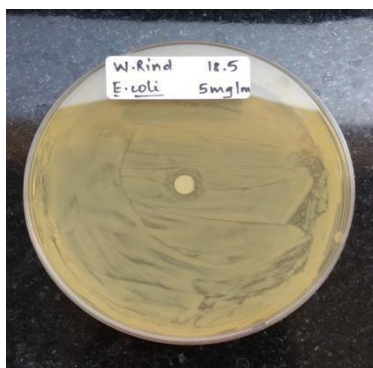


FIG: 07 – Media Plates Of *E. coli* with discs.

(D) TLC WITH BI Zone of inhibition was observed around discs.

PROTOCOL

Activate the plate by putting the silica plate in plate holder in oven (60°C) for 10 min.



Mix the solvents [hexane: ethyl acetate :: 8:2] immediately before use in a glass beaker.



Before using solvent system first saturate the TLC tank with that solvent.



Use a soft pencil to mark the origin line (the line you will spot the samples) 1cm from the bottom of the plate and the expected solvent front about 0.5 cm from the top of the plate.



Spot the samples on the prewashed, activated and marked TLC plate with the help of micropipette. After spotting, use hair drier to dry the spots.



Place the plate in its appropriate saturated tank to prevent the solvent vapor elution from the tank.



FIG:8 TLC PLATE BEING RUN.



FIG: 9 ETHANOLIC EXTRACT FOR TLC.

(E) BIOAUTOGRAPHY

PROTOCOL

Nutrient agar was seeded with *E.coli* and *S.aureus* in two different beakers respectively.



The pre run TLC plates were placed in sterile petridishes .



The seeded media was poured on the TLC plates in the petridish.



The plates were then incubated at 37°C for 24 hrs. The plates were observed for zone of inhibition.

RESULTS

TLC

The silica plates were observed under U.V. light. Two spots were noted. Further , bioautography was carried out on these plates.



FIG :10 Silica Plates Under Uv Light.

TLC of the ethanolic extract was visualized under a UV visualize. A single spot was observed which is the separated component of the ethanolic extract.

BIOAUTOGRAPHY

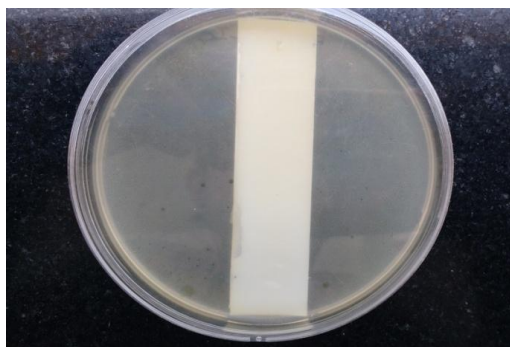


FIG: 11 Media Plate Of *E. coli*

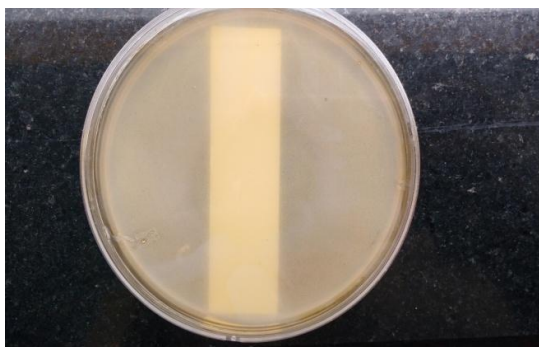


FIG: 12 Media Plate OF *S. aureus*.

Bioautography plates showed no zone of inhibition in either organism.

DISCUSSION

Phytochemical analysis - From the results obtained by the standard qualitative phytochemical analysis carried out on the watermelon rind extract, it is evident that the rind shows more or less the same content of phytoconstituents that is present in the rest of the fruit.

However, there may be variance in the quantity of phytochemicals between other parts of the fruit and the rind- this can be confirmed by carrying out further quantitative phytoconstituent analysis.

Anti-oxidant analysis – anti oxidant analysis revealed that ethanolic extract does show anti oxidant activity. However , the activity was concentration dependent upto 1.5mg/ml. With increase in concentration, it was observed that there is significantly less DPPH scavenging activity which needs to be further investigated.

Anti-bacterial activity – From the results obtained of disc diffusion method for anti bacterial potential, it is apparent that the rind extract does have mild antimicrobial activity against *Escherichia coli*. But the presence of slight hazy growth in the zone of inhibition, it may be possible that the inhibition is due to some other factors. This needs to be further affirmed by carrying out other types of anti-bacterial analysis.

TLC did show separation of the components of ethanolic extract of rind using a hexane ethyl acetate solvent system. But further usage of this separated component in bioautography did not show the presence of any bioactive compounds.

CONCLUSION

Phytochemical analysis revealed the presence of tannin, terpenoid , flavonoid in the ethanolic extract of watermelon rind.Ethanolic extract of *Citrullus lanatus* shows Antioxidant activity. The result showed that DPPH radical scavenging activity was exhibited in a concentration dependent manner. At higher concentrations, the extract showed significantly less DPPH scavenging activity.*Citrullus lanatus* does not show antibacterial activity at all concentrations against gram positive bacteria (*S. aureus*) and gram negative bacteria (*E.coli*) .

BIBLIOGRAPHY

1. Antioxidant Activity by DPPH Radical: American Journal of Ethno medicine, (2014), Vol. 1, No. 4, 244.
2. Bushra Rahman: Phytochemical investigation of *Citrullus lanatus* (Watermelon) rind: (2010) thesis report, submitted to the Department of Pharmacy, East West University.
3. C. Egbunu Anthony Cemaluk: Comparative Investigation of the Antibacterial and Antifungal Potentials of the Extracts of Watermelon (*Citrullus lanatus*) Rind and Seed, (2015) European Journal of Medicinal Plants9 (4): 1-7, Article No.EJMP.18142, ISSN: 2231-0894.
4. Chanda, S., Baravalia, Y., Kaneria, M. and Rakholiya, K: Fruit and Vegetable Peels- Strong Natural Source of Antimicrobials. Current Research (2010), Technology and Education Topics in Applied Microbiology and Microbial Biotechnology 2: 444–450.
5. Lakshmi, A.J: Nutritional potential, bioaccessibility of minerals and functionality of watermelon (*Citrullus vulgaris*) seeds (2011), LWT - Food Science and Technology, 1821-1826, 44.
6. Laurence M. Harwood, Christopher J. Moody. Experimental organic chemistry: Principles and Practice (Illustrated edition ed.), pp. 122–125. ISBN 978-0632020171.
7. Mandel, H., Levy, N., Izkovitch, S. and Korman, S.H. Elevated Plasma Citrulline and Arginine Due to Consumption of *Citrullus vulgaris* (2005) , Berichte der Deutschen Chemischen Gesellschaft, 28, 467-472.
8. Olfat S. Barakat, Hanan A. Goda and Sara M. Mahmoud: Economic Exploitation of Rejected Watermelon Fruits as a Potential Source of Renewable Energy: International Journal of Advanced Research (2014), Volume 2, Issue 7, 421-434: Department of Agricultural Microbiology, Faculty of Agriculture, Cairo University, Giza, Egypt.
9. Rajasree R S, Sibi P, Femi Francis, Helen William: Review Article Phytochemicals of Cucurbitaceae Family: International Journal of Pharmacognosy and Phytochemical Research (2016); 8(1); 113-123 ISSN: 0975-4873, College of Pharmaceutical Sciences, Govt. Medical College, Kottayam, Kerala, India.
10. Sharma. G., Vivek, Gupta, A.K., Ganjewala, D., Gupta, C. and Prakash, D: Phytochemical composition, antioxidant and antibacterial potential of underutilized parts of some fruits: International Food Research Journal (2017), 24(3): 1167-1173.

10.THE STUDY ON CAUSE & EFFECTS OF STRESS AMONG EMPLOYEES IN CORPORATE SECTOR

SURBHI SINGH

TY BFM

INTRODUCTION



**“STRESS IS THE DEMAND MADE UPON THE ADAPTIVE CAPACITY OF MIND
AND BODY”**

-DAVID FONTANA

Hans Selye was one of the founding fathers of stress research. His view in 1956 was that “stress is not necessarily something bad – it all depends on how you take it. The stress of exhilarating, creative successful work is beneficial, while that of failure, humiliation or infection is detrimental.” Selye believed that the biochemical effects of stress would be experienced irrespective of whether the situation was positive or negative.

Today’s age is called as “**The Age of Anxiety**”. Today vast majorities of people are in a state of stress. Their fast-paced lifestyle demands that they are raring to go always and are

always under pressure to perform. This pressure usually leads to stress. Stress can be due to various reasons. Stress is now viewed as a negative thing, with a range of harmful long term effects. These effects have rarely been observed in positive situations. Stress is a condition or feeling experienced when a person perceives that “**demands exceed the personal and social resources the individual is able to mobilize.**” It is something that occurs all the time and affects everyone one way or another at least some of the time.

Stress produces numerous physical and mental symptoms which vary according to each individual's situational factors. These can include physical health decline as well as depression. The process of stress management is named as one of the keys to a happy and successful life in modern society. Although life provides numerous demands that can prove difficult to handle, stress management provides a number of ways to manage anxiety and maintain overall well-being. Many practical stress management techniques are available, some for use by health professionals and others, for self-help, which may help an individual reduce their levels of stress, provide positive feelings of control over one's life and promote general well-being. Although many techniques have traditionally been developed to deal with the consequences of stress, considerable research has also been conducted on the prevention of stress, a subject closely related to psychological resilience-building. A number of self-help approaches to stress-prevention and resilience-building have been developed, drawing mainly on the theory and practice of cognitive-behavioural therapy.

Managing that stress becomes vital in order to keep up job performance as well as relationship with co-workers and employers. For some workers, changing the work environment relieves work stress. Making the environment less competitive between employees decreases some amounts of stress. However, each person is different and some people like the pressure to perform better.

OBJECTIVES OF THE STUDY

This project essentially aims to achieve the following objectives

They are:

1. To study the concept of stress.
2. To study the causes of stress in employees in corporate sector.
3. To know the effects of stress on employees in corporate sector.
4. To study how stress can be managed.

RESEARCH METHODOLOGY

Primary Data : Data which has not been previously published i.e. the data is derived from the new or original research study and collected directly from first hand sources by means of surveys, observation or experimentation is known as **Primary Data**.

Secondary Data: Data which has already been collected by someone or an organisation for some other purpose or research study is known as **Secondary Data**.



METHOD OF DATA COLLECTION

Primary Data: In primary data, structured questionnaire was made and 155 respondents were asked to fill the questionnaire.

Secondary Data: Secondary data was collected from various sources such as books, internet and newspapers.

STRESS STATISTICS IN INDIA

As per the World Health Organisation, 1 in every 5 persons (20% of the population) in India are said to be suffering from some form of mental unrest. According to a report in 2015, 50 percent of corporate India is under chronic stress with 30 per cent having problems such as addiction and marital discord and 20 percent suffering from depression.

A statement said a study by the Indian Council for Research on International Economic Relations found that India's rapid economic expansion has boosted corporate profits and employee incomes, but has also sparked a surge in workplace stress and lifestyle diseases that few Indian companies have addressed.

The survey said 45 per cent of Indian workers are particularly stressed by the increased focus on profitability that has arisen during the recession. In fact, this particular pressure is stressing out Indian employees more than workers in any of the other countries surveyed. Another factor responsible for increasing workplace stress is the pressure to maintain excellent customer service: 33 per cent identified this as a major stress-causing factor. Company size has also had an influence on the level of stress increase experienced in recent years.

It found that workers in mid-sized Indian companies (50-249 employees) have experienced a greater rise in workplace stress: 61 per cent of employees in mid-sized firms have reported higher levels of stress against 55 per cent of people in smaller businesses. This may be due to the potential for downsizing.

India has one of the highest rates of suicides among people aged between 15 and 29. Although the reasons are myriad but failure in examination, unemployment, and depression are some the reasons why people put their life at risk.

According to WEEK MAGAZINE, 69% of people suffering from stress related disorders such as depression were apprehensive that society would consider them to be crazy. 55% of people suffering from stress related disorders say they have no or very few close

friends. 71% people under stress refrain from social activities. 50% of people under stress say they are not able to pursue leisure activities or hobbies. Another study says 72% writers, 42% artists, 41% politicians, 36% intellectuals, 35% musicians and 33% scientists are prone to stress related disorders.

Depression among the youth has increased from 2% to 12% in the last five years. Globally 3 out of every 5 visits to the doctor are for stress related problems. 76% people under stress say they have sleeping disorders and 58% suffer headaches. Laughing helps ease stress. And laughing 100 times equals 10 minutes of working out on a rowing machine or 15 minutes of cycling. 85% of people under stress tend to have strained relations with family and friends. 70% of people under stress say they have become short-tempered.

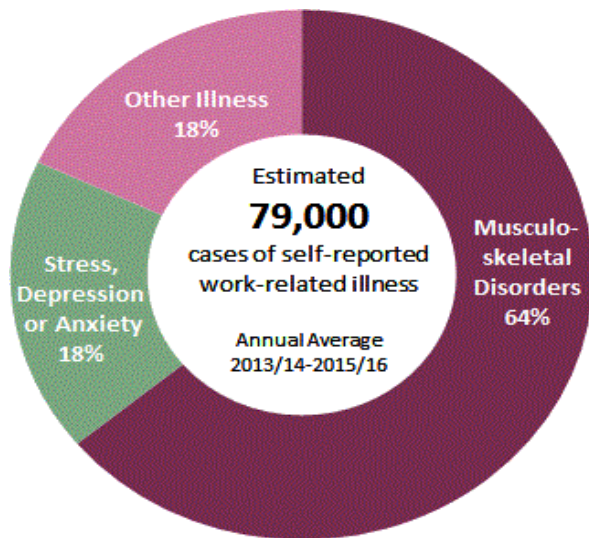
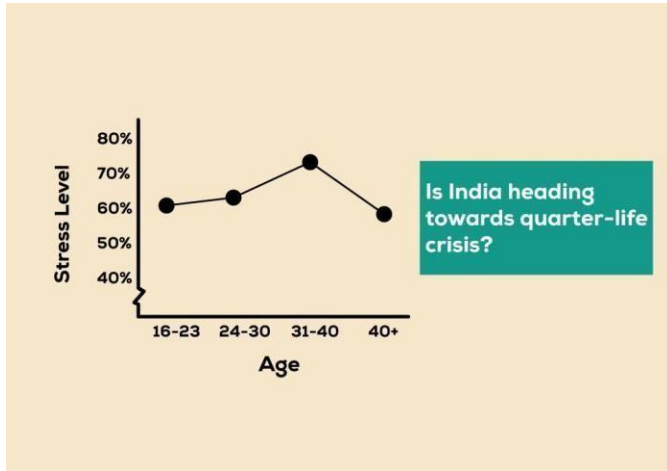
A NIMHANS study says 36% techies show signs of psychiatric disorder. Globally 1 out of every 10 students suffers significant distress. Over 50% of lost workdays across the world are due to stress, says an ILO study. 16000 students in India committed suicide between 2004 and 2008.

According to reports 50% employees in India Inc are under stress: 30% have problems such as addictions and marital discord. 20% suffers from depression.

Depression is the No 1 occupational disease of the 21st century says WHO. 49% of people under stress say they suffer from upset stomach or nausea. 71% people under stress feel they are not productive and cry regularly.

Children laugh about 300 times a day while adults laugh only 15 to 100 times. India currently has only about 3500 psychiatrists. Analysts say there must be at least a threefold increase in strength to help a growing tribe of people suffering from stress related disorders.

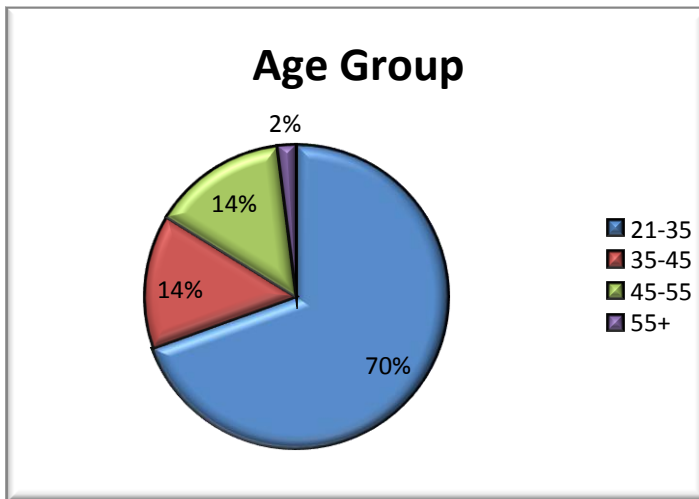
66% CEO's in India are stressed out and 11% find it too much to handle says ASSOCHAM.72% of students in India are unaware of how to deal with stress and its ill-effects. In 2006 alone 5,857 students committed suicide owing to exam stress.27.6% of IT professionals in India are addicted to narcotic drugs says a NIMHANS study.



COLLECTION AND ANALYSIS OF DATA

To understand the nature of employees, following questions were asked:

1. Age group

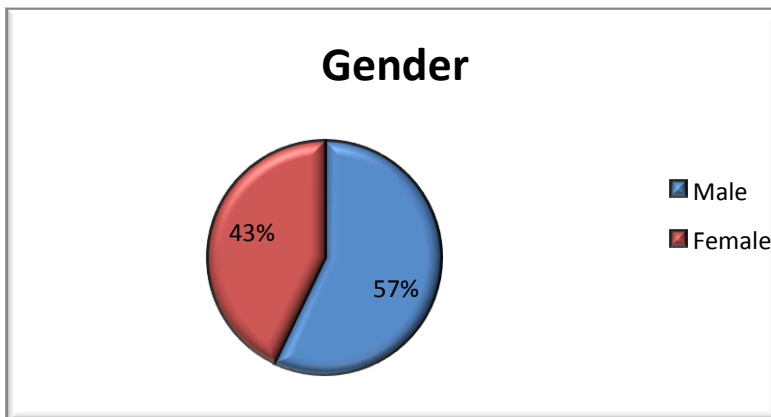


COMMENT:

Out of 155 respondents, maximum (69.5) were from age group 22-35 and minimum (1.9) were from age group 55+ where as other age groups contributed to 14.3 each.

According to the above chart, youngsters are more prone to stress.

2. Gender

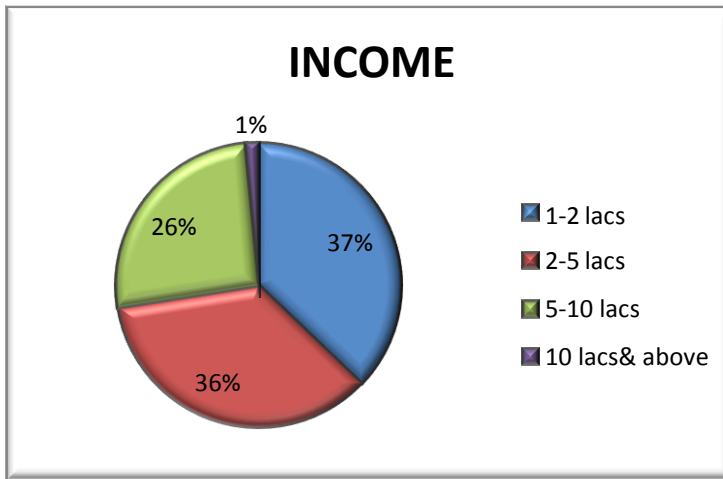


COMMENT:

Out of 155 respondents, 57% were Males and 43% were females.

Males tend to get more affected by stress than females.

3. Income

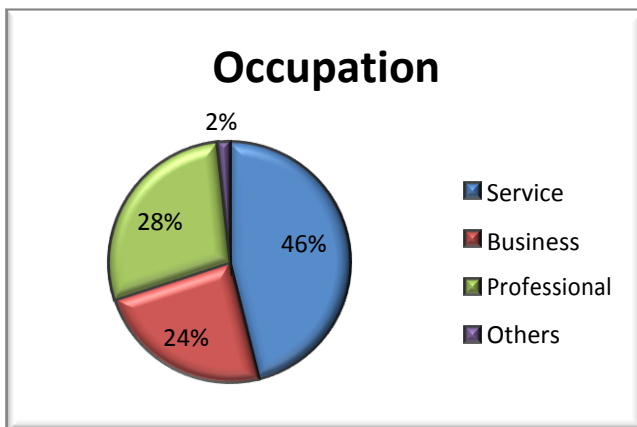


COMMENT:

It is seen that Income is one of the most responsible stress factor.

