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2nd National Conference

"Innovative Trends
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लोक कल्याण साधनम् ।।

A true source of Inspiration...

Prof. Dr. V. D. Karad, a renowned educationist who is known in the society for his work in human rights, spiritual advices & democracy, is a strong follower of Vivekananda. Recently (2015) he participated in “Parliament of World's Religions” at Salt Palace Convention Center, SaltLake city, Utah, (U.S.)

More than 10,000 people from all over the world, from more than 80 nations and more than 50 faiths were present for the said parliament.

He is the same person who has initiated the First International Robocon, and World Peace Eco Park in 2009.

Under his valuable guidance MAEERS's MIT group of Institutions has reached 63 institutions with more than 50000 students on the campuses. His chain of “Vishwashanti Gurukul” schools initiated in 2007 has in a short span of time come up at more than 7 locations.

His institution has received UNESCO chair in 1996 from UNESCO Paris for his extraordinary contribution towards human rights & democracy.

Hon'ble, Prof. Dr. Vishwanath D. Karad
President
MIT Art, Design & Technology University, Pune

|| न हि ज्ञानेन सदृशं पवित्रमिह विद्यते ।
तत्स्वयं योगसंसिद्धः कालेनात्मनि विन्दति।।

Meaning nothing is more sacred than knowledge. He who is himself perfected in yoga or similar Sacrifice finds better opportunity for himself in due course of Time.

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We, at MITADT University believe in the holistic & inclusive development of young minds, and I am sure that, you will value the time that you spend at the campus.

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Dr. Mangesh T. Karad
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Prof. Dr. Sunil Rai
Vice chancellor – MIT ADT University

MIT ART, DESIGN & TECHNOLOGY UNIVERSITY, RAJBAUGH, LONI KALBHOR, PUNE, INDIA ESTABLISHED BY MIT ART, DESIGN & TECHNOLOGY UNIVERSITY MAHARASHTRA ACT NUMBER XXXIX OF 2015

MIT Art, Design & Technology University is a multi-disciplinary university which provides degrees in innovative areas like ART, Design & Technology.

In 2015 MAEER's premium campus, Raj Baugh, Loni Kalbhor, Pune is declared as Private state University named MIT Art, Design & Technology University. The campus is around 24 kms away from Pune Station and has residential facilities for students as well as on campus faculty.

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Though the University status is achieved in 2015 the whole campus has been functional for the last 12 years. Marine Engineering ranks 5th in the list of top Marine engineering colleges. The Design institute has its own identity in the nation and holds the 5th rank amongst Indian institutes. This year, University has started novel program areas like Aerospace Engineering, School of Architecture as well as Project Construction and Infrastructure Management. A new Vishwaraj Hospital is opened on 3rd April 2016.

This multi-disciplinary campus believes in value based education system imbibed by Father Founder Trustee Dr. V. D. Karad. He believes in principles of self-disciplinary actions, healthcare, and Meditation, Yoga and Community service. Students are encouraged for various on campus activities to develop their hobbies and can participate in various forums which majorly focuses on community service and promotion of devotional activities.

Jay Hind ! Jay Bharat !

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This Spectrum covers novel aspects of Designing and the institute has created its significant brand all over the nation.

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To function as a certified organization of management education, concerned with quality teaching for the aspiring students and to accommodate the distinctive needs of all genres of students by continually developing new ways to improve programs and educational delivery systems using the latest industrial technologies for the promotion of management education in India.

Message from Director

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As a prospective student, you are welcome to explore options that may be available to you in our various academic program's and please do not hesitate to contact us for additional information. I wish to thank you for showing interest in MIT college of Management, Pune. At MITCOM students are expected to have an enriching and life-transforming experience which will enable them to reach new heights in their professional life. We foster sharpening of skills and enhancement of knowledge base in our students through various extracurricular, co-curricular activities.

India today stands as the world's third largest economic power, its economy is growing at around 7%, Indian Entrepreneurs are emerging as global leaders, Indians are figuring increasingly in the list of the richest persons in the world, India's knowledge power is making India as a preferred destination for out sourcing knowledge services from India, India is fast emerging as a destination for worldclass R&D Centres and Innovation hub.

Young friends, these are the signs of an even brighter tomorrow for India and its people. You must, therefore, be highly excited to make your own contributions to the growth and development of "India of your dream".

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"STUDY OF MARKETING AND NEED OF CHANGE IN MARKETING TECHNIQUE FOR AGRICULTURAL PRODUCE."

By

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ABSTRACT:

Indian agricultural marketing is poor and defective. Farmers not getting reasonable price for their produce. Mostly Indian farmers are illiterate or can easily fooled by money lenders, middle-man, traders etc. Most of the margin of farmers taken by middleman results in loss of farmers and customers getting product at high price. Also, there is lack of processing machinery and storage facilities so they have to sell their produce immediately after harvesting. In Indian agriculture market there is no proper grading and standardization system for agriculture prodcue and lack of infrastructure like roads and transportation system made available.