So we can see that the group 1-2 lacs (37%) tend to be more stressed and the least to be affected is group 10 lacs & above (1%)

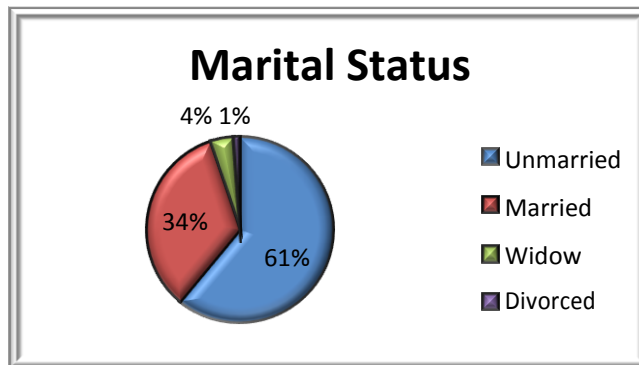
4. Occupation



COMMENT:

Out of 155, 46% were from service sector; 28% were professionals; 26% were business men and 2% were from other sector. People from service sector are more stressed than others.

5. Marital Status

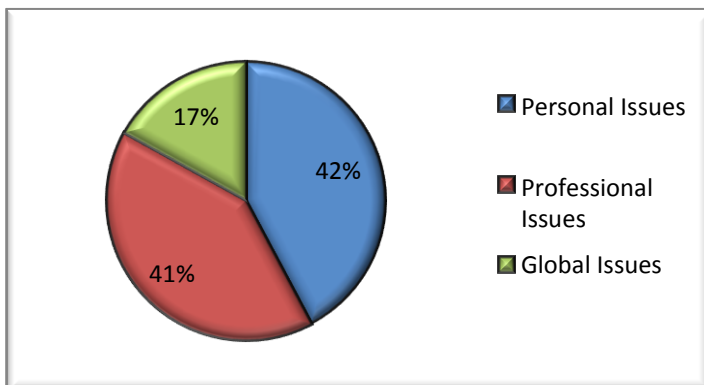


COMMENT:

61% are unmarried; 34% are married; and other 5 % contributes to others.

According to the chart, unmarried people are more prone to stress than others.

6. What causes you the most stress?

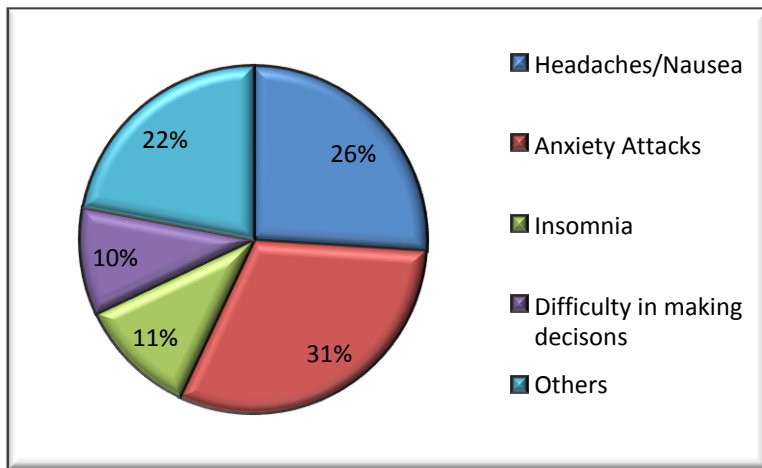


COMMENT:

There are many causes for stress out of which personal issues are the major reason for stress followed by professional and global issues.

Our results show a high group of people are affected by stress due to personal problems (42%) but another peak can be seen in professional (41%).It also shows least number of people suffers with stress due to global issues.

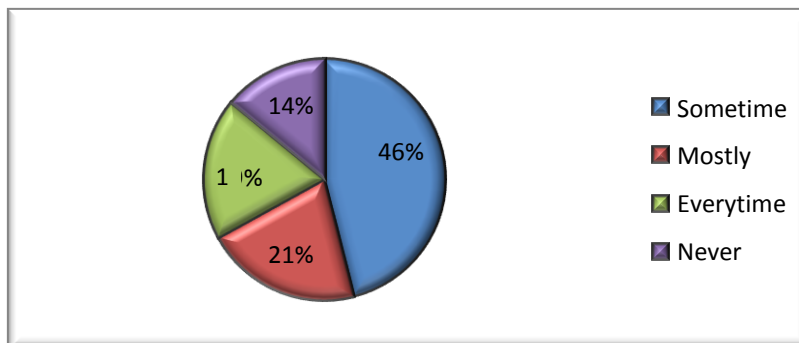
7. When you feel stressed, do you feel any of the following symptoms?



COMMENT:

Symptoms can be visible in many ways. According to the above chart, 31% of the respondents have experienced anxiety attacks while 26% feel nauseated and had experienced frequent headaches. 22% respondents have experienced other symptoms while 11% had insomnia and 10% had difficulty in making decisions.

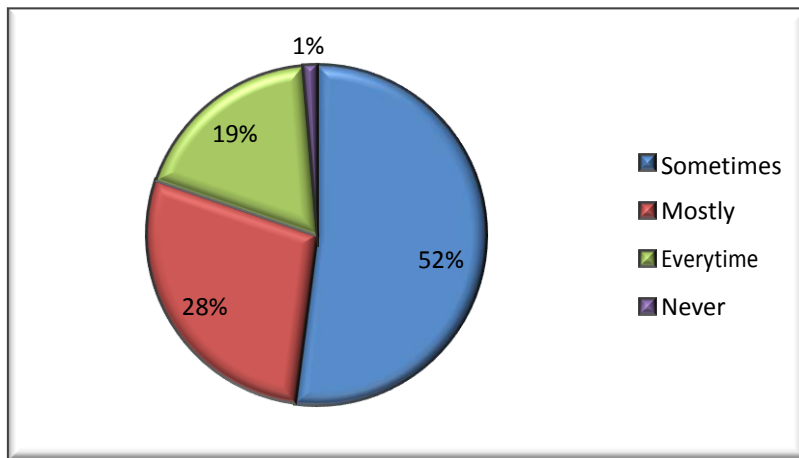
8. Does your stress affect your health?



COMMENT:

Stress can have a detrimental impact on the health. According to the above chart, 46% feel that stress affects their health sometimes, while 21% agreed that mostly stress affects their health. 19% of the respondents feel that stress had affected their health every time while 14% remain unaffected.

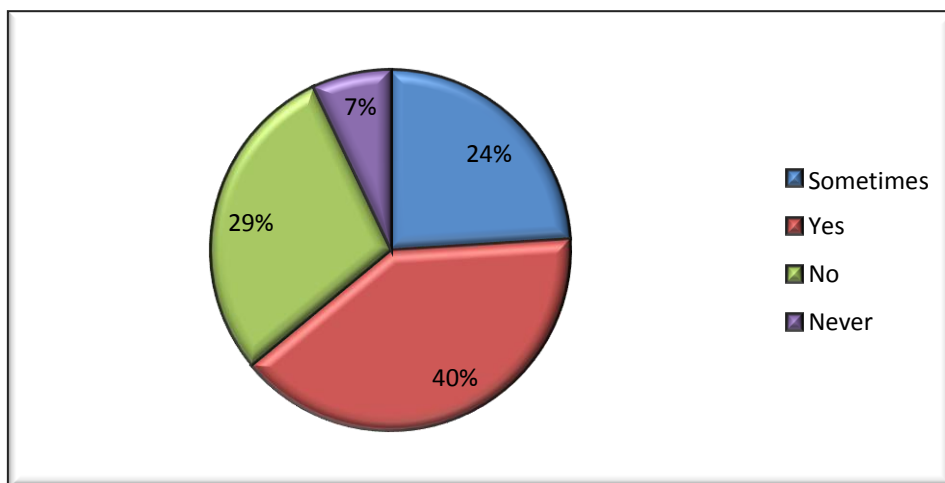
9. How often you face stress situations?



COMMENT:

One cannot avoid stressful situations. Out of 155 respondents, major part of people i.e.52% feel that they have encountered stress situations sometimes while 28% have come across stress situations mostly. 19% have experienced stressful situations every time.

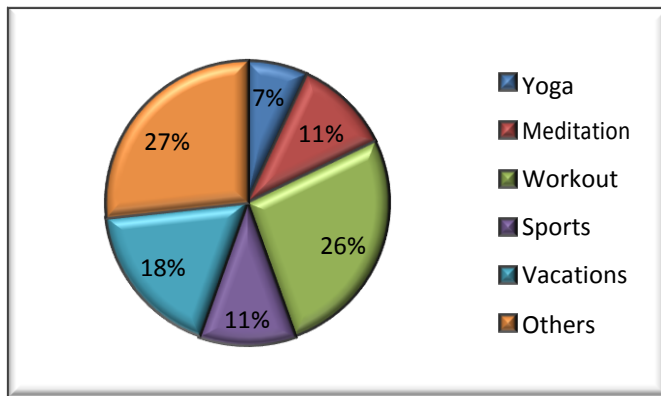
10. Have you ever taken any steps for managing your stress?



COMMENT:

If one is encountered with stressful situations it is very important to manage it. According to the above chart, 40% of the people have taken steps to overcome it while 29 % remained ignorant. 24% of the people have taken steps to manage the stress sometimes while 7 % has never taken the steps to manage the stress.

11. In what kind of activities are you engaged in?

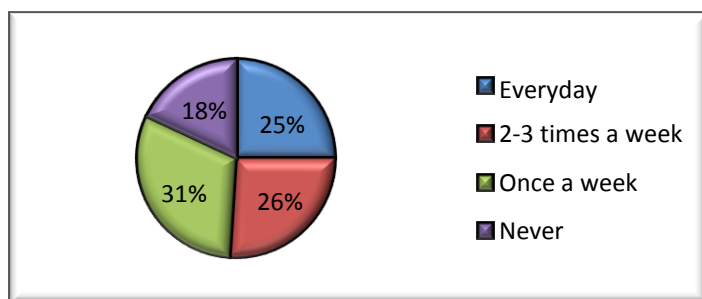


COMMENT:

Many people experience stress for a multitude of reasons. There are number of activities for reducing stress effects. According to the chart, 26% have been working out to overcome stress while 18% go on vacations, 11% of the people have indulged in sports activity, 11% of the people meditate and 7 % have been doing yoga for stress relief. 27% have adopted other activities for stress relief.

12. How often do you engage in any of the following activities?

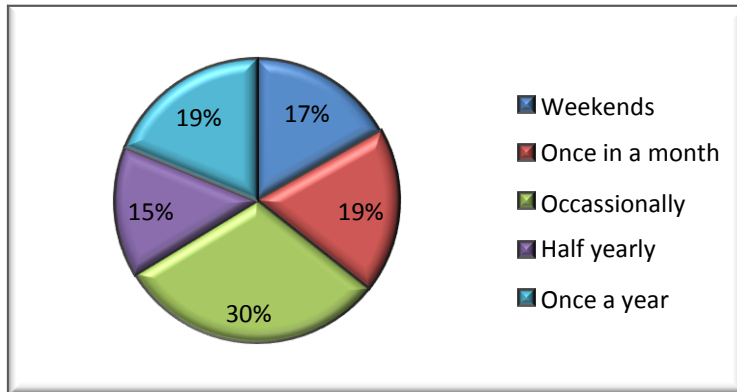
(Yoga, workout, sports, meditation and others)



COMMENT:

According to the above chart, out of 155 respondents 31% engaged in the above following activities once a week while 26% do these activities 2-3 times a week. 25 % indulges in these activities everyday and 17% never engages in any activities.

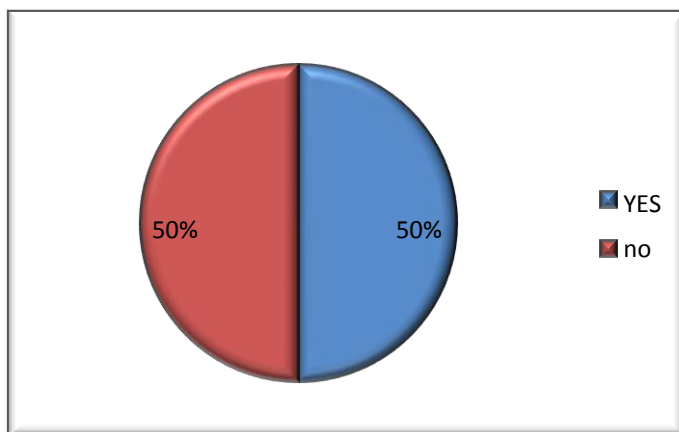
13. How often do you go for holidays/excursions/trips?



COMMENT:

According to the above chart, 30% of the respondents go for holidays occasionally.19% of the respondents go once in a year and other 19% once in a month.17 % go for holidays during weekends and 15% once in six months.

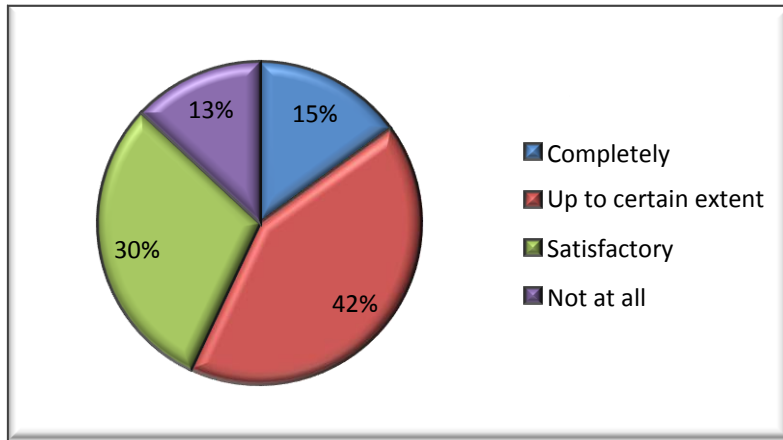
14. Are you satisfied with your job?



COMMENT:

Job satisfaction is one of the major reasons for stress. According to the above chart, 50% of the respondents feel that they are satisfied with job while other 50% feel that they are dissatisfied with their job.

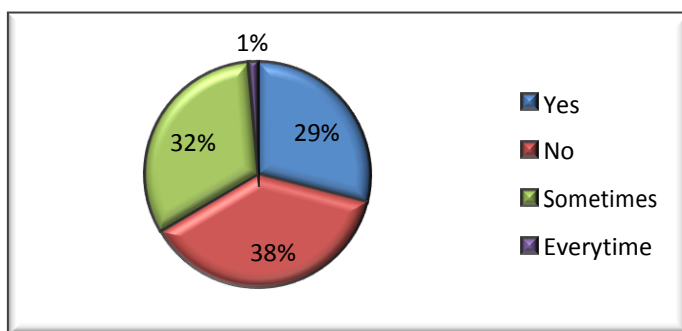
15. To what level the management is helpful in handling your stress?



COMMENT:

Management must be helpful towards employees for overcoming organizational stress. Out of 155 respondents, 42% feel that management is helpful to them up to certain extent. While 30% are satisfied by the management in handling their stress. 15% feels that, Management is completely helpful to them while 13% feel that they have been overlooked and management is not helpful to them for handling stress.

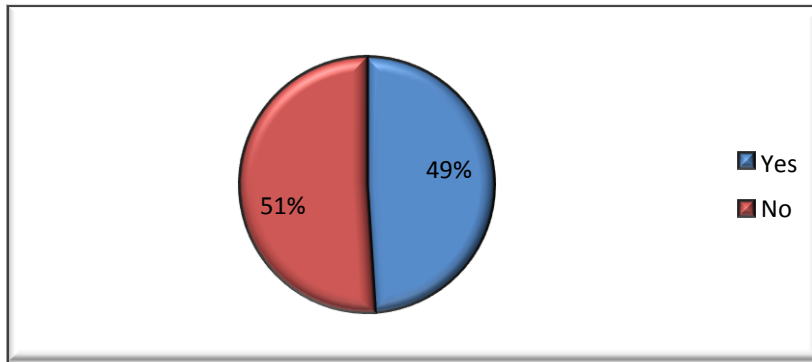
16. Do you participate in the activities organized by the management for managing stress?



COMMENT:

According to the above given chart, 32% participate sometimes in the activities organized by the management while 38% do not participate in the stress management activities and other 29% participate in the activities.

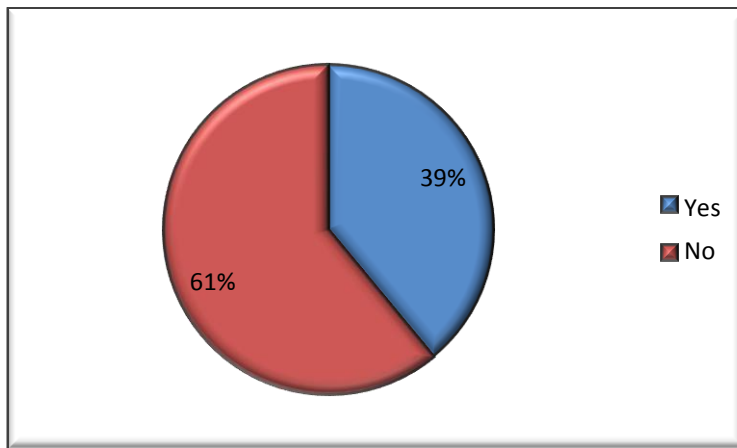
17. Has your management organized seminars or any motivational programs for stress management?



COMMENT:

Out of 155 respondents, 49% agree that management organizes seminars or any motivational Programs for handling stress while 51% feel that management does not organize seminars or Motivational programs for managing stress.

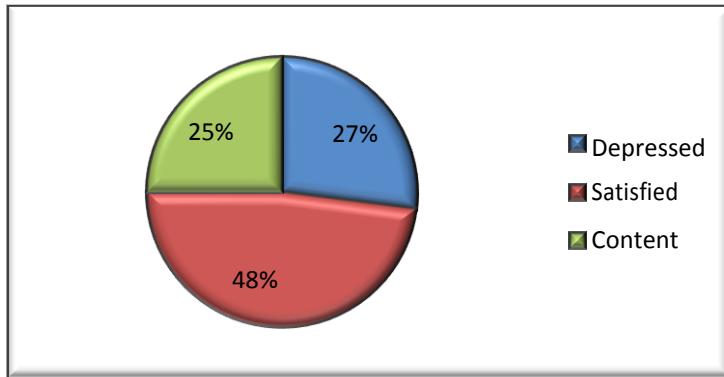
18. Have you ever taken any professional advice or medication regarding stress?



COMMENT:

Professional advice by counselor and medication is very necessary for managing stress. According to the above chart, only 39% of the people have taken medication or advice while the other 61% remained ignorant and did not take any counselor’s advice or medication.

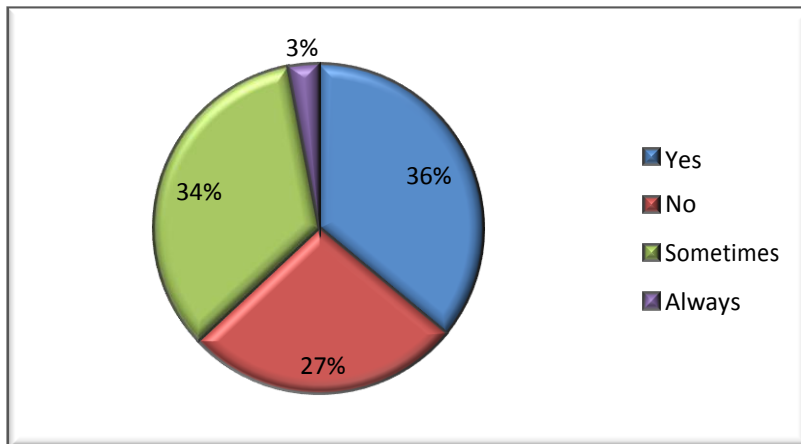
19. How do feel while working in the organization?



COMMENT:

According to the above chart, 48% of the people are satisfied by their work but 27% are depressed and 25% are content while working in the organization.

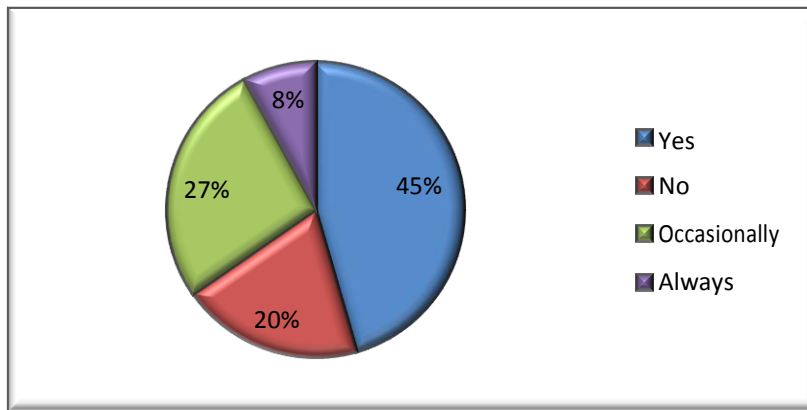
20. Do you consider work pressure or deadline the main source of stress?



COMMENT:

Deadline or work pressure is another source of stress. According to the above chart, 36% of the people feel that deadlines or work pressure the cause of stress while 34% feel that it can be sometimes. 27% completely disagree to it that the deadline are the source of stress while the least number of people i.e. 3% feel that it is the main source of stress.

21. Do you spend enough time with your family?



COMMENT

Spending time with the family can be a great stress buster. According to the above chart, 45% of the people spend their time with their family while 20% do not spend their time with the family. 27% of the spend their time with family occasionally while the other 8% always spend their time with the family.

INTERPRETATION OF DATA

After the entire analysis of survey and questionnaire, the youngsters who belong to group 22-35 are more prone to stress than any other age groups. Males are more inclined to stressful situations than females due to income which is a very important factor for source of stress. Everyone encounters stressful situations, 42% feel that personal issues are the main cause of stress followed by professional issues i.e. 41%

Stress affect all aspects of our life, but the symptoms can vary in each. According to the survey, 26% feel nauseated and had experienced headache which is a very common symptom. Due to stress, health deteriorates.46% have agreed that sometimes stress affects their health. It is very important to take necessary steps to manage stress situations but only 40% have taken steps to handle it. Stress can be managed by engaging in certain activities which improves one's condition like yoga, sports, meditation. 25% of the people engaged in these activities every day.

Half of the people are not satisfied with their job while the other half seems to be satisfied. The management plays a very important role in helping their dissatisfied employees by organizing activities to manage stress, but only 28% of the people have participated in the activities.

48% of the people are satisfied while working in the organization while the some seem to be depressed and some content. Work pressure or deadlines are the other source of stress. 36% have experienced it. Taking a professional advice and medication can help to deal with stress.61% of the people have taken professional help but 39% seems to be ignorant. Unmanageable stress and anxiety can be unhealthy to both physically and psychologically. It can also be seen from the finding that spending time with family can help one to overcome stress about which 46% have agreed to it.

CONCLUSION

The concept of stress is borrowed from the natural science. It was introduced by **Hans Selye** in the year **1936**. In general science, stress is the pressures people feel in life due to their reaction to situation. It is an adopted response to the external situation that results in physical, psychological and behavioral deviation for organizational differences for organizational participants. The positive side of stress is called Eustress and the negative side of stress is called as Distress.

The stress can be caused by internal or external factors.

The effects of stress on an employee depend on duration, strength and individual characteristics. When stress persists and becomes excessive, it culminates to strain and in turn adversely affects a person's physique (body), psychology (mind) and behavior.

For understanding the symptoms of stress can be classified into 3 broad categories:

- Physiological
- Psychological
- Behavioral

It is better to bend than to break. Researchers have indicated various strategies to be used to manage stress. It can be at individual level or at organizational level. Some stress is normal and even useful. Stress can help if you need to work hard or react quickly. But if stress happens too often or lasts too long, it can have bad effects. Effective stress management techniques can help counter the negative effects of stress in your life.

After the entire analysis of survey and questionnaire, the youngsters are more prone to stress than other groups. Organizational stress is more common among people. World Health Organization says 1 in every 5 persons in India is suffering with stress. Thus, stress should not be overlooked and must be treated in time. From this study, it can be concluded that employers have realized the importance of managing the stress in the workplace because of the wide variety of programs now offered to manage stress.

SUGGESTIONS AND RECOMMENDATIONS

Based on the findings and conclusions in this study the following recommendations are made:

- Employers must be made aware about the term ‘Stress’ and its causes and symptoms must be discussed in the workplace.
- Organizations should offer various stress management programs to help employers manage stress because stress is prevalent in the workplace.
- Management should conduct a survey of the programs they already offer to discover which programs are the most effective for managing stress.
- Employees should share their ideas for managing stress with the organization so that the organization can implement effective stress relief programs.

➤ **BIBLIOGRAPHY**

- **BOOKS-**

- Stress Management by Kantamneni Radhakrishnamurthy – Srinii Hill Publications
- Art of Stress Management by Sarvesh Gulati – Rupa Publications India

- Organizational Behavior by S.S Khamka – S Chand & Company
- Stress and Work: Perspective on Understanding and Managing Stress by D.M. Pestonjee – SAGE Response

- **WEBSITES-**

www.psychologistworld.com

www.medicinenet.com

www.apaorg.com

www.mentalhelp.net

www.bebrainfit.com

www.webmd.com

11. Avengers: Infinity War

Prajakta Mhatre

SYBMM



How do you describe a single movie which has over 60 Marvel characters? Words can't do it justice. Ever since Iron Man hit theatres, fans have been eager to watch every Marvel movie since then. And now that Marvel studios have completed 10 years, we all can agree that Avengers: Infinity War is going to be an epic movie in Marvel collection. Avengers: Infinity War is an upcoming American superhero film based on the Marvel comics. It is intended to be the sequel to 2012's Marvel's: The Avengers and 2015's Avengers: Age Of Ultron and the 19th film in the Marvel Cinematic Universe (MCU). The Avengers join forces with various Marvel superheroes, but is it going to end well for the superheroes? With Thanos, the greatest supervillain in the MCU in pursuit of collecting all of the infinity stones there's a lot at stake... well half of the universe to be exact!

Avengers and their allies must fight together and must be willing to sacrifice all. The powerful Thanos must be defeated before his lust of devastation and ruin, puts an end to the universe. Thanos plans to use the infinity stones to inflict his will and power on...well everything!! Directors of the film i.e. Joe Russo and Anthony Russo have done a great job keeping the

audience on their toes. They have seen to it that they do not give away much but at the same time they provide inquisitive approach for the audience.

“There’s a narrative thread that is connecting these films, but at the same time, there’s an independence in terms of what the experience is or where the story goes” said Joe Russo.



The film was announced in October 2014 as Avengers: Infinity War- Part 1, Produced by Marvel Studios. It will be distributed by Walt Disney Studios, Motion Pictures. Film will be released on April 27 2018. A report in the daily record suggest Avengers: Infinity War could end up being the most expensive movie made so far with a budget of \$400 million. Well, when you put over sixty epic marvel characters in a single movie, the price has to be high!

References:

[Experiential write ups.](#)

12. BLOCKCHAIN

Gulnaz Begum

TYCS A

Blockchain is the world's leading software platform for digital assets.

By allowing digital information to be distributed but not copied, blockchain technology created the backbone of a new type of internet. Originally devised for the digital currency, Bitcoin, the tech community is now finding other potential uses for the technology.

Bitcoin has been called “digital gold,” and for a good reason. To date, the total value of the currency is close to \$9 billion US. And blockchains can make other types of digital value. Like the internet (or your car), you don’t need to know how the blockchain works to use it. However, having a basic knowledge of this new technology show why it’s considered revolutionary.

A distributed database

Picture a spreadsheet that is duplicated thousands of times across a network of computers. Then imagine that this network is designed to regularly update this spreadsheet and you have a basic understanding of the blockchain.

Information held on a blockchain exists as a shared — and continually reconciled — database. This is a way of using the network that has obvious benefits. The blockchain database isn’t stored in any single location, meaning the records it keeps are truly public and easily verifiable. No centralized version of this information exists for a hacker to corrupt. Hosted by millions of computers simultaneously, its data is accessible to anyone on the internet.

Transparent and incorruptible

The blockchain network lives in a state of consensus, one that automatically checks in with itself every ten minutes. A kind of self-auditing ecosystem of a digital value, the network reconciles every transaction that happens in ten-minute intervals. Each group of these transactions is referred to as a “block”. Two important properties result from this:

1. **Transparency** data is embedded within the network as a whole, by definition it is public.
2. **It cannot be corrupted** altering any unit of information on the blockchain would mean using a huge amount of computing power to override the entire network.

In theory, this could be possible. In practice, it's unlikely to happen. Taking control of the system to capture Bitcoins, for instance, would also have the effect of destroying their value.

A network of nodes

A network of so-called computing “nodes” makes up the blockchain.



Node: computer connected to the blockchain network using a client that performs the task of validating and relaying transactions gets a copy of the blockchain, which gets downloaded automatically upon joining the blockchain network.

Together they create a powerful second-level network, a wholly different vision for how the internet can function.

Every node is an “administrator” of the blockchain, and joins the network voluntarily (in this sense, the network is decentralized). However, each one has an incentive for participating in the network: the chance of winning Bitcoins.

Nodes are said to be “mining” Bitcoin, but the term is something of a misnomer. In fact, each one is competing to win Bitcoins by solving computational puzzles.

There are an estimated 700 Bitcoin-like crypto currencies (exchangeable value tokens) already available. As well, a range of other potential adaptations of the original blockchain concept are currently active, or in development.

The Blockchain & Enhanced security

By storing data across its network, the blockchain eliminates the risks that come with data being held centrally.

Its network lacks centralized points of vulnerability that computer hackers can exploit. Today's internet has security problems that are familiar to everyone. We all rely on the "username/password" system to protect our identity and assets online. Blockchain security methods use encryption technology.

The basis for this is the so-called public and private "keys". A "public key" (a long, randomly-generated string of numbers) is a users' address on the blockchain. Bitcoins sent across the network gets recorded as belonging to that address. The "private key" is like a password that gives its owner access to their Bitcoin or other digital assets.

Few uses of Blockchain:

Smart contracts: Distributed ledgers enable the coding of simple contracts that will execute when specified conditions are met.

The sharing economy: By enabling peer-to-peer payments, the blockchain opens the door to direct interaction between parties — a truly decentralized sharing economy results.

Governance: By making the results fully transparent and publicly accessible, distributed database technology could bring full transparency to elections or any other kind of poll taking.

File storage: Decentralizing file storage on the internet brings clear benefits. Distributing data throughout the network protects files from getting hacked or lost.

Internet of Things (IoT): Smart contracts make the automation of remote systems management possible. A combination of software, sensors, and the network facilitates an exchange of data between objects and mechanisms. The result increases system efficiency and improves cost monitoring.

References:

<https://www.linkedin.com/pulse/what-blockchain-technology-step-by-step-guide-rahul-ashok-ambulkar>

13. Data Analytics

-BASI REDDY GARI MANASA REDDY.

TYCS A

With 2016 drawing to a close, we can look back on what can only be described as a mixed year for data analytics. The polling data in the run-up to Brexit and Trump's election, for instance, have seen many dismiss the power of data, with Mike Murphy, a Republican strategist who predicted a Clinton win, saying after the election, 'My crystal ball has been shattered into atoms. Tonight, data died.'

However, reports of data's demise are premature. Data analytics has not spent the last several years being exulted by organizations of every hue for no reason, and a recent IDC report still had the big data and business analytics market growing at a rate of over 11% in 2016 and at a compound annual growth rate of 11.7% through to 2020.

In 2017, there will be new challenges for analytics practitioners to deal with. There will also be new technologies and new ways of working to help overcome them. We've outlined our predictions for what 2017 will bring analytics.

Unstructured Data Will Dominate The Analytics Landscape

Unstructured data is any data that does not fit into relational databases. It is estimated that 90% of all data is either semi-structured or unstructured. This includes videos, powerpoint presentations, company records, social media, RSS, documents, and text - all of which are vital to understand for businesses. While structured data analytics describes what's happening, analysis of unstructured data gives you the why.

However, much of this wealth of valuable insights is currently going untouched. In a 2015 IDG Enterprise study on big data and analytics, 83% of IT professionals who responded said they have made structured data initiatives a high priority for their organizations, yet just 43% said the same of unstructured data initiatives.

The reason for this is simple. The tools needed to analyze such a large scale of data have not existed. However, machine learning and data visualization tools are now making it possible. In 2017, with these tools improving exponentially in quality and decreasing in cost, we expect to see far more companies putting unstructured data at the top of their agenda.

Embedded Analytics Set To Take Off

Embedded analytics is the fastest growing area of Business Intelligence (BI). In a study from self-service analytics firm Logi Analytics, more than 66% of IT teams said they are now using embedded analytics in their organizations, while almost 30% said they were considering it.

Embedded analytics consist of any consumer-facing BI and analytics tools that have been integrated into software applications, operating as a component of the native application itself rather than a separate platform. Embedded analytics allows end users to utilize higher quality data because the standards of governance are improved. They can also pinpoint insights quicker as time is not wasted requesting reports from external agents, and it allows findings to be distributed to those who need it across the organization.

The popularity of embedded analytics has grown exponentially over the past several years, and we expect this curve to go up over the course of the next year. Logi Analytics' study found that business users are now adopting embedded analytics at twice the speed they are traditional BI tools, while Gartner's 2016 Embedded Analytics Report also recently found that 87% of application providers claimed embedded analytics is important to their users, up from 82% in 2015.

The Data Scientist's Role Evolves

According to a Forrester survey, businesses will invest 300% more in artificial intelligence (AI) in 2017 than they did in 2016. This has significant ramifications for analytics, with machine learning able to analyze data at a scale humans simply couldn't. As Forrester notes, it will 'drive faster business decisions in marketing, e-commerce, product management, and other areas of the business by helping close the gap from insights to action.' In their 2015 survey, just 51% of data and analytics decision-makers said they could easily obtain data and analyze it without the help of technologist, yet they anticipate this rising to 66% in 2017.

But does this mean the end of the data scientist in 2017? Another recent poll from KDnuggets asked when most expert-level Predictive Analytics/Data Science tasks currently done by human Data Scientists will be automated. A not insignificant 51% of respondents said that they expect this to happen within the next decade, while just a quarter said they expect the process to take over 50 years or never. Joel Shapiro, Executive Director of the Program on Data Analytics at Kellogg's School of Management at Northwestern University, notes: 'In the right cases, data can be automatically generated and analyzed. But analytics is fundamentally about using analysis to do something differently. I am very skeptical of off-the-shelf analytics products that claim all you have to do is load in your data and it will spit out actionable insight.' In the short term, data scientists are unlikely to be replaced, however, as more of the traditional reporting and queries are carried out by AI, we expect to see many data scientists see their role become more creative over the next year.

Behavioral Analytics Advances

The amount companies spend on digital ads is expected to grow to as much as \$77.37 billion in the US alone next year, and understanding the audience is vital to ensuring this is money well spent.

The ability to predict someone's personality presents a clear opportunity for targeting advertising, enabling marketers to segment audiences according to personality type rather than by age or gender, which is crass and highly unreliable. The benefits of personalization are well documented, with a 2015 Harris Poll study finding that 95% of respondents would be more likely to respond to personalized outreach. The Aberdeen Group also found that agencies best at personalization achieved up to a 36% higher conversion average and a 21% stronger lead acceptance rate.

Psychologists have attempted to understand different personality types and behaviors using checkboxes for decades, and digital marketers now have a significant amount of data about their customers available that could enable them to do the same. In a media release earlier this year from Universiti Teknologi Malaysia, research scholar Dr Ikusan R. Adeyemi said, 'Our research suggests a person's personality traits can be deduced by their general internet usage,' and it could do so using machine learning algorithms by analyzing just half an hour of web browsing. With

marketers now more au fait with analytics and tools that can judge people's personality increasingly refined, next year should see a real drive in the practice.

Prescriptive, Not Predictive, Analytics Rules The Day

Predictive analytics have dominated the data landscape this year, but they can only take you so far. In 2017, more companies are going to start looking at prescriptive analytics, with Gartner predicting the market to grow to \$1.1 billion by 2019 - 22% CAGR from 2014.

Prescriptive analytics uses the insights revealed by predictive analytics and provides a call to action based on what it finds. It analyzes current data sets for patterns and evaluates the outcomes of the multiple scenarios that could be enacted based on decisions that could be made based on the data, providing decision makers with hypotheticals as to the impact of each option. Just 10% of organizations currently use some form of prescriptive analytics, according to Gartner, but this will grow to 35% by 2020, and with the increasing buzz we have seen already this year, it seems likely companies will look to implement prescriptive analytics in their droves next year.

References:

1. -channels.theinnovationenterprise
2. www.infoq.com
3. Holly2 Plus

What Is Cryptocurrency?

A cryptocurrency is a digital asset designed to work as a medium of exchange that uses cryptography to secure its transactions, to control the creation of additional units, and to verify the transfer of assets. The decentralized control of each cryptocurrency works through a blockchain, which is a public transaction database, functioning as a distributed ledger.



What is Blockchain Technology?

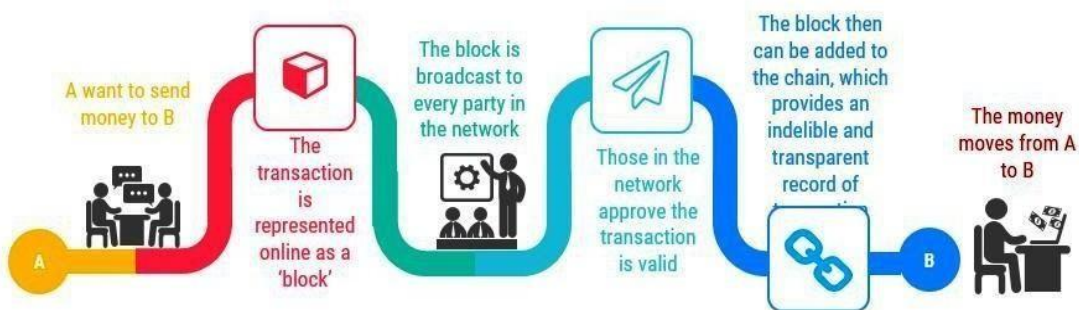
“The blockchain is an incorruptible digital ledger of economic transactions that can be programmed to record not just financial transactions but virtually everything of value.”

Blockchain is considered as next level of Internet.

The Internet of Value

Building off the idea of a public ledger, another popular way to describe blockchain is as the internet of value. The idea is pretty simple: the internet made it possible to freely distribute data online, blockchain does the same thing for money. Instead of relying on newspapers, television and radio (which are mainly controlled by big corporations), the internet gives everyone a voice for better or worse. Blockchain and cryptocurrency make it just as easy to transfer money across the world by bypassing traditional middlemen like banks and even government.

How a blockchain works?



Who created it?

A pseudonymous software developer going by the name of Satoshi Nakamoto proposed bitcoin in 2008, as an electronic payment system based on mathematical proof. The idea was to produce a means of exchange, independent of any central authority, that could be transferred electronically in a secure, verifiable and immutable way.

To this day, no-one knows who Satoshi Nakamoto really is.

In what ways is it different from traditional currencies?

Bitcoin can be used to pay for things electronically, if both parties are willing. In that sense, it's like conventional dollars, euros, or yen, which are also traded digitally.

But it differs from fiat digital currencies in several important ways:

1 - Decentralization

Bitcoin's most important characteristic is that it is decentralized. No single institution controls the bitcoin network. It is maintained by a group of volunteer coders, and run by an open network of dedicated computers spread around the world.

2 - Limited supply

Fiat currencies (dollars, euros, yen, etc.) have an unlimited supply - central banks can issue as many as they want, and can attempt to manipulate a currency's value relative to others. Holders of the currency (and especially citizens with little alternative) bear the cost.

3 - Pseudonymity

While senders of traditional electronic payments are usually identified (for verification purposes, and to comply with anti-money laundering and other legislation), users of bitcoin in theory operate in semi-anonymity. Since there is no central "validator," users do not need to identify themselves when sending bitcoin to another user. When a transaction request is submitted, the protocol checks all previous transactions to confirm that the sender has the necessary bitcoin as well as the authority to send them. The system does not need to know his or her identity.

4 - Immutability

Bitcoin transactions cannot be reversed, unlike electronic fiat transactions.

This is because there is no central "adjudicator" that can say "ok, return the money." If a transaction is recorded on the network, and if more than an hour has passed, it is impossible to modify.

“Blockchain solves the problem of manipulation. When I speak about it in the West, people say they trust Google, Facebook, or their banks. But the rest of the world doesn’t trust organizations and corporations that much I mean Africa, India, the Eastern Europe, or Russia. It’s not about the places where people are really rich. Blockchain’s opportunities are the highest in the countries that haven’t reached that level yet.” – ***Vitalik Buterin, inventor of Ethereum***

“I think decentralized networks will be the next huge wave in technology.” -
Melanie Swan, author Blockchain: Blueprint for a New Economy (2015)



“Blockchain the next big thing in technology”.

References:

[/www.theguardian.com/technology/2018/mar/20/child-abuse-imagery-bitcoin-blockchain-illegal-content](http://www.theguardian.com/technology/2018/mar/20/child-abuse-imagery-bitcoin-blockchain-illegal-content)

15. Impact Of Social Media on today's youth

Karthik Koppaka P

TYCS A

"You know, someone needs to build a service like this for the world.",is what the American programming prodigy from Harvard,Mark Zuckerberg said while eating a pizza with his friends,little did they know they would build one of the most revolutionary pieces for connecting in the world,which would later be the example,the foundation for others to follow,Yes i am Talking about the now popular facebook.com

Facebook one of the most popular social Sites at present,was founded on 4th feb 2004 Its popularity grew rapidly among the people and millions of users joined the revolution,later on there were many other sites which implemented the concept and followed suit,the most popular users of these sites are the youth which was the most impacted,Now Social media is a necessity which can make or break a future.**Social Sites have the power to Make or break a Whole Nation**

A Social Site can Create a Positive Impact on the Youth and The Nation as they are open and used by millions.They can and are used to spread awareness to create a small impact for blood donation to things that change the way we look at things,which happened and shook the nation,the Nirbhaya case which left the internet on fire and still remains in our hearts as this changed the way we look at women and Rape,Or The 26/11 attacks where people supported each other and the nation showing respect to the heroes we knew and respect.due to these post w came to know about the news and its intensity,this was how a simple site connected the whole nation as one to revolt and remember the times,these reminded us of the parts in our heart that were still Human and clean,These Events Raged Not only the Nation But The Whole World To an extent where nations forgot their egos,rage,battles and sent their support.this is the power of social media that can and will shake the world if needed,it has the power To bring people and nations together.

It can be used to Inspire and build the youth and its mindset as when a youth sees their role model doing great things for the society on these sites he tends to follow the actions and the motive or message spreads with less effort. But a social site doesn't have to Be used just for sharing emotions, intensity and support it can also be used to show the skills or resources you have, or simply said it can be used to build your image as a person, it can change the way people look at you, it can be used to define who you are and what you do. It can be used by an Entrepreneur to market his skills, his team and his company to get clients, leads or jobs. The sites can be used to keep interaction with anyone. A Social Site can make You or your startup Famous Around The world for free. It can be used as a major marketing and advertising tool. A social site can also be used to simply connect and share with friends, or connect with a loved one in a far away country. Now a days social sites are used video calling home when a person's home sick to feel better. It is said by researchers that 27% of the worlds depression is cured by the internet.

But as we know if there is light then shadows follows, yes social sites are revolutionary, inspiring, connecting and awesome, But there is major problem in the system, Humans With Emotions, Brains and free time due to which people on the internet/social sites are prone to clutches of identity theft, cyberbullying, depression, phishing. These are ways a baboon with skills can destroy your life, he can create an account with your name or steal/hack your account and he can pretend to be you and abuse your friends, family, acquaintances and it will be a long time gone before you can explain 897 friends of yours that it's not you whos doing it. Cyber bullying is the evil and disgusting way people bully others online using hateful comments, messages, spams, etc which may lead to depression and anger. phishing is the art of deceiving innocent people so that they provide their information, which they don't know will be put to bad use. There are many ways these can be prevented but they are still not that effective as imaginable but rest assured internet is a much safer place than before

So in Summary Yes, Internet is a fun, inspirational and supportive place to be in and enjoy and spread awareness, But as everything it has some flaws which when/if overcome will make the internet a better place.

References:

Experiential write ups.

16. Kotlin to Java, is this the right time?

Abhishek Singh

SyCS

Imagine posting your favorite picture on Tumblr(Yes, you heard it right), and getting a perfect curation with great effort for a good engagement. But on the other hand, your friend does the same thing with little to no effort and gains the same engagement on Instagram. The most important thing to notice here is the effort required to achieve the same motive with same end results. The simple answer to all of this is the ‘ease of doing’.

Now, think of learning Java in semesters throughout the graduation period. It may have been the best language for decades, but will it be in future? No one can tell. It ‘was’ the most suitable language for developing android apps for many years. People made fortunes out of it. But everything changed in the I/O conference of Google in 2017.

Kotlin is developed by JetBrains, and the fact that these are people behind series of IDE’s such as IntelliJ and Resharper, really shines through in Kotlin. At Google’s I/O 2017 conference, it announced its support for Kotlin. So what does it basically mean? Remember when we used Eclipse for Android development? It was ages ago and then Google came and suddenly announced the full-fledged Android Studio and BOOM; everyone shifted towards it. This sets a great example for people who want to learn kotlin.

Google announced Kotlin as the first level language for Android development along with java and c++ to reduce the dependency in these languages. But the most important part to be considered is that kotlin is not only as good as Java but also better than it, in most of the segments. It is relatively easy to understand than Java but also feature-rich. So, the chances of people using Kotlin primarily in near future is higher than ever.

But why include it in the syllabus? Although Java is still more popular, but the technology changes overnight and the graduation period is of three years. Just to wait and then let the industry change and henceforth the initialization of total makeover will be too late. This bold step is totally worth the risk. There is no harm in it. If the plan succeeds, then it will make the students ready for the future before any other institute in the country. But if the effort fails, there is no harm in it. Kotlin is a great object-oriented programming language on its own and is worth learning.

References:

<https://medium.com/@magnus.chatt/why-you-should-totally-switch-to-kotlin-c7bbde9e10d5>

<http://blog.teamtreehouse.com/learn-kotlin-java>

<https://www.brainvire.com/kotlin-android-development-has-become-talk-of-the-town>

17. Partition : A Big Blunder ?

By : Zubair Ul Haq

TyBmm (Advertising) 3348

At the time of partition not only India was divided geographically but there was a division in countries of brotherhood, communal harmony, culture and ethnicity. Our leaders at that time turned selfish, everybody, wanted to be the head of the free India. The power-hunger of our leaders resulted one demanding his free state and other was murdered in cold blood lately .There was a cold war between leaders, the individuals who fought for independence.

By the beginning of 1964 alarm bells had started to ring, with the growing expectation of freedom the conspiracy of the leaders to part the country was also becoming stronger day by day. Communal clashes became a routine and all were emerged by their leaders.

The concept of Pakistan was just a mere imagination of poet Alama Iqbal which the leaders at the time tried to bring into reality which was based on religion, not on geography or ethnicity. Thus Pakistan came into existence with East Bengal later becoming Bangladesh. Partition resulted in three major wars which were very destructive, rising of two nuclear powers adjacent to each other with no certainty of one another, it resulted in migration of people from Pakistan to India. Millions of refugees in India felt homeless. Had there not been any partition there would have not been any Kashmir issue and all those innocent lives had not been wasted. Had there not been any partition maybe there would have never been any communal clashes. At last humans love peace, if there had been no partition, Islamabad, Lahore, Karachi, Dhaka, would have felt like home, like any other city of India, this was not the freedom people used to dream of, we are more slaves than before, there is no actual freedom. This partition seems just a political concept. It was not just a political division it was a division in long time brotherhood, unity, values, ethnicity, culture, emotions, and most importantly of identity....

References:

Experiential write ups.

18. Souvenir: A Tale

Angela Khare.

SY BMM (6716).

I stood there right in the corner, without being acknowledged by anyone. It was my favourite place, my home. Years have passed by, but it still feels the same. The same vibe, the same liveliness. Batches passed just like the seasons. It's probably the busiest place I've ever witnessed



around. A place where nobody fails to visit. Where one can be oneself, where one would have no restrictions. One's most comfortable self, amidst the chaos where one finds peace. Where one can chill around shamelessly after being kicked out of the classroom. At the edge of time, one would rush around completing the assignments. Where one would crib about the lectures being so long. A place where one can spend most of one's time apart from the classroom, where one shares joy and laugh till the tummies hurt. Where we all age a

bit, remembering all the love and warm smiles we shared, to all the colourful memories made. I have seen the most comical incidents of the times, right from mini food accidents till water splashing right at your face. A place which loads the social platform with pictures. Growling in stomach that causes the bell to ring. A place that fulfils the thirst and hunger. Where there is a constant change in the arrangements. An old man who gives out the coupon to happiness. A place where one can smile till the cheekbones hurt. Maybe my home is your home too? Now you must've guessed me right?

Yes, I live in your epic cafe, your own canteen.

Your's sincere,

Water filter.

Reference:

Experiential write ups.

19. The Dark Side of web

Siddharth Menon,

It's 2018 and the world is connected now more than ever. We at **Learn2Create** want the internet to be a safer place where the river of knowledge flows freely. Currently, **more than 3 billion** people worldwide use the internet. Everything we see on the web is only the tip of the iceberg. To give you an estimate, through our search engines we can access only 0.03% of the information available online. What about the rest of it? That is where **The Dark Web** comes into play.

What is The Dark web?

The sites that traditional searches yield are part of what's known as the **Surface Web**, which is comprised of indexed pages that a search engine's web crawlers are programmed to retrieve. The Dark web consists of data that you won't locate with a simple Google search.

What is the dark web really? The Dark Web is a part of the world wide web that requires special software to access. The Dark web sites are effectively "hidden", in that they have not been indexed by a search engine and can only be accessed if you know the address of the site. Special markets also operate within the dark web called, "**darknet markets**", which mainly sell illegal products like drugs and firearms, paid for in cryptocurrency.

The dark web requires a specific software program (The Tor Browser) to do the trick, and it offers you a special layer of anonymity that the surface web and the deep web cannot.

Deep web VS Dark web:

There is a widespread misconception that Deep web is the same as the Dark web. Contrary to popular belief, the deep web and the dark web are actually two separate definitions. A majority of the public that's unacquainted with the dark web, tend to use these two concepts interchangeably. Here's an infographic by *Dark Web News* that explains the concept with clarity.

The contrast between the deep web and the dark web is often visually described by comparing it to an iceberg. Visualize an iceberg that is partly submerged.

The Surface Web:

Everything that is accessible to the average internet user is considered as the Surface web. This is seen as the part of the iceberg that is above water. Surface web includes Facebook, Twitter, Wikipedia and more.

The Deep Web:

Just below the surface of the water is the Deep Web. It's made up of of the same general host names as sites on the surface web, but along with the extension of those domains. The deep web is the majority of the internet as a whole.

What people don't realize is that there's a lot the invisible internet has to offer besides illegal activity. Harvard's internal communications system is an example.

The Dark Web:

The last part of the iceberg that is submerged deep underwater represents the Dark web. It is a subset of the deep web that's only accessible through software that guards anonymity. The Dark web contains URLs that end in .onion rather than .com, .gov or .edu.

it offers you a special layer of anonymity that the surface web and the deep web cannot. Using TOR itself isn't illegal, nor is going on many deep web websites. The only illegal activity is what would be illegal out in the real world.

Illegal guns, pornography, terrorism and drug markets rely on the dark web. These are run by people who want to stay anonymous.

Some illegal markets on the Dark side are:

- Guns and ammunition

- Hackers and malicious services
- Assassins and hitmen

Accessing the Dark web:

The simplest way to start using Tor is to download the Tor browser bundle (assuming you're on Windows) You can find installation instructions for Tor on other operating systems on the same page.

Once it's installed and launched, the browser should connect automatically to the Tor network. Be warned though, some sites may contain links to illegal services and content. You are responsible for your actions as this information is purely educational.

Besides the shady people, here are a few more users of the deep web:

- Journalists and Whistleblowers
- Free speech and anti-censorship advocates
- Citizens in oppressed regimes who need access to news and information

At the end of the day, it comes down to who you are as a person. Power in the wrong hands can cause trouble. But the same power in the hands of righteous men, can bring change and improve the lives of others. That's it from us at Learn2Create and always remember: Stay safe, stay curious!

Reference:

Experiential write ups.

20. The Era of Cryptocurrency

Ajinkya Lonkar

TYCS(A)

Today we begin a short excursion on an article on the topic of making cryptocurrency as a modern monetary instrument. Let's analyze what and in what form we – the human race – perceived as money, and for what we used them. And also we'll look at how the emergence of new types of financial instruments affects the existing economic system.



What is Cryptocurrency?

Cryptocurrency is a digital (virtual) currency, the unit of which is a coin. The coin is protected from forgery, because it is an encrypted information that can not be copied (using cryptography and defined the prefix “crypto” in the name). And how does the electronic cryptocurrency differ from ordinary money in electronic form? In order for ordinary money to appear on the account in electronic form, first they must be deposited into the account in the physical incarnation, for example, through a bank or payment terminal. That is, for ordinary currency, the electronic form is only one of the forms of representation.

Cryptocurrency is emitted directly on the network and is not connected in any way with any ordinary currency or with any official currency system. Thus, the answer to the question of “What is Cryptocurrency?” in simple words will sound like “this is electronic money”.

Anyone who has computer equipment of the required capacity and special software, can be engaged in its production in the network (the so-called mining). In the process of mining, the computing power of the equipment is solved by algorithms, the complexity of which is gradually growing and deciding to extract a coin – a set of encrypted information. The proof of the coin in the network is a blockchain – a kind of account. This currency is stored decentrally, distributed by cryptocurrency wallet users.

From its properties and features, there are advantages and disadvantages in comparison with conventional traditional currencies:

Advantages of Cryptocurrency

- Open source of algorithm allows everyone to mine it.
- Anonymity of transactions – information about the owner of the cryptocurrency wallet is absent (there is only a wallet number).
- Decentralized nature, absence of a single digital bank, lack of control over transactions and payments.
- Not subject to inflation (a limited number of coins are issued).

- Security: it can not be copied.

Disadvantages of Cryptocurrency

- Due to the lack of regulatory mechanisms, there is no guarantee of the safety of electronic cryptocurrency wallets.
- High volatility due to the specifics of use.
- On the part of national regulators, there may be negative actions in its relation.
- The loss of the password to the electronic cryptocurrency wallet or its inefficiency leads to the irretrievable loss of all the cryptocurrencies in it.
- With the increase in the level of complexity, it becomes unprofitable to mine a cryptocurrency on the equipment of individual users

Today, the most popular cryptocurrency is Bitcoin. In 2007-2009, a certain group of individuals developed a unique algorithm of bitcoin and began its emission and production online. At first, bitcoin was little known and was the lot of techies and IT specialists. The number of miners due to this was limited, mining was slow, no one managed the process of introducing bitcoin (accordingly, there were no strategies and concepts), there was no clarity at all why bitcoin is needed and what to do with it. The cost of mining was also low, from \$0.1 per coin. In 2010, the fate of bitcoin was influenced by certain events, the consequences of which have developed for it so successfully.

The breakthrough was the provision of one of the exchanges the possibility of exchanging bitcoin for real money, albeit at a small exchange rate then. At the same time, some portals of clandestine trade drew attention to bitcoin as the ideal means of anonymous transactions. All this caused a rapid increase in interest, bitcoin gained fame, the cost began to grow very rapidly, and traders led bitcoin to the global level of fame. Then there was the rise of bitcoin to \$1,100 for a coin in 2013, a fall to the level of \$200-250 per 1 BTC in 2015, and again the rapid rise in 2016-2017 to the modern (as of November 2017) level of more than \$7000 for one bitcoin.

Today, bitcoin is the most popular and famous cryptocurrency, which also has the largest capitalization of \$118.664.313.380 (November 3, 2017). Today, bitcoin can be exchanged in

some ATMs for ordinary currencies, some outlets and websites accept bitcoin as payment for goods and services, bitcoin has long lost its initial dependence on the institutions of clandestine trade, and now bitcoin is used both in financial markets and in the real industries.

Another popular cryptocurrency is Ethereum, ETH, although it is not as widely represented as bitcoin. Capitalization of ETH is \$27.446.281.734 (November 3, 2017). Modern cryptocurrencies occupy their own small niche in the market. This is connected, among other things, with the chain “mining-possession-storage-use”: The miners use their servers or connect to server pools, mine a virtual currency in order to earn ordinary currency by speculation. Mined bitcoins – what to do with them next? The natural question is: if you have a cryptocurrency, what can you buy with it? You can store it in your cryptocurrency wallets, you can use it – sell it to those who do not have mining capabilities, you can spend on those services that provide for payment in bitcoin. And what kind of shops accept bitcoin – they are, oddly enough, online shops selling the same mining equipment, or gaming portals that provide for quick earnings and quick withdrawal of funds. There are, of course, the usual shops and online services that accept bitcoin, but this is not very systematic. Thus, today the cryptocurrency market is unbalanced, largely dependent on speculative sentiments of participants, which leads to large volatility.

Today, anyone can obtain cryptocurrency (and its varieties), you can even create your own. The success of the cryptocurrency today is due to the breadth of the audience, this currency should be known and popular among people.

References:

<https://blockgeeks.com/guides/what-is-cryptocurrency/>

www.theguardian.com/technology/cryptocurrencies

www.theguardian.com/technology/2018/mar/20/child-abuse-imagery-bitcoin-blockchain-illegal-content

21. A STUDY ON COMMUNICATION SKILLS AMONG STUDENTS IN SELECTED COLLEGES IN NAVI MUMBAI.

Shweta Shelar TYFM
Shubhecha Kumari Gupta –TYFM
Aishwarya Bawlekar – TYFM

Introduction

Communication is a skill that you can learn. It's like riding a bicycle or typing. If you're willing to work at it, you can rapidly improve the quality of every part of your life. The ability to convey or share ideas and feelings effectively is called communication.

The human, who is a social being, has been in interaction with the environment for centuries. He tried to satisfy his need to convey his emotions, thoughts, dreams and hopes through talking and writing and wanted them to be understood by reading and listening. And depending on the need for this co-sharing, the fact which is called communication emerged

“Wise men speak because they have something to say; Fools because they have to something.”

Limitation of Study:

- The study is limited to the selected colleges of Navi Mumbai .
- The study is limited to undergraduate students only .
- The data collected is limited to 150 responded.

Hypothesis of Study:

HO:Communication skill raises the morale of students.

H1: Communication skill does not raise the morale of students.

HO:Communication Skills are important part of general education.

H1: Communication Skills are not important as part of general education.

Collection and analysis of data (in process)

Section -1

A)Name:.....

B)College:.....

C)Gender: a) male b)female

D)Place of residence:.....

Q1) Do you think your communication skill is good?

a)Yes

b)No

Q2)Which language you can speak fluently?

a)Hindi

b)Marathi

c)English

Q3) How good are at you in English speaking?

a)Excellent

b)Good

c)Average

Below average

Q4) where do you think your communication skill has enhance?

a)School

b)college

Q5)What do you think communication skills is important or not?

a)Yes

b)No

Q6)Do you like communication skills as a subject in your college or as course?

a)yes

b) No

Q7) Do you think communication skills as important as other skills ?

a)yes

b)No

Q8)where do you see communication skills are useful?

a)Events & competition

b)Interviews

c)With friends

d) All of these

Q9) Do you feel youngsters lack in communication skills?

a)yes

b)No

Q10)Do you feel communication skills have to face competition in terms of other courses/skills?

a)yes

b)No

Q11) Do you feel there is scope of communication skills is India?

a)yes

b)No

Q12)Would you suggest others to improve their communication skills?

a)Yes

b)No

13)Do you think because of lacking in communication skills folks don't participate or face competition?

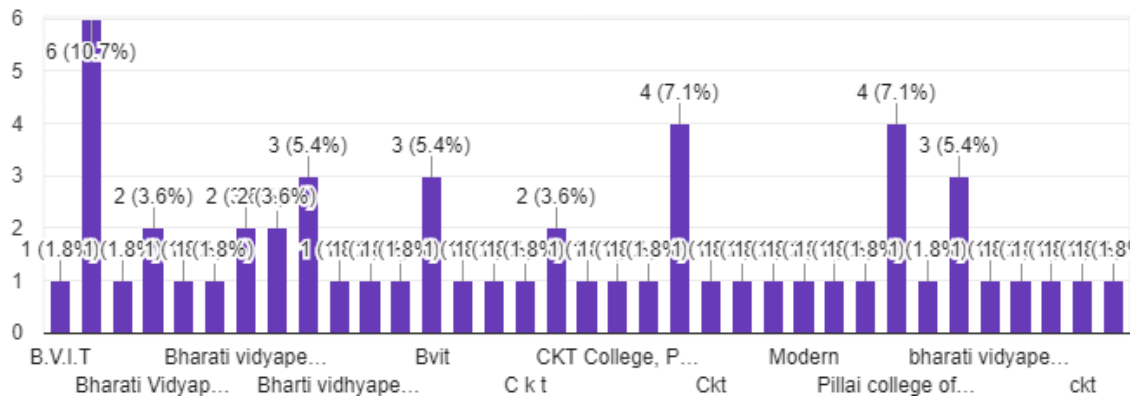
a) Yes

b)No

Collection and analysis of data

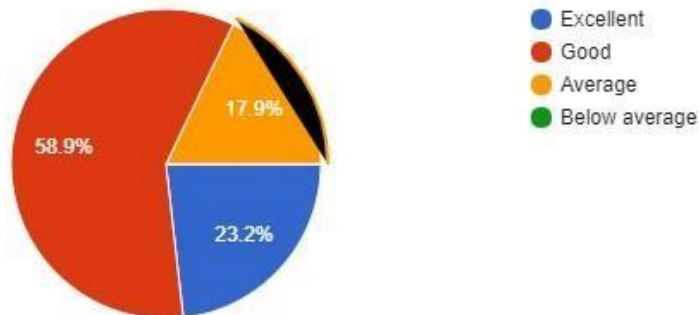
college

56 responses



Q3) How good are at you in English speaking?

56 responses



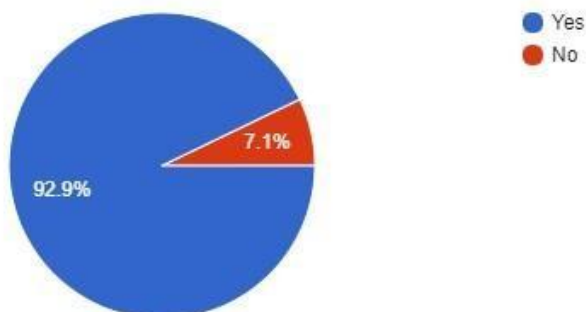
Q 4) What do you think communication skills is important or not?

56 responses



Q 5) Do you like communication skills as a subject in your college or as course?

56 responses



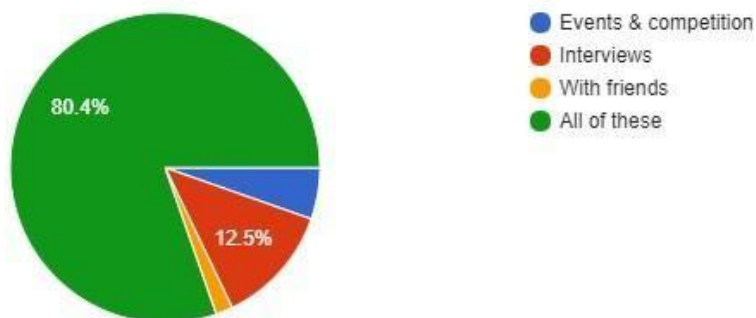
Q 6) Do you think communication skills as important as other skills ?

56 responses



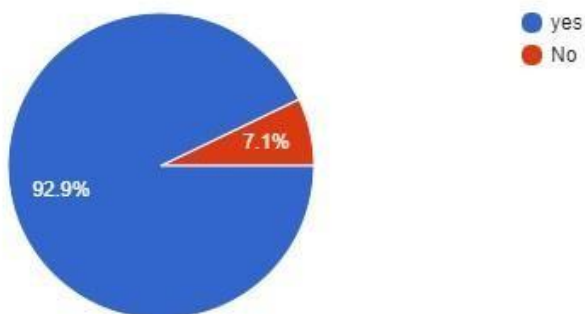
Q 7) where do you see communication skills are useful?

56 responses



Q 8) Do you feel youngsters lack in communication skills?

56 responses



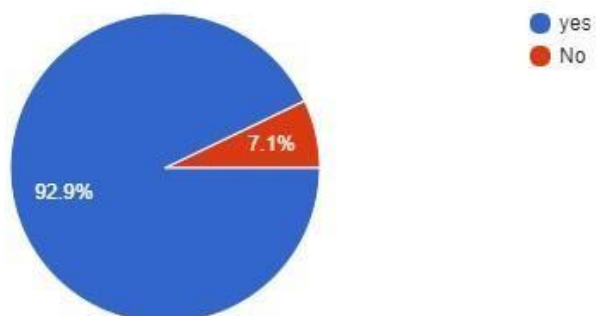
Q 9) Do you feel communication skills have to face competition in terms of other courses/skills?

56 responses



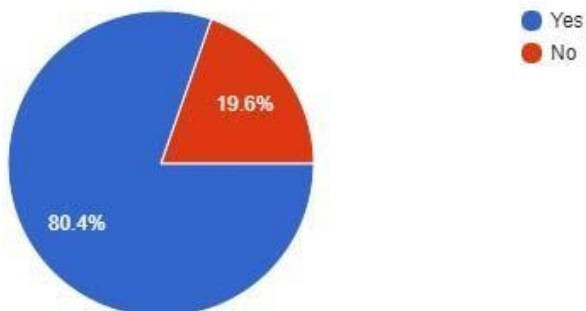
Q 10) Do you feel there is scope of communication skills in India?

56 responses



Q 11) Would you suggest others to improve their communication skills?

56 responses



Q 12) Do you think because of lacking in communication skills students don't participate or face competition?

56 responses



Interpretation of data

- The respondents tend to take interest in communication skills as it is important part of day to day life. The communication skill tells a person what , when, how and where to communicate especially in official occasions.
- The survey shows that the level of communication skills among undergraduates students is 58.9% good and 23.2% is excellent and 98.2% felt it is an important subject . As communication skills plays a vital role in business world and other sectors. As per the survey 94.6% respondents felt communication skills are important.

Conclusion

- According to the survey, we concluded that most of the people prefer communication skills is as important as other skills .
- 98.2% respondents felt communication skills are important and 92.9% student like communication skills as their course or subject in their respective college.

”Communication - the human connection - is the key to personal and career success.”

22. Extraction and detection of zeatin from *Moringa oleifera* leaves and to check its crude extract's effect on plant growth

Project by:-

Jyoti Raju Kadam*, Tanmay D. Joshi, Raksheeta V. Shetty, Anushree L. Shinde, and Tanushri B.Rakshaskar

Department of Biotechnology,
Mahatma Education Society's, Pillai College of Arts, Commerce & Science.
New Panvel - 401206

Abstract

In this study, plant growth hormone zeatin (cytokinin) in *Moringa oleifera* leaves was extracted and its detection was done. 80% methanolic extract was prepared from leaves of *Moringa oleifera* (drumstick plant) for the extraction and detection of zeatin (cytokinin). The methanolic extract was further partitioned into Zeatin (cytokinin) fraction using methyl acetate and water saturated n-butanol. The presence of plant growth hormone zeatin in the extracted sample from *Moringa oleifera* leaves was identified and detected by calculating the Retardation factor (Rf) value using the Thin layer chromatography (TLC) technique. The effect of crude extract of *Moringa oleifera* leaves was checked on *Brassica nigra* (black mustard) growth.

.

Key words

Zeatin, *Moringa oleifera*, methanolic extract, Retardation factor, Thin Layer Chromatography (TLC), *Brassica nigra*.

Objective

To introduce alternative method for satisfying the need of increasing demand for environment-friendly agricultural methods.

Introduction

Plant growth hormones are chemicals that regulate plant growth. These are produced within the plant and occur in extremely low concentrations. Hormones regulate cellular processes in targeted cells locally and moved to other locations in other functional parts of plant. Hormones also determine the formation of flower, stems, and leaves, shedding of leaves, development and ripening of fruit. Plant hormones shape the plant affecting seed growth, time of flowering, the sex of flowers, senescence of leaves and fruits. Cytokinins are a class of plant growth hormones that promotes cell division and are involved majorly in development of shoot system. They are involved primarily in cell growth and differentiation but also affect apical dominance axillary bud growth and leaf senescence. *Moringa oleifera* leaves contain zeatin (a type of cytokinin) and therefore its leaves can be used to promote the growth of plant.

The other uses of zeatin are:-

1. It promotes growth of apical and lateral buds
2. It causes auxiliary stems to grow and flower.
3. It Retards yellowing of vegetables
4. Also Zeatin has several anti-aging effects on human skin.

Materials and methods

To isolate and identify plant growth hormone zeatin from *Moringa oleifera* leaves Materials and Methods used are as follows.

Eighty percent (80%) methanol extraction

In order to obtain a high concentration of any potential plant growth hormone (cytokinin present in *Moringa oleifera*) the procedure described by Badr et al. (1971) and modified by Taylor et al. (2004) was adopted. 7.5g of *Moringa oleifera* leaves powder was weighed and put into a screw cap bottle and 75ml of 80% methanol was added to it. This 75ml of 80% methanolic slurry of *Moringa oleifera* leaf powder was placed on a mechanical shaker for approximately 24hrs. The slurry was allowed to stand and partitioned into the liquid and solid phases. The supernatant was collected and centrifuged for 6min at 4000rpm, filtered. Then the extract was reduced to 8ml by evaporation.

Solvent partitioning

The pH of extract was adjusted to 2.5 by adding few drops of 1N sulphuric acid (H₂SO₄). The acidified extract 8ml was transferred into separatory funnel. 63ml of methyl acetate was added, shaken and allowed to partition into the organic and aqueous phases. The organic phase (methyl acetate) was separated from the aqueous phase into a clean conical flask. The pH of remaining aqueous phase was adjusted to 7 by adding a few drops of 1N sodium hydroxide (NaOH). This was then transferred into separatory funnel and the same volume of water saturated n-butanol 7ml was added. The funnel was shaken gently and the solution was allowed to separate into less dense water saturated n-butanol phase (organic) and denser aqueous phase before the two phases were separated. The saturated n-butanol organic phase (which presumed to contain the zeatin) was stored in refrigerator at 4°C for further analysis.

Identification of plant growth hormone (Zeatin)

Identification of Plant growth hormone zeatin was done using thin layer chromatography (TLC) by using ammonia vapours and UV transilluminator.

Thin layer chromatography of extract

To detect the presence of Zeatin in the n-butanol phase the spots of the standard zeatin and test sample were developed on TLC plate (of dimension 20x8 cm with 0.25mm thickness of silica gel) by developing the plates in solvent system n-butanol : methyl acetate : water (90:10:10 v/v/v) to about 13cm in vertical direction. The plates were then exposed to ammonia vapours in closed chamber and observed under UV transilluminator for yellow spots.

Effect of the crude extract of *Moringa oleifera* leaves on *Brassica nigra* (black mustard) plant

The effect of freshly prepared crude extract of *Moringa oleifera* leaves was checked on the growth of *Brassica nigra* plant. 100 grams of soil was added in four small pots with different concentration of crude moringa leaves extract in each pot. Seeds of the plant were sowed in these pots. The plants were grown providing proper sunlight and water and their roots and shoots were measured respectively

Dilution Table

<u>Pots with 100 g of soil</u>	<u>Amount of crude extract (g)</u>
1) Control	0
2) Undiluted	5
3) 1:2	2.5
4) 1:4	1.25

Data of Measured stem and roots of grown plants

Dilution		1	2	3	4	5
Undiluted	Stem	3.8 cm	2.9 cm	3.9 cm	2.7 cm	2.8 cm
	Roots	6.0 cm	6.5 cm	6.7 cm	8.0 cm	8.0 cm
1:2	Stem	4.0 cm	4.0 cm	3.9 cm	4.0 cm	4.5 cm
	Roots	2.7 cm	2.8 cm	2.9 cm	3.0 cm	3.3 cm
1:4	Stem	3.5 cm	4.0 cm	4.5 cm	4.5 cm	4.8 cm
	Roots	3.5 cm	4.0 cm	4.3 cm	4.0 cm	4.8 cm
Control	Stem	2.5cm	2.5 cm	3.0 cm	2.8 cm	2.8 cm
	Roots	6.0 cm	6.5 cm	6.8 cm	7.5 cm	9.4 cm

Observation:-

Effect of Crude *Moringa Oleifera* leaves extract on *Brassica nigra* (Black mustard) Plant



Effect of Crude *Moringa oleifera* leaves extract on shoot system of *Brassica nigra* (Black mustard) plant



Discussion

In the Project done, plant growth hormone zeatin (cytokinin) was extracted and further detected using TLC (Thin layer Chromatography) technique. Crude extract of *Moringa oleifera* when added to soil at different dilutions significantly increased the growth of plant. The growth of black mustard plant was better in all the pots with crude *Moringa oleifera* leaves extract as compared to control. The growth of plant was comparatively better at dilution 1:2 and from this it can be said that, increase in shoot system of black mustard plant was due to the hormone zeatin present in *Moringa oleifera* leaves and crude preparation of *Moringa oleifera* leaves can be used to increase the shoot system of plants.

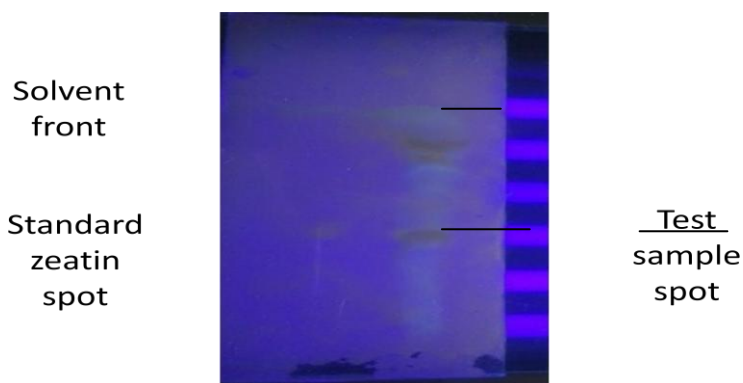
Acknowledgement

We would like to express our gratitude towards our coordinator Mrs.Bindu Rajaguru madam and Department of Biotechnology pillai college of arts, commerce and science for granting us permission to do project of our interest in college's laboratory, which helped us in understanding Research and to learn many new concepts related to our field of interest and gain knowledge related to plants.We would also like to extend our gratitude to Mrs.Jyoti Kadam madam for guiding us throughout our research work and would like to thank the Supporting Staff who helped us while doing this project.

Result

Detection of zeatin

By liquid-liquid extraction of *Moringa oleifera* leaves, the organic phase presumed to contain cytokinin (zeatin) was obtained. Detection of zeatin was done by TLC method and light yellow coloured spots were observed after separation using suitable solvent system, ammonia vapours and UV transilluminator with Rf value 0.38 identical to the Rf value of standard zeatin.



TLC of organic phase (with zeatin)
observed under UV -transilluminator at
254nm.

Conclusion

From the result obtained it can be concluded that the *Moringa oleifera* leaves contain plant growth hormone Zeatin that along with other micro and macro nutrients helps in promoting the growth of plants by promoting the shoot system growth of the plant. The crude making of *Moringa oleifera* leaves in water can be used to get good yield and to improve the shoot system of plants as it contains zeatin.

References

1. K.Miezah.et.al (year .2008, volume 4, page no. 30-40), International journal of virology, Isolation and Identification of some plant growth promoting substances in compost and co-compost.
2. Mvumi culver et.al (September.2012, volume 2(5)), Greener Journal of Agricultural sciences, Effect of moringa extract on Growth and yield of Tomato.
3. Kunihiko syono and John G. Torrey (April 1976), Identification of Cytokinins of Root Nodules of the Garden Pea, *Pisum Sativum* L.
4. Pooja P. Patel.et.al (Year.2012), European journal of Experimental Biology, Isolation, Purification and Estimation of Zeatin from *Corynebacterium aurimucosum*
5. Wen-shaw Chen (December 15, 1981), Department of Horticulture, National Chia-yi Institue of Agriculture, Chia-yi, Taiwan, Republic of China, Cytokinins of the Developing Mango Fruit.
6. Kodwo, Meizah (December 2007), Extraction and Identification of Plant Growth Hormones from recycled waste materials and their effect on growth and yield of Maize.
7. Petr Tarkowski.et.al (year.2009, vol.28, No.3, Trends in analytical Chemistry), Analytical methods for Cytokinins.
8. Ljubomira Atanassova.et.al (May 14, 1996), Acad. M. Popav institute of plant physiology, Acad. G. Bonchev Str., Bl. 21. Sofia. Cytokinins and Growth Responses of Maize and Plants to salt stress.
9. Clement. U. Okeke.et.al, 1) Department of Botany, Nnamdi Azikiwe University, Awka, Anambra state, Nigeria. 2) Department of applied biology, Ebonyl state University, Abakaliki, Ebonyi state, Nigeria. Effect of the crude water extract of the leaves of *Moringa oleifera* on the germination and growth of *Amaranthus spinosus* and *Amarantha hybridus*.
10. Fimbres, Anna Maria (July 5, 2017), The University of Arizona, Isolation and Identification of Cytokinin from *Medicago satival*. (AlfAlfa, Zeatin, Hplc).

23.IMPACT OF GST ON KIRANA MERCHANTS IN PANVEL REGION

Amit Ghosh &

Vikas Prajapati

TY BCOM

Abstract

Goods and Services Tax (GST) is an indirect tax which was introduced in India on 1 July 2017 and was applicable throughout India which replaced multiple cascading taxes levied by the central and state governments. It was introduced as the Constitution (One Hundred and First Amendment) Act 2017, following the passage of Constitution 122nd Amendment Act Bill.

This study attempted to find out awareness and impact level of GST on kirana merchant .Due to geographical and cost constraints, the study was restricted to 45 respondents in Panvel region. The researcher preferred questionnaire method and employed stratified sampling method to collect data. Hypothesis is tested by using Chi- square method. Analysis and interpretation of data was done by using percentage of the responses. The conclusion of the study is that GST has a negative impact on the kirana merchants.

Keywords

GST, Indirect tax, 122nd Amendment Act Bill, Central Government, State Government, Kirana Merchants

INTRODUCTION

The major source of revenue for any nation is the Tax, so for economic development of the nation it is compulsory to have good taxation system. India started its journey towards tax system in the year 1980. GST would be a major move towards Indian economy as since independence India has faced some of the issues because of complex indirect tax system, this

complexity is assumed to be resolved by present GST structure replacing all state and central indirect taxes in to one simple unique tax.

GST known as Goods and Services Tax applicable to both goods and services, will be levied at all the stages of supply. Tax will be charged on all taxable goods and services in India. There are two components included in GST: CGST and SGST charged by Central and State government respectively. In the interstate transaction central government will collect GST and distribute it to the imported states.

Scope of the study

The area of this research was Panvel. It is a city in Raigad district of Maharashtra, in Konkan Division. The city is highly populated due to its closeness to Mumbai. Geographically, Panvel consists of two divisions namely, Old Panvel & New Panvel (recent developments in Panvel) & demographically, it has 180,020 People residing of which male and female are 92,484 and 87,536 respectively.

Objective of the Study

The Research was carried out with the following objectives:-

1. To study the level of awareness of GST on kirana merchants.
2. To analyze the impact of GST on kirana merchants.

Hypothesis of the study

Hypothesis is an assumption or proposition whose tenability is to be tested. The researcher in this present research work has framed the following hypothesis:-

H_0 : GST has a negative impact on kirana merchants.

H_1 : GST has a positive impact on kirana merchants.

Research Methodology

- The research was conducted by using primary data. (Questionnaire method)
- The study included 45 respondents
- Stratified Random Sampling Technique was used.

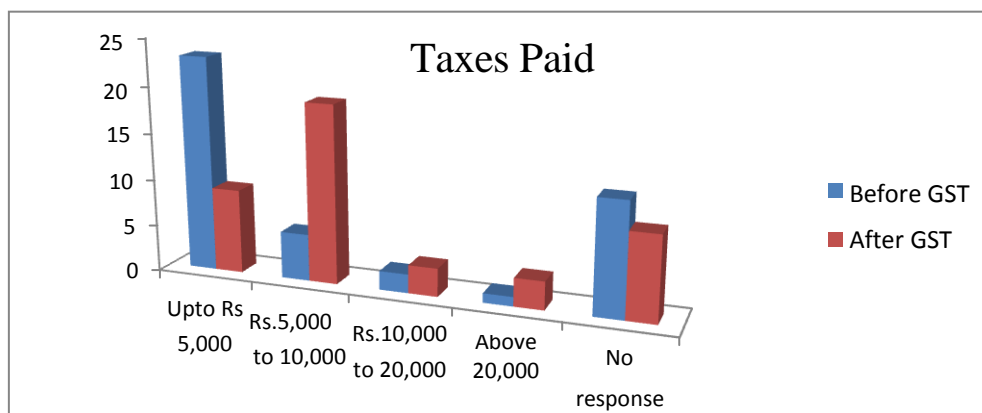
Data Analysis And Interpretation

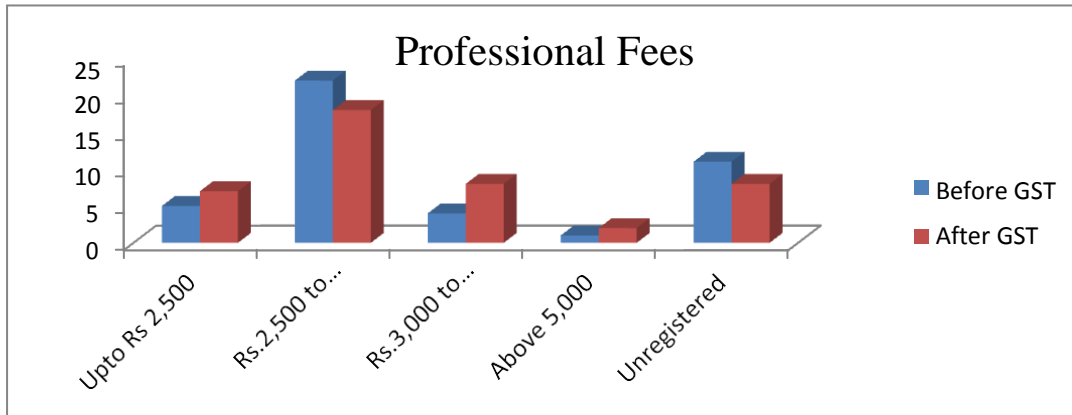
The data collected with the help of research methodology was analyzed by using various tools and Techniques of statistical method. Further, it was manually organized and entered into a database for analyzing different variables and the respondents were divided into 4 Income Groups (Upto Rs. 50,000 , Rs. 50,000 to 1,00,000 , Rs.1,00,000 to 2,00,000 & Above Rs.2,00,000) to get a better analysis .

Findings of Study

After a proper interaction with the respondents regarding their awareness towards this Act and following results were obtained:-

- Out of the total respondents 76% are registered under GST
- Those aware about the Act, most of them came to know about it largely through newspapers, displays at offices and word-of-mouth.
- 27 % respondents express their support to GST
- Following are some of the graphical representation of Analysis





Presentation of Results

After proper analysis of data, it was classified and tabulated. Tables, graphs, bar charts and pie-charts are used as methods of data processing in the present research.

Presentation of Results

<u>Observed value</u>			
	Positive impact	Negative impact	Total
GST	16	9	25
NO GST (VAT)	7	13	20
Total	23	22	45
<u>Expected value</u>			

	Positive impact	Negative impact	Total	
GST	13	12	25	
NO GST (VAT)	10	10	20	
Total	23	22	45	
Chi - square				
O	E	(O-E)	(O-E) ²	(O-E) ² /E
16	13	3	9	0.69
9	12	-3	9	0.75
7	10	-3	9	0.90
13	10	3	9	0.90
Chi - square calculated value				3.24

Chi square table value at 5% level of significance is 3.841. Since table value of Chi – square at 5% level of significance is less than Chi-square calculated value null hypothesis is accepted.

Limitations of Study

1. It is restricted only up to Panvel. Similar study in other cities, study on other aspects in different cities, study on different approach in other cities can be topics for other researchers.
2. Further, Study is restricted only on the Income basis . Other basics such as gender , age, education, employment can be the topics for other researchers.

Conclusion

In this study the following conclusion are drawn from the analysis of the collected data:The conclusion of the study is that GST has a negative impact on the kirana merchants due to lack of in-depth knowledge of GST .

References

- 1 . Sodhani & Deepshikha Sodhani, Goods & Services Tax – A Ready Reckoner, Snow White Publications Pvt. Ltd Books In India, April2017
2. Nitya Tax Associates, Basics of GST, Taxmann, August2016
3. C R Kothari, (1985) Research Methodologies – 3 rd Edition, Pg. No. 179-206

24.ISLAMIC BANKING IN INDIA & IT'S FUTURE PROSPECTS

PRATIKSHA SINGH

TY.BFM

INTRODUCTION

- Islamic Banking, also known as interest free banking, is a banking system, which promotes profit sharing, but prohibits the charging and paying of interest.

The potential for Islamic Banking in India lies in these two points namely;

1. India could be a significant market for Islamic Banking Institutions due to its large Muslim population; and
 2. India could attract the Middle East's high investible surplus.
- Though it has been misunderstood in India as a religious charitable venture, it actually is a viable alternative to tackle the macro-economic problems we are presently confronted with.

OBJECTIVES & LIMITATION OF THE STUDY

❖ OBJECTIVES

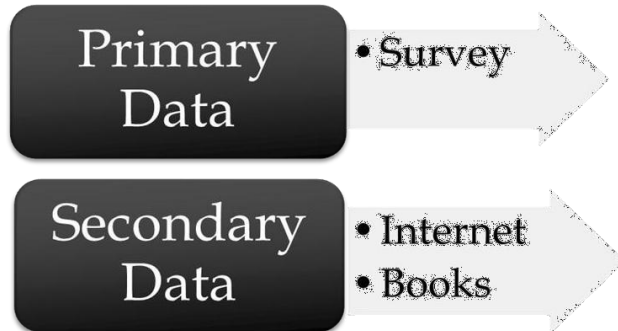
1. To study the concept of IB in the Indian banking sector
2. To study the importance of IB in strengthening the Indian banking sector
3. To analyze the level of awareness of IB among the customers of banks in India.

❖ LIMITATION

1. The scope of the study is limited to Islamic Banking
2. The study is limited up to 150 respondents

3. The respondents are taken from Navi Mumbai region only

RESEARCH METHODOLOGY



Primary Data: In primary data, structured questionnaire was made and 150 respondents who are customers of various banks were asked to fill the questionnaire.

Secondary Data: Secondary data was collected from various resources like the internet and books.

HYPOTHESIS OF THE STUDY

The following major hypothesis were framed based on the objectives.

H₀: There is significant difference with regard to the general perception and awareness of Islamic banking.

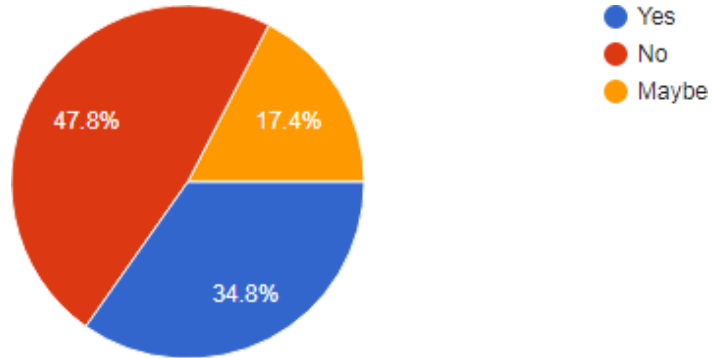
H₁: There is no significant difference with regard to the general perception and awareness of Islamic banking.

H₀: There is significant difference between Islamic Banking methods and Traditional Banking methods

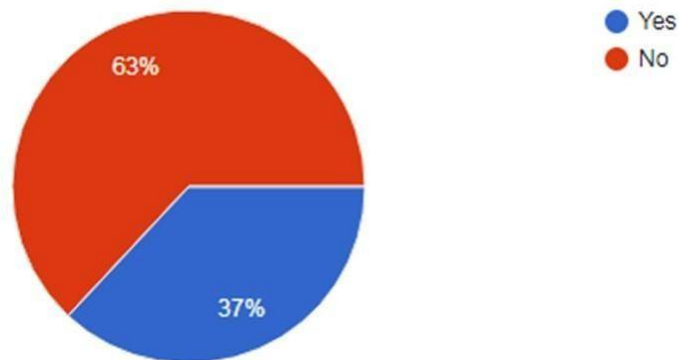
H₁: There is no significant difference between Islamic Banking methods and Traditional Banking methods.

COLLECTION ANALYSIS

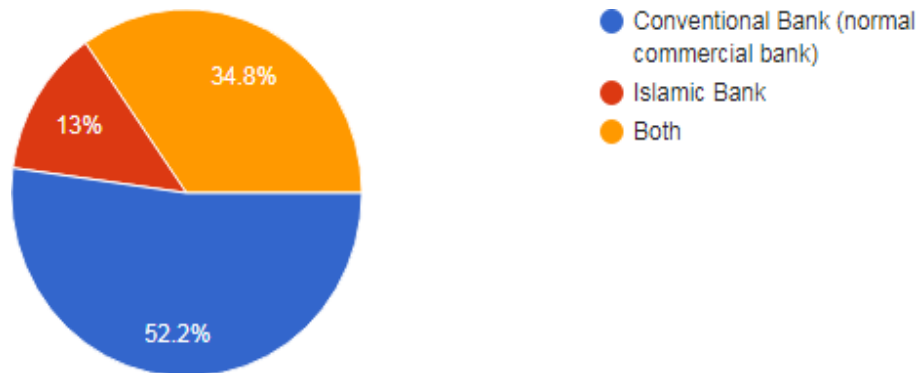
Question title: Are you aware about Islamic Banking in India?



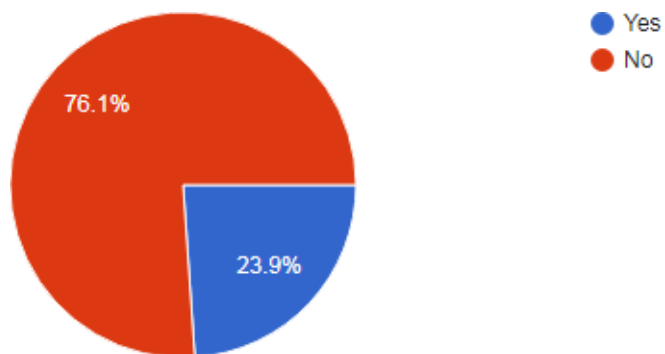
Question title: Are you aware about the differences between conventional banking system and Islamic banking system?



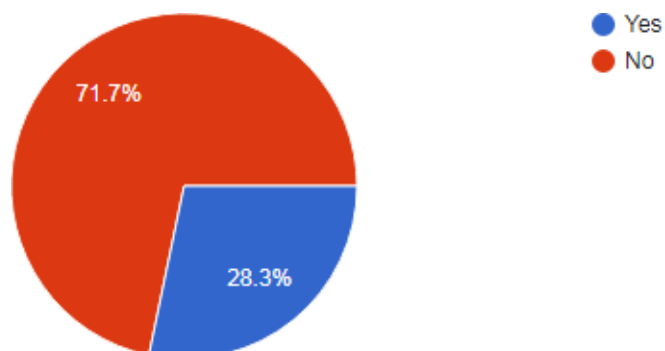
Question title: Which type of Bank would you prefer?



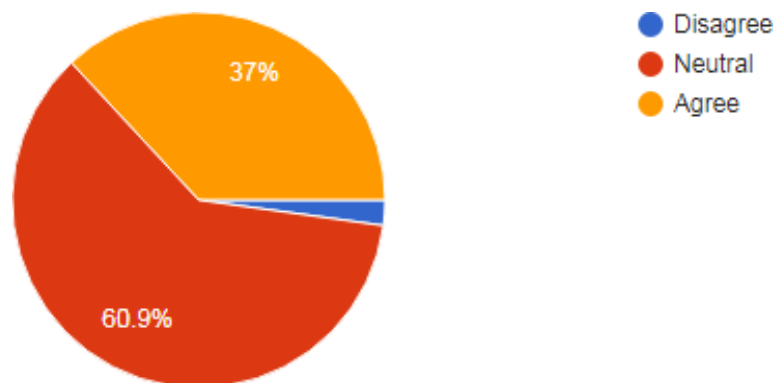
Question title: Are the features and benefits of Islamic banking products known to you?



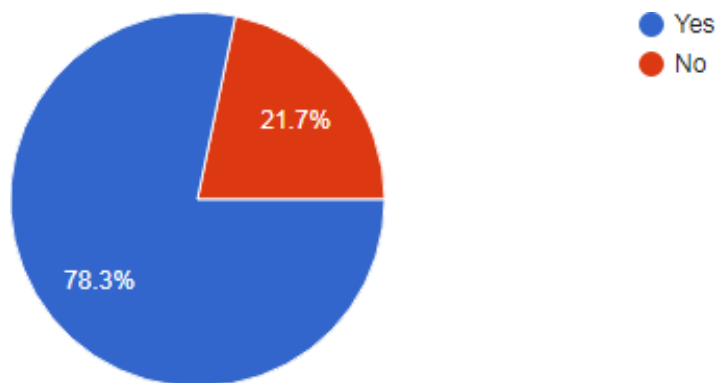
Question title: Is the information about certain Islamic banking products on the leaflet/ brochures/ website can be easily understood and sufficient?



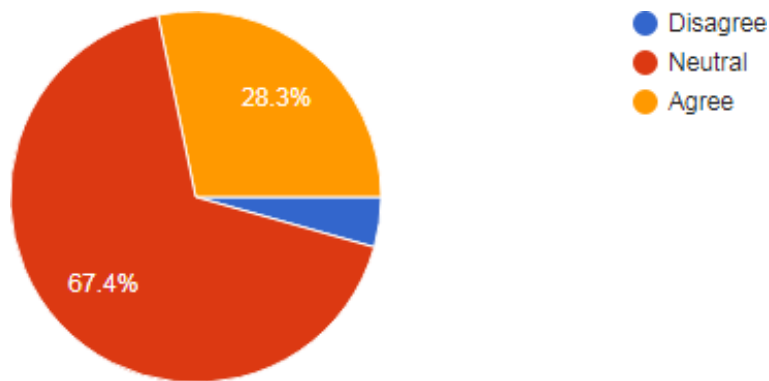
Question title: Should conventional banks adopt some features of Islamic Banking?



Question title: In order to be known, should Islamic banking be promoted more effectively?



Question title: Will Islamic Banking system be a lucrative approach towards Indian economy?



INTERPRETATION OF DATA

Following things can be interpreted from the data:

- There is minimal or no awareness about Islamic Banking.
- Major numbers of people are unaware about the features & differences between Islamic Banking and Conventional banking system.
- Almost half of the numbers prefer conventional Banks and the other half demand Islamic Bank & both Islamic and conventional banks.
- A greater part of respondents think Islamic Bank should be promoted effectively to be known.
- A very few disagree for Islamic banking to be a better approach for Indian economy while others agree strongly aligned with those who are neutral.

CONCLUSION

- One of the main selling points of Islamic banking, at least in theory, is that, unlike conventional banking, it is concerned about the viability of the project and the profitability of the operation but not the size of the collateral.
- The Islamic banking system induces savings and capital formation and lead to optimum allocation of resources. Islamic banks operating on profit and loss sharing basis are definitely in a stronger position to absorb the shocks to their assets position (bank's financing).
- Empirically, it is not difficult for specialists in economics and finance to find Islamic banking in not only feasible and acceptable, but also efficient and significantly effective.

- Islamic banks however face a challenge of developing innovative services and products for mobilizing deposits and utilizing them effectively and efficiently for financing under profit and loss sharing system.

SUGGESTIONS AND RECCOMENDATIONS

- Islamic banking needs to introduce corporate governance with transparent accounting standards. It needs to perform detailed evaluation before embarking Profit Loss Sharing Scheme, which demand a pool of highly trained professionals.
- If Islamic banking is introduced, the inadequate labour capital ratio, for informal sector workers associated with agriculture and manufacturing industries could be resolved through equity finance, which might be a revolution in our agriculture and unorganized sector.
- Islamic banking should not be a religion based banking business, but could be profitably used to resolve our issues pertaining to economy.
- Such a system will offer an effective banking system where Muslims in India may invest in pursuant to Islamic principles and the rest may have an alternative to interest bearing conventional banking.

25. ISOLATION OF PHB PRODUCING BACTERIA FROM SOIL.

Ms Amin Kriti, Ms Nadar Kanimalar, Ms Prema Thangavel, Mrs Meenakshi Johri

S.Y. Biotechnology

Abstract

Plastics are the synthetic polymers made from non-renewable sources like petrochemicals. Plastic waste production is the main reason for many environmental pollution such as air pollution, water pollution, soil pollution as they are non degradable in nature. An alternative for this is a completely biodegradable plastic, such as Polyhydroxyalkanoates (PHA). Polyhydroxybutyrates are biodegradable polyesters synthesized by many bacteria. PHB is highly produced from microorganisms under optimum conditions such as physical conditions (pH, temperature, incubation times), nutritional conditions (carbon, nitrogen sources and C/N ratio and biochemical conditions). Due to their biological origin an advantage of PHB is that, they are degraded naturally and completely to carbon dioxide and water under natural environment by the enzymatic activities of microbes. The present study reports the isolation and screening of soil bacteria and subsequent PHB production under normal conditions and study of it's morphological characteristics.

Key words- Polyhydroxybutyrates , biodegradable, polyesters

Introduction

Synthetic polymers-designated as plastics- are applied in a wide range of packaging film, , household, agricultural, marine and medical applications surgical pins and sutures and bone replacements. But it is difficult to degrade these polymers in the natural environment. So the example for biodegradable polymer materials is Polyhydroxyalkanoates (PHAs). The main member of the PHA family is Polyhydroxybutyrate (PHB). Many references show that number of microorganisms like *Alcaligenes eutrophus*, *Azotobacter beijerinckia*, *Pseudomonas Oleovorans*, *Rhizobium sp.* etc., produce PHAs as reserve food material. The study focused on the producing of poly-beta-hydroxybutyrate (PHB) granules by strains isolated. Screening and isolation techniques were done for the bacteria by using Sudan Black B technique. It was tested

by using Nutrient Agar Plate. It was noticed that maximum density of PHB granules was recorded from the P2 soil strains.

Materials and Methods

1. Collection of soil sample:- Clay soil sample from Pillai garden was collected in a clean bag packed properly, labelled and stored for further study.
2. Bacterial isolation from collected soil samples:- The collected soil was mixed with saline and streaked on the nutrient agar plate and incubated at 37⁰C for 24 hours. Colonies with different characteristic features were maintained as pure cultures on nutrient agar slants and stored at 4°C.
3. Screening for PHB using Sudan Black b dye on solid agar:- The selected colony were further sub cultured on nutrient agar plate and from this sub cultured plate, a colony was further spot cultured on other plate for Sudan black B testing. The 24 hours incubated colony was tested for PHB production by using the dye. Sudan black B was poured on the colony and allowed to absorb for 30 minutes and then the excess was washed off using alcohol.
4. Screening for PHB production under light microscope using Sudan black B :- The selected colony was selected for further study of PHB production. The colonies were studied for PHB production under microscope using Sudan Black B dye. A smear was prepared and stained with Sudan Black B dye and observed under oil immersion lens.
5. Morphological characterization of PHB positive isolates:- Colony characteristic and morphological characteristic of the P2 colony was done and it was tested for various staining procedure like lipid staining, Endospore staining and gram staining.

Result and discussion- Organisms were isolated with the help of Nutrient agar medium from soil sample which were taken from Panvel (Pillai College). A total of 4 bacterial colonies were selected and the numbers were given to each colony. After that isolates were screened for accumulation of poly-1-hydroxybutyrate (PHB). Among 4 colonies, 1 colony showed positive

Black colony for Sudan Black B staining. The Staining procedure showed that the selected positive colony was positive and rod shaped with black granules and green endospore.



Fig.1 Microbial growth cultured from soil sample

Colony Characteristic of the Isolated Colonies .

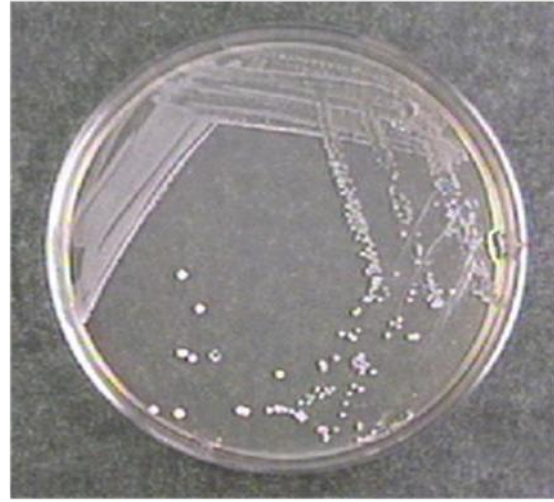
	P1	P2
Size	1 mm	1mm
Shape	Circular	Irregular
Colour	Off White	Off white
Margin	Entire	Entire
Elevation	Raised	Elevated
Opacity	Opaque	Opaque

	P3	P4
Size	Pinpoint	1mm
Shape	Circular	Irregular
Colour	Off white	Pale yellow
Margin	Entire	Entire
Elevation	Flat	Flat
Opacity	Translucent	Opaque

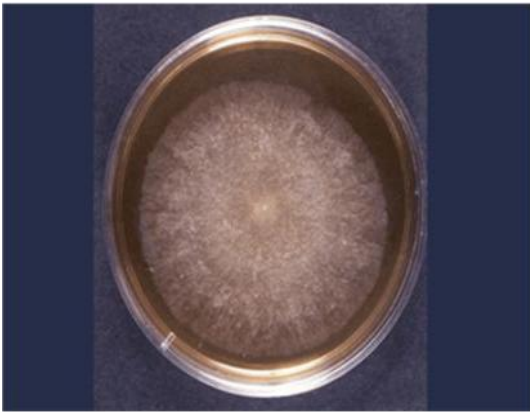
P1



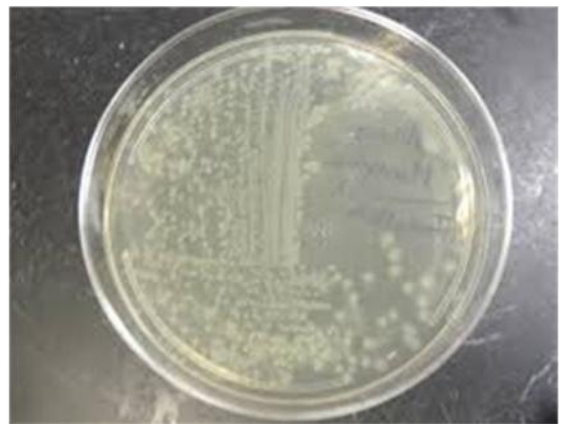
P2



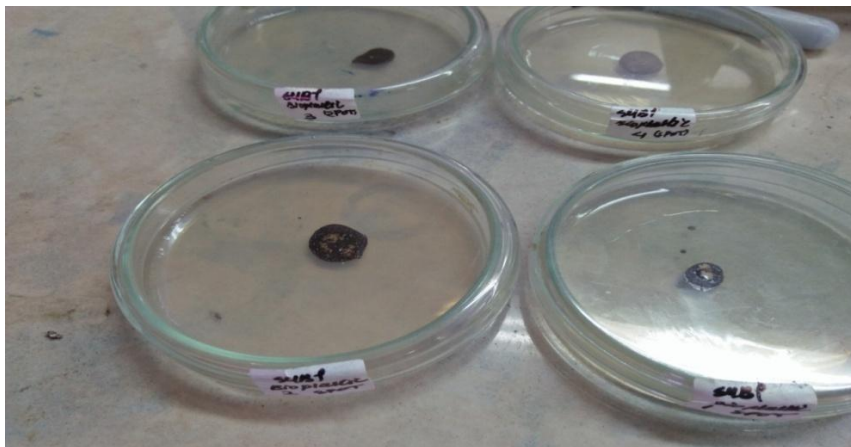
P3



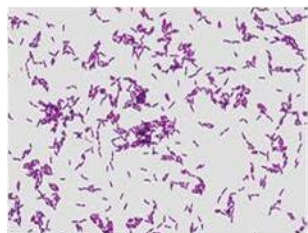
P4



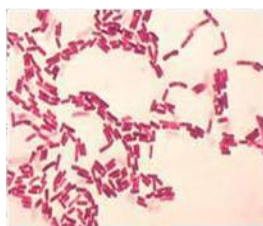
B. Solid Plate Sudan Black B testing.



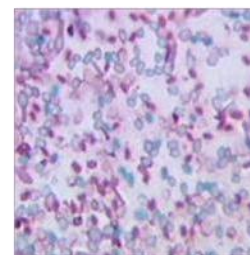
RESULT OF STAINING FOR SELECTED P2 COLONY



Gram's reaction	
Nature	positive
Shape	Rod
Size	Short



Lipid staining	P2
Cell colour	Pink
Granule colour	Black



Endospore Staining	P2
Cell colour	Pink
Endospore colour	Green

Conclusion

- PHB producing bacteria were isolated from the collected rhizospheric soil sample.
- PHB production in bacteria was determined using Sudan Black B method.
- P2 showed extensive PHB production compared to other isolates and therefore P2 was studied for its morphological characteristics.
- P2 was found to be *Bacillus sps.*

Acknowledgements

We wish to express our sincere gratitude to research funding of Pillai college for providing financial support for carrying out this research.

Reference

- K. Swathi*1 & N. Sruthi Ranjani2 , PRODUCTION, ISOLATION, SCREENING AND EXTRACTION OF POLYHYDROXYBUTYRATE (PHB) FROM BACILLUS SPS USING TREATED SEWAGE SAMPLE , International Journal of Pharmacy and Biological Sciences (e-ISSN: 2230-7605) , IJPBS |Volume 5| Issue 2|APR-JUN|2015|58-64
- Website:- www.ijpbs.com or www.ijpbsonline.com

26. Research on Monitoring body postures using Sensors and developing a device to manage body posture(P.R.S)

Limish John Mathew

B.Sc Computer Science

Bharath Vikraman Nair

B.Sc Computer Science

Abstract

Nowadays, back pain, headaches, joint pain are common for people who work with a computer. It also raised the issues of heart disease, heart attacks or other cardiovascular diseases. Such problems made worse by bad posture and sitting in the improper way. Many people are unaware of the harmful consequences of such actions. The research is mainly meant to focus on the problems caused due to bad posture and how to avoid it. The purpose of the research is to develop a device which monitors the person's posture and alerts when it needs correction.

The device we have to develop is basic, but research aims to design low cost, power, and mobile solution.

KEYWORDS: Posture , wearable device, back pain, sensors, alert system

1. INTRODUCTION

A computer plays a vital role in today's life. Prolong, and inappropriate use of a computer can cause harmful effects on health. It can cause back and neck pain, muscle, and joint pain, internal injuries to the shoulder, arm, and wrist.

The human spine is devised to be in an upright neutral position with shoulders back and a slight curvature at the base. Computer use for a long time, leaning forward to reach the keyboard, bending the head to see the computer screen disturb the natural position of the spine. This research is aim to provide a convenient way to solve the basic yet injurious fitness problem. It

would let the user know when the bad posture is detected. The user is expected to correct bad posture and avoid inimical health issues in old age.

There are many existing systems in posture detection but have their disadvantages. Some are of high cost or drain much power, or it may not be portable.

To overcome this issues we propose a system, to build the sensor technology which will provide real-time information about the body posture. Additionally, this new technology has to be cost efficient and consume less power to be effective.

2. SIGNIFICANCE OF STUDY

This research help us to identify problems caused by bad posture, and how to avoid those problems

3. OBJECTIVE OF THE RESEARCH PAPER

The objective of the research paper is to develop a device which alert the user when bad posture is detected. Hence, user can maintain a proper posture all the time.

4. RESEARCH METHODOLOGY

The study is conducted to obtain data on the problems faced by desk job workers while sitting for prolong hours. 100 individual desk job workers from Mumbai were used as method of data collection. The study is conducted in Mumbai region.

Researchers has collected data from 100 respondents. Survey method is used for collection of data from individuals. A structured questionnaire was designed for the same to collect data from the individuals. Also discussions, observation and personal interviews have been conducted to collect data from individuals.

5. LIMITATIONS OF THE STUDY

The study was confined only in Mumbai, also it was not easy to collect data from individuals because of their busy schedule. Only 100 individuals were used for data collection purpose. The designing of the device was a hard as it has to be easy to wear and efficient.

6. DATA ANALYSIS AND INTEPRETAION

Data were collected from 100 respondents from Mumbai region. Data collected by respondents were tabulated. This data further used for drawing findings, conclusions and designing a small device based on the objectives of the research.

GENDER WISE DISTRIBUTION OF RESPONDANTS

Gender	Frequency
Male	62
Female	38

AGE WISE DISTRIBUTION OF RESPONDANTS

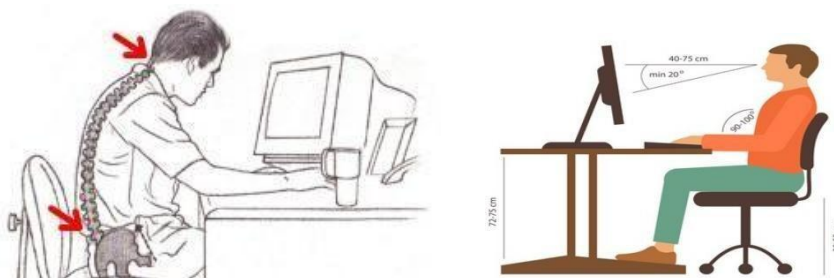
Age	Frequency	Working Hours
24-30	44	8
31-40	32	8
41-55	24	8

DATA COLLECTED FROM INDIVIDUAL RESPONDENT

Sr. No	Individual Problems faced by respondents	Percentage (From 100 participant)
1.	Suffering from bad posture	82
2.	Suffering from back pain	35
3.	Aware about their bad posture	45
4.	Unaware about their bad posture	55
5.	Suffering from stress	62
6.	People who welcome a device to recognize and alert about bad posture	91
7.	People who are using other alternative methods to control bad posture	5

7. FINDINGS OF THE STUDY

The study shows that people are having health issues related to bad posture and majority are even unaware of their own bad postures while they are busy with work. There are no effective device or method to identify and alert bad posture to the user, Hence 91% of respondents welcome a device which can identify and alert them about their bad posture.



8. DESIGNING A DEVICE AS A SOLUTION

The central purpose is to develop a wearable system with low cost, high performance, and less power consumption. The sensor is designed to attach to the user's body on the back, when bad posture is detected it will alert the user to change their position. In this device Arduino mini, accelerometer sensor(Inertial sensor), battery, buzzer, Bluetooth module and vibrating motor are used. Real time data of sensor is sent to Arduino chip, the code is written is such a way that buzzer or vibrating motor will give an alert by threshold values set.

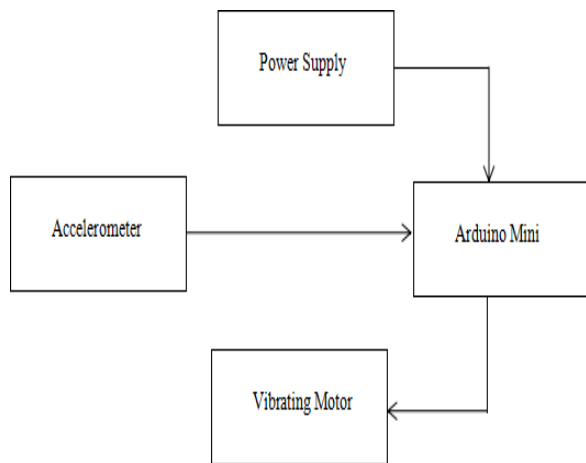


Fig.A

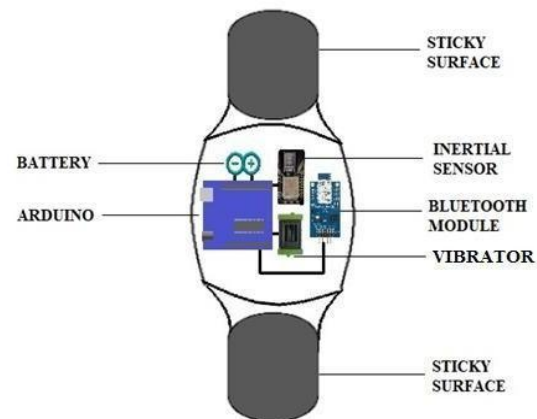


Fig.B

Fig.A shows the working flow chart of the device

Fig.B shows the proposed design of the device

DEVICE DESCRIPTON

This device is a miniature wearable device which user can wear on their back. User can set a threshold value as their normal position, and whenever the user lean forward to cause a bad posture the accelerometer will detect the angle and send it to arduino mini in real time. Arduino

will compare it with the threshold value which was kept for normal position by the user. Upon calculating the deviation of angle, arduino will send a signal to the vibrating motor which will vibrate to indicate the user about their bad posture. Hence, user can change their posture back to normal and stay safe.

9. CONCLUSION

Correct posture aligns everything in body, muscles, ligaments and bones. But in today's world body posture is the most neglected problem. Also because of sedentary and inactive lifestyle, many people face health issues. Although there are some research studies for posture correction and monitoring system, these studies have some drawbacks such as more power consumption, high cost or system is not wearable. We have proposed and developed a device which addresses this problem.

The primary goal of this research is to provide a user-friendly interface that alerts the user about posture problems. The device which will be mobilize and easy to use. For that goal, this paper proposed to use accelerometer sensor and arduino mini which are lightweight and cost efficient. Ultimately, we have proposed a device which can address bad posture and is economical and user-friendly.

10. SUGGESTIONS AND RECOMMENDATIONS

An android app can be developed for real time monitoring of posture, therefore user can check how good or how bad they were sitting for an entire time. Machine learning algorithms and neural networks can be embedded with the device for higher rate of performance and accuracy in detection.

11. ACKNOWLEDGEMENT

I am highly indebted to K.M Vasudevan Pillai's Campus to provide me the opportunity to do project in the Institute. At this juncture, I am deeply honored to express my sincere thanks to Asst.Prof. Sujata Shahabade for the proper direction and supervision. Also, I would like to thank

my project partner Bharath Vikraman Nair for his ideas about device design and other valuable helps.

12. REFERENCES

[1] National centers for health statistics chartbook on trends in the health of americans 2006. Special Feature: Pain', 2006.

[2] Gallagher A., Matsuoka Y., and Wei-Tech Ang. An efficient real-time human posture tracking algorithm using low-cost inertial and magnetic sensors. RSJ International Conference, 3:2967–2972, 2004.

[3] Dunne L.E., Walsh P., Hermann S., Smyth B., and Caulfield B. Wearable monitoring of seated spinal posture. in Biomedical Circuits and Systems, IEEE, 2(2):97–105, 2008.

[4] Paul Thomas, PrithviNath Manikonda, Sindhura Josyula, and Soorya Vamsee Boppana. Sensor technology to monitor body postures. Interdisciplinary Tele-com Program University of Colorado Boulder.

[5] Q Wang. Smart rehabilitation garment for posture monitoring. Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), 2016.

27. Study of Oxidative burst in Neutrophils due to Phagocytosis of Metallic-Nanoparticles

Kartha S. and Gupta B., Prashant C.K.

Avishkar Research Convention 2018, Department of Biotechnology,

ABSTRACT: Neutrophils are phagocytic innate leukocytes in blood that kill microbes through oxidative burst after ingestion. NADPH oxidase is responsible for the massive oxidative burst. The study aims to look for oxidative burst in neutrophils after ingestion of metallic nanoparticles through NBT assay. Polymorphonuclear cells were isolated after Ficoll hypaque separation of human blood. Isolated neutrophils were incubated with nitrobluetetrazolium to load them with the chemical. Metallic nanoparticles (Iron oxide) were synthesized and then incubated with the neutrophils for different time points. If oxidative burst takes place then NBT will be reduced and the cells will appear blue. The study will be useful to know whether these nanoparticles (NP) create reactive oxygen species.

Keywords: Neutrophils, Oxidative burst, Iron oxide nanoparticles.

Introduction

Respiratory burst plays an important role in the immune system. It is a crucial reaction that occurs in phagocytes to degrade internalized particles and bacteria. Respiratory burst or oxidative burst is the rapid release of reactive oxygen species from cells. Usually the release of these chemicals from the immune cells eg. Neutrophils and monocytes, denote they came into contact with different bacteria or fungi. Nanoparticles mimic the action of bacterial or viral infection. Neutrophils being the first line of defense are the ones to interact with them first.

Inflammatory response of iron oxide nanoparticles is investigated in the study. Safety analysis is tested here as it is used in routine in vivo analysis such as hypothermia and magnetic resonance imaging.

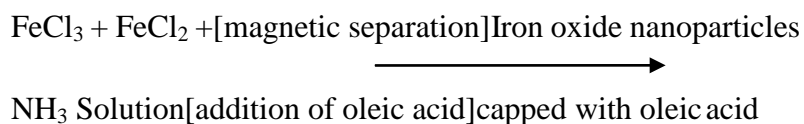
Objective

To study the oxidative burst in neutrophils after ingestion of metallic nanoparticles through NBT assay.

Materials & Methods

FeCl₃, FeCl₂, NH₃, Oleic acid, NBT and Ficoll-Hypaque all were procured from Sigma-Aldrich.

Synthesis of iron oxide nanoparticles: Nanoparticles were prepared by a method developed inhouse by Goyal et al. at PCACS. The nanoparticles were coated with oleic acid to prevent clumping. As these are iron particles, due to their innate magnetic properties, they form aggregates, which is not desirable.



Nanoparticle Characterization: Iron oxide nanoparticles were characterized with the help of Transmission Electron Microscopy.

In vitro Studies for Oxidative Burst: Isolation of Neutrophils was carried out by Ficoll Hypaque technique. Isolated neutrophils were incubated with 0.3% NBT for half an hour at room temperature, followed by an incubation for half an hour with the synthesized Iron oxide nanoparticles at room temperature. The analysis of oxidative burst through the formation of blue formazan was done with the aid of a phase contrast microscope.

Results and Discussion

TEM image depicted a fairly uniform sized metallic nanoparticles synthesized thereby eliminating the variability due to size.

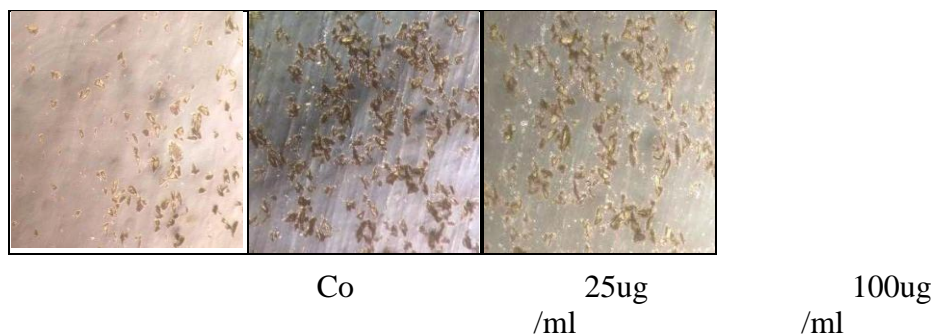


Figure 1: Phase contrast microscopic images of the three test condition of NBT assay

Total cell Lysis was observed in the positive sample where the hydrogen peroxide was added to neutrophils and NBT. The negative control showed a minimum number of blue cells in which distilled water was used. 7-20% NBT positive results were reported in control cells in various references due to the normal amount of NADPH present in the cell membrane of neutrophils. With increasing concentration of nanoparticles introduced, significant increase in the number of NBT reduced cells were observed.

Category (ug/ml)	Blue cells	Transparent cells	Total cells	Percentage blue cells
Control	22	48	70	31.42
25	40	35	75	53.33
100	70	7	77	90.9

Figure 2: Estimation of percentage of dead cells by NBT assay

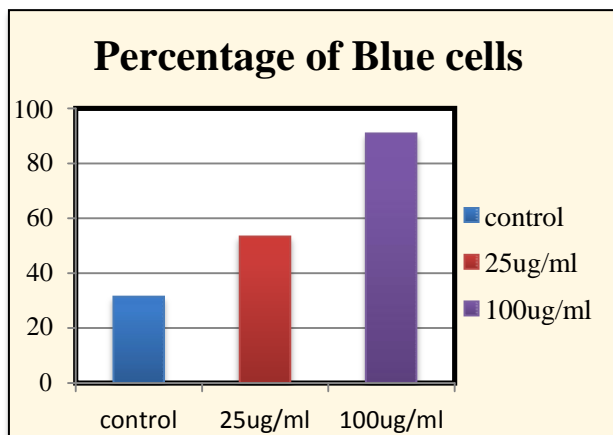


Figure 3: Graphical representation of the percentage of dead cells.

Conclusion

Cells incubated with nanoparticles showed oxidative burst activity. This phenomenon when occurs in vivo would result in inflammation. This inflammation may be good or detrimental for the body which warrants further study.

Acknowledgement

We are truly grateful to Pillai College of Arts, Commerce and Science for providing us the funds to carry out our experiments, to print the poster and all other aspects regarding the project. We are thankful to the University of Mumbai for organizing Avishkar, thus encouraging young minds and promoting interest of student community towards research. We are indebted to Ms. Bhakti Hirani for her guidance for the preparation of Iron oxide nanoparticles and Dr. Remya Varadharajan for constantly encouraging us throughout this period. We extend our gratitude towards all the staff of department of biotechnology for all their help and support.

References

1. Kojouri G.A., Sadeghian S., et al (2011) *The Effects of Oral Consumption of Selenium Nanoparticles on Chemotactic and Respiratory Burst Activities of Neutrophils in Comparison with Sodium Selenite in Sheep*. Springer.
2. Naqvi S., Samim M., et al (2010) *Concentration-dependent toxicity of iron oxide nanoparticles mediated by increased oxidative stress*. International Journal of Nanomedicine.
3. Love S.A., Maurer-Jones M.A., (2012) *Assessing Nanoparticle Toxicity*. Annual Review of Analytical Chemistry.
4. Müller K, Skepper JN, et.al (2007) *Effect of ultrasmall superparamagnetic iron oxide nanoparticles (Ferumoxtran-0) on human monocyte-macrophages in vitro*. Biomaterials.

28. Helping hands for the golden agers.

Category - 5 Code No.
Level - UG

Inter-university Avishkar Research convention : 2017 - 2018
HELPING HANDS FOR THE GOLDEN AGERS

INTRODUCTION

"We are now in the DIGITAL WORLD... Here today ->

Save your time through our website

Objectives

- Bridge between senior people and the people who can provide them help.
- Provide service through digital manner.
- Faster mode of providing and getting help.

WEB SITE GOALS

MAIN MOTO OF WEBSITE.

Is to connect needy people to the help maker through a website ...

This website will be linked to all the Ngo's, Various Organisations, Public, Youth Groups, etc.

- Bridge between SENIOR people and the people who can provide them help.
- Provide service through Digital Manner.
- Faster mode of providing and getting help.
- It is the place where SENIOR people and people who provides help meet together.
- Useful website for the AGED public.

TECHNOLOGY USED

We will use all this programming languages for our website...

Website for the public service...

A website that will make your work easily faster.

- 1.CONNECTING SENIOR PEOPLE TO THE HELP MAKER.
- 2.PROVIDE SERVICE THROUGH A DIGITAL MANNER .
- 3.FASTER MODE OF PROVIDING AND GETTING HELP.

REASON FOR CREATING WEBSITE

1. Didn't got the desire help ?
2. Our website will make you help out.
3. Don't know what to do with websites ? Search for our desire.
4. Search for the specific you will definitely get what you are looking for.
5. Will connect you to the follow:
6. You will get the help.

How this website will Work...

Connecting to Various PUBLIC YOUTH Groups.

Connecting to Various NGO'S.

Connecting to various ORGANISATIONS, ETC.

29. Posture recognition system.

Category - 5

CODE NO.

Inter-university Avishkar Research convention : 2017 - 2018

Level - UG

POSTURE RECOGNITION SYSTEM

INTRODUCTION

- ❖ **POSTURE RECOGNITION SYSTEM** is a small size easy to carry electronic device which helps in controlling bad posture caused by prolonged sitting
- ❖ **P.R.S** is a wearable small device which consists of battery, sensors and a micro controller which will detect bad posture and give alert to user using vibration feedback
- ❖ It is an easy to use device which can be controlled using an android device and its companion app

OBJECTIVES

- ❖ To study the physical stress and its causes of an office worker doing a job which involves a lot of sitting and less physical movements
- ❖ To study about bad posture and its related side effects which causes physical and mental stress to an employee
- ❖ To study pros and cons of available methods to control bad posture
- ❖ To develop a device(P.R.S) to control bad posture

RESEARCH METHODOLOGY

- ❖ Selecting 25 office workers who sit in front of a computer and work
- ❖ Questionnaire was used to determine the need and success of device
- ❖ Almost 25 workers responded positively with some having slight concerns about
 - ❑ Cost
 - ❑ Any side effects caused by the Device
 - ❑ Size and ease of use

PROBLEMS CAUSED BY BAD POSTURE

- ❖ Muscle soreness and lower back pain
- ❖ Slouched position causes depression because of lower self esteem and negative moods
- ❖ Increased physical and mental stress, where physical stress leads to mental stress
- ❖ Causes Carpal Tunnel Syndrome, Muscles can become tight and present numbness, tingling, or pain.
- ❖ Less motivation, slouched position causes less motivation because of stress and depression hence it affects social and work situations
- ❖ Poor digestion, when body is slouched or hunched the organs bunch up together causing poor digestion
- ❖ Fatigue

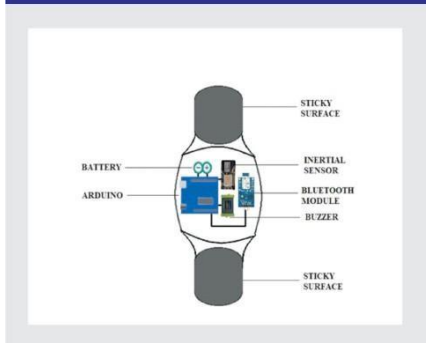
PROBLEMS OF EXISTING TECHNOLOGY

- Wearable belts**
- ❖ Discomfort
 - ❖ Less freedom of movement
- Posture Braces**
- ❖ Causes muscle weakness(atrophy)
 - ❖ Should be trained to wear
 - ❖ Has a schedule of wearing time and occasions
- Posture chairs**
- ❖ Expensive
 - ❖ Not easy to carry for different situation

WORKING OF P.R.S

- ❖ Upon wearing, the inertial sensor actively monitors the movements and position of user.
- ❖ When movements go beyond threshold value the vibration motor will be activated and alerts the user
- ❖ Threshold value is kept for neglecting alerts given on normal movements, causing nuisance
- ❖ P.R.S can be controlled using smart phone with its companion app. Rate of vibration, turn off or turn on. And even real time data is shown in the app, using specific algorithm the app shows how good was the users posture throughout the day, also will suggest improvements if any required

SCHEMATIC OF P.R.S



MATERIAL COST ANALYSIS (PER UNIT)

Sr.No	Component	Price(Rupees)
1	Arduino pro mini	250
2	Flat micro vibrating motor	50
3	Inertial sensor	200
4	Ultra thin LiPo battery	1000
5	Premium plastic casing	100
6	HC-05 Bluetooth module	250
7	Total base amount	1850

FURTHER DEVELOPMENT

- ❖ With the proposed design and architecture if we construct P.R.S we can assure it can help eliminating bad posture and reduce its side effects
- ❖ Memory card can be included in this system for offline working and compatibility
- ❖ Later we could be able to produce even smaller device design

30. Safety of children with peer.

CATEGORY - C1

INTER-UNIVERSITY AVISHKAR RESEARCH CONVENTION: 2017-2018

LEVEL- UG

SAFETY FOR CHILDREN WITH PEER.

Step to bring warmth of safety to tender age.

OBJECTIVES

- To study the **safety issues** of children.
- Understand the extent of importance given to **Moral Education**.
- To study **maturity level** of students of children.
- To develop device "**safe moments**" to ensure safety of children.

RESEARCH METHODOLOGY

Primary data:

- Sample
 - 150 children of 7 to 12 years
 - Their parents
- Simple random technique was used.

Secondary data:

- News articles
- Online books
- Research papers

HYPOTHESIS OF THE STUDY

- H_0 : Safe moments does not make children safe.
- H_1 : Safe moments devices make children safe.

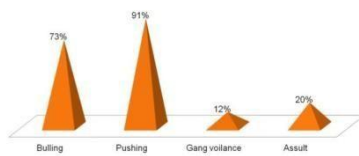
- H_0 : Lack of Moral education is not reason of increase in violence in children.
- H_1 : Lack of Moral education is reason of increase in violence in children.

DATA ANALYSIS AND INTERPRETATION

Safety issues

Every month, a child in school have a major fight.

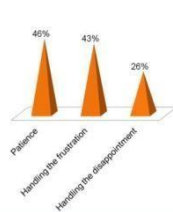
54% of parents reported that their child suffered at least one form of **injury** in the past two years at school.



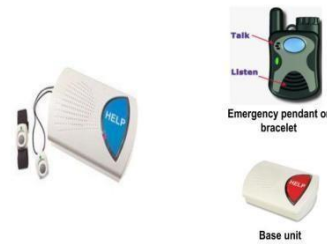
Importance of moral education



Maturity level



SAFE MOMENT



INTRODUCTION OF DEVICE

- We strongly believe that no child should be alone without a solid way to get help.
- This Cellular System provides that help and peace of mind to parents and children and allow them to enjoy their childhood.
- It have two device
 - Base unit with trusted person
 - Emergency pendant or bracelet with child.

FEATURES

- Range- The distance the pendant can be from the main unit. 1300 feet
- Battery Life- The days the main unit can work in the event of a power outage. 32 hrs
- Extra Features-
 - Water resistant pendants.
 - GPS packages

CIRCUIT DIAGRAM

COST MANAGEMENT

- In order to reduce cost of the product following technique are used-
- Impacting skills in under privileged students of college (age group- above 18)
 - After that giving them assignments to produce and sell it to their locality.
 - This will also improve their sense of responsibility towards their young ones.

MATERIAL COST ANALYSIS (PER UNIT)

Material cost before using e-waste		Material cost after using e-waste	
Material	Amt. in rupees	Material	Amt. in rupees
Microcontroller chip	1500	Microcontroller chip	1500
Battery	300	Battery	Nil
Battery connectors	300	Battery connectors	Nil
Miscellaneous	350	Miscellaneous	350
Total	2450	Total	1850

Quality check is essential to ensure safety of children.

TESTING HYPOTHESIS

Hypothesis	Calculated value	Table value	Remark
H_0 : Safe moments does not make children safe.	1.9	1.75	Thus null hypothesis is rejected and alternative hypothesis is accepted
H_1 : Safe moments devices make children safe.			

FURTHER DEVELOPMENTS

- GPS technology can also be implemented in this system.
- Camera can be connected.
- Memory cards can be connected.



REFERENCES



31. Signal of stress/Save our soul

Category - 5
Inter-university Avishkar Research convention : 2017 - 2018
Level - UG


SOS : Signal Of Stress/Save Our Soul

Your Personal Safety!

55110

INTRODUCTION

- ✍ SoS: An international code signal of extreme distress.
- ✍ The aim of the PPT is to develop an Android/iOS application that lets its users to send notifications in case of an emergency or a panic situation.
- ✍ VIA this application users can send multiple text messages and emails on the press of a single button in case of emergency situation.

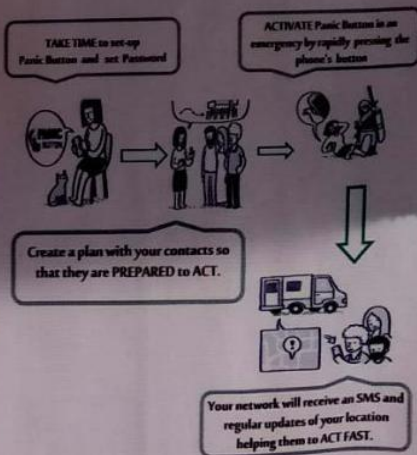


ABOUT MOBILE APPLICATION

How Does Panic Button Work ?

TAKE TIME to set-up Panic Button and set Password

ACTIVATE Panic Button in an emergency by rapidly pressing the phone's button



Your network will receive an SMS and regular updates of your location helping them to ACT FAST.

Hardware & Software

- ✍ 32 and 64 bit ARM, x86, MIPS architecture
- ✍ Android Phones (for testing purpose).
- ✍ Jdk.
- ✍ Android SDK
- ✍ SQLite
- ✍ Google Maps v2 API

Emergency Problems to Overcome

- ✍ Emergency help mostly depends on "Voice Calls", what if the person cannot comprehend?
- ✍ Time taken for the emergency help to arrive is too long, i.e. "fastest help in 15 minutes" in cities.
- ✍ Emergency help via mobile telephony is not possible where there is "no mobile network coverage".
- ✍ Many "anonymous false mobile calls" to disturb the emergency personnel.
- ✍ Assume immediate evacuation of a densely populated certain area is needed, "how to alarm the people in an area only and real fast?"

Solution

- ✍ Mobile telephone starts sending repeated emergency/care messages including pre-registered and live information.
- ✍ The individuals or first-aid trained people near to the person in need, can help the person immediately. Emergency center will not receive the emergency call directly from mobile phone of the person, but from mobile phones of others.
- ✍ Entry into "SOS Mode of Operation" is either via E112 number dialing or via special combination of mobile phone keys.
- ✍ SOS receiving mobile phones start giving tone and display alarms, to inform the user about the emergency.

Research Methodology Used

Exploratory Method:

This application lets its users to send notifications in case of an emergency or a panic situation by sending multiple text messages and emails on the press of a single button.

Conclusion & Advantages

- ✍ More functionalities can be accepted to this existing app with new features, as and when required.
- ✍ This app is a multipurpose utility to send messages to friends and neighbors not only when we are in danger but also to invite them for get together etc.
- ✍ This application is mainly useful for women

32. To study the effect of iron nanoparticle on hydroponically grown plants.

Code No.:

Inter-University Avishkar Research Convention: 2017-2018

Category: Level:

TO STUDY THE EFFECT OF IRON NANOPARTICLE ON HYDROPONICALLY GROWN PLANTS.

INTRODUCTION

- It is a method of growing plants without soil using mineral nutrients solution in a water solvent. The nutrients in hydroponics can come from an array of different sources. Water culture, Wick system, EBB & Flow, Drip system recovery/ non-recovery and aeroponics.
- India has the highest record of anemic patients especially in regions of Assam, Haryana, Jharkhand, Himachal Pradesh, Tamil Nadu, Kerala, Orissa, Madhya Pradesh.
- In Maharashtra the major effected area is Aurangabad city (87.21% pregnant women) , Ahmednagar (71.1% school children).



OBJECTIVE

- To synthesize iron nanoparticles by chemical method.
- To grow spinach hydroponically under the influence of iron nanoparticle.



METHODOLOGY

- Synthesis of iron nanoparticle by chemical method.
- Hydroponics of spinach.
- To investigate the effect of nanoparticles on hydroponically grown spinach.

CONTROL: spinach was grown hydroponically by spraying distilled water.

TEST: spinach was grown hydroponically by spraying iron nanoparticles on leaves daily for 15 days.



RESULT AND CONCLUSION

Growth after 1 week:



Test Control

- There was a significant growth in test plants in comparison to the controls.
- Further analysis of the content of iron nanoparticle requires the complete growth of the spinach plant.

Growth after 2 weeks:



Test Control

33. Whisper.

Category - C5 Inter-university Avishkar Research convention : 2017 - 2018

Code :
Level - UG

Whisper

Introduction

We, as human beings use the internet to answer our questions, to learn, to pass time, to connect with people across continents and even to find our soulmates. But, what about those who cannot use the internet? Not because they don't have access to the technology, but their body doesn't allow them to. Whisper is an idea, a step towards providing an answer to this question.

The Objective

The primary objective of this project is to create a feature which implements existing technology to make the World Wide Web more accessible to the blind.

Significance and Need

Significance

- ✓ Over 1 billion websites exist on the Internet as of 2017.
- ✓ Humans have shared more knowledge in the past decade or so, than they have done in the entirety of human history.

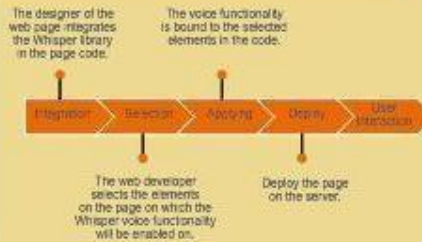
Need

- ✓ The need for this project can be summed up as follows: Giving those who can't see a slightly better opportunity to access the Internet

Explorations

- ✓ Of the billion websites that exist on the internet, all of them have JavaScript code in them.
- ✓ Javascript has received a growing number of mobile specific APIs in the past few years.
- ✓ The reason for the point above is the mass production of increasingly powerful smartphones and tablets.
- ✓ The new APIs allow programmers to target the various sensors and output components of the devices via the browser.
- ✓ Fewer browsers have increased capabilities of interacting directly with the mobile OSs.

Working



About the Project

- ✓ Whisper is a JavaScript library that converts text to voice when the text is tapped on.
- ✓ The Whisper.js library will implement Text-to-speech API and combine the functionality using jQuery.

References

- ✓ internetlivestats.com
- ✓ W3C.org
- ✓ jQuery.com

Conclusion

Whisper stands as a project and an effort in the direction of making the Internet truly more accessible. With the rising power of devices and technologies like artificial intelligence, the possibilities are limitless.

34. GROW YOUR LOVED ONES: LIFE AFTER DEATH

CATEGORY - C1		INTER-UNIVERSITY AVISHKAR RESEARCH CONVENTION 2017-2018		LEVEL-UG	
<h2 style="margin: 0;">GROW YOUR LOVED ONES .</h2> <h3 style="margin: 0;">"LIFE AFTER DEATH"</h3>					
<h4 style="margin: 0;">INTRODUCTION</h4> 		<h4 style="margin: 0;">SIGNIFICANCE OF STUDY</h4> <ol style="list-style-type: none"> 1) It is high time to save the environment. 2) A 100% positive approach to a disturbing event. 		<h4 style="margin: 0;">EXTENT OF INTOXICATION OF RIVERS DUE TO CREMATED ASHES</h4> 	
<h4 style="margin: 0;">OUR BELIEF</h4> <h5 style="margin: 0;">HINDUISM</h5> <p>Hindus burn their dead because they believe human body to be made up of five elements and should return to these elements (PANCH BHOOT). They believe in reincarnation i.e. the rebirth of soul in another body.</p> 		<h4 style="margin: 0;">REVIEW OF LITERATURE</h4> <p style="text-align: center;">-By Lewis H Mates</p> <ol style="list-style-type: none"> 1) "Save the land for living" was one of the motto used by the cremation society of The Great Britain in promoting the practice of promotion (pg 174) 2) Instead of cement crematoriums plant a life on those land which will satisfy their soul as well as life our Mother Earth. 		<h4 style="margin: 0;">LIMITATIONS OF THE STUDY</h4> <ul style="list-style-type: none"> • Religious belief is one of the main factor that brings difficulty in the acceptability among the people. • Cost factor also is a main problem regarding this idea. • Availability of the factors for the same. 	
<h5 style="margin: 0;">ISLAMISM AND CHRISTIANITY</h5> <p>Burials are carried out in Islamic and Christianity as they are inherent part of their beliefs. These religions believe in resurrection of body. They believe in resurrection i.e. restore (a dead person) to life.</p> 		<h4 style="margin: 0;">OBJECTIVES OF THE STUDY</h4> <ol style="list-style-type: none"> 1) To convey the importance of forest instead of crematoriums. 2) To study the extent of intoxication of rivers due to cremated ashes. 		<h4 style="margin: 0;">SUGGESTIONS</h4> <ul style="list-style-type: none"> • If practically followed by all the people it will be considered as a boon for the environment • Also considering the fact that it should not effect religious belief of any religion 	
<h4 style="margin: 0;">SCOPE OF THE STUDY</h4> <ol style="list-style-type: none"> 1. For Hindus, Cremation ashes to become beneficial to plant life, the very high pH level has to be lowered and the toxic levels of sodium must be diluted. If these two concerns are not properly addressed, the plant will become stressed or collapse. The acidic content can be reduced by adding the NEUTRALIZING AGENT to these cremation ashes. 2. Whereas for the Islamic and Christians, as they don't burn their bodies and convert them into ashes there are BIODEGRADABLE BURIAL PODS in which they keep the dead in the pods and sow a seedling at the top which later on grows into a tree. 		<h4 style="margin: 0;">IMPORTANCE OF FORESTS INSTEAD OF CREMATORIOUS.</h4> <p style="text-align: center;">"Live in green not in dark"</p> 		<h4 style="margin: 0;">REFERENCES</h4> <ol style="list-style-type: none"> 1) <u>Book</u> Encyclopedia of cremation 2) <u>Online Sources</u> Research: http://www.cibtech.org/I-GEOLOGY-EARTH ENVIRONMENT PUBLICATIONS 2016 VOL. 6, NO. 3, 021G EE- 002-MAURYA%E2%80%93IMPACT-INDIA.pdf Newspaper: https://www.ucanews.com/news/as-indias-rivers-turn-toxic-rehabilitation-plans-a-part-70040 	



Pillai College of Arts, Commerce & Science
Dr. K. M. Vasudevan Pillai Campus
Plot No. 10, Sector 16, New Panvel - 410 206
Maharashtra, India
Contact: 022-2745 1700/ 6100/ 6030/ 2748 1764
E-mail: pcacs@mes.ac.in