There is need of change in agricultural marketing so farmers should adopt concept like contract farming, Direct marketing, Private wholesale market, organized retailing, FPO (Farmer Producing Organization), Co-operatives in Agricultural Marketing like AMUL. This can be results into Monetizing the produce, Market growth, Capital formation and investment in technologies, Increase in revenue generation, Market expansion, Export and foreign exchange. Need of change is agricultural marketing is serious issue. New innovative ideas can change the life style of the farmers.

In the current study researcher has tried to understand the present marketing techniques used by farmers to increase their revenue. But due to fast changing market scenario the companies and every one doing business needs to keep updating the marketing techniques on regular basis.

Keywords: Agriculture marketing, marketing techniques

A) Introduction:

Agricultural marketing comprises all the activities involved in the supply of farm inputs and output – including all those operations which are related to the procurement, collecting, grading, storing, food and Agro-processing, transportation, financing and selling of the agricultural produce. In effect, marketing includes all overarching aspects of agribusiness, while it excludes the core activity of cultivation.

The agricultural marketing system also relates to economic growth of the agriculture sector and ensuring safe and affordable food to consumers, both of which are directly linked to the food security of the country.

Even though India is an agricultural country, still agricultural marketing is not very effective and efficient that it can increase the revenue of farmers and companies. Hence, farmers do not get reasonable price for the products even after their hard work and are fully exploited by the middlemen.

Current issues of Agriculture marketing: India is known as agriculture based country blessed with very much suitable weather conditions and good quality of soil. It's said that "Indian soil produces Gold", but on the other hand agriculture sector is not handled with seriousness by our Government since beginning. Now, in recent years farmers and agriculture sector is considered for some subsides and facilities by Government. There are many concerns about the sector. Major drawback which we are focused are poor marketing strategies.

- The one main defect of the Indian Agricultural marketing is the presence of too many middlemen

and exploitation of farmers by them. On one hand these middlemen exploit the farmers by purchasing the produce at lower prices and on the other hand they exploit the customers by demanding higher prices from them. The only aim of a number of commission agents, brokers etc. is to derive a higher income from the middle processes. These middlemen take undue advantage of the poor former on the basis of their financial resources.

- One of the biggest issue of agricultural marketing arises due to weights and scales. Usually, in rural areas bricks & stones, etc. are used as weights and in urban markets also defective weights are found. Thus, the grain of the farmer is weighed by a heavier weight for their own gain. Most of the traders keep separate weights for purchase and sale of grain.

- The Indian farmers are not fully literate and hence, are easier be fooled by the money

lenders, traders, middlemen, due to their simple nature. Similarly, lack of unity among farmers also causes their exploitation because Indian farmers are spread in distant areas in rural places. They are unable to meet with each other and resolve their problems, as a result they do not get a fair price for their produce.

- In the rural areas there is lack of financial resources, due to which even their emergency

Requirements are not fulfilled. In such conditions the farmers sell their produce before its ripening. Similarly, some financial facilities, like, installments on loans for pumping-set, tractor, thrasher etc. have to be paid on monthly or quarterly basis due to which they have to sell the product as soon as possible. Thus, as the lack of financial assistance, is a problem for the farmers; so does the receipt of loan also puts them in problem.

B) **Objective**:

1. To study the present situation of agricultural marketing system in India.
2. To know the limitations of marketing system and problems faced by the farmers.
3. To find out new techniques in marketing system to overcome the problems of producers.
4. To understand if farmers can easily adopt new marketing methods.
5. To know about advanced technology in marketing.

C) Research Methodology:

i) **Secondary Data**: The current study is to understand the current marketing systems and

understand the new techniques which can improve agriculture produce the secondary data collection is used to get the information and same is discussed in the research paper.

ii) **Descriptive analysis**: The more suitable analysis technique for the study is descriptive

analysis hence, it is used.

D) Data Analysis & Interpretation:

i) Marketing methods used by Indian Farmers:

Marketing by middleman: In India agricultural marketing is not in vogue, like, cooperative societies, government marketing activities, regular markets etc. As a result, the farmer remains entangled in exploitation. Thus, lack of organised marketing system is harmful for the farmers. That is -why; the farmer sells his product personally to different people. The middleman take full advantage of the unorganized farmers.

Distribution channel: The roads from Villages to cities are usually unmade which are not capable of transport during the rainy season. The bullock carts can take the product only up to a limited area. During lack of transport facilities the farmer is unable to take his produce to the appropriate market and is unable to receive a fair price for his product.

Warehousing facility: Agricultural marketing system in present scenario does not provide sufficient store houses. Due to lack of this facility the farmer is unable to keep his product safely until it can fetch a fair price, and he is forced to sell his product at a low price. The insufficient and unscientific facilities of shortage which are available, waste large quantities of grains. Approximately 20% to 30% grains are lost due to rats, insects etc. and the farmers have to bear crores of loss due to lack of these facilities.

Agriculture produce grading system: Presently there is no seriousness in standardization and grading of these products and its is very difficult to convince the buyer about the standard of the produce. Hence, the customers have problem in purchasing the product.

Information about the market: The Indian farmer has very poor knowledge about marketing. They presently following the information acquired from the businessmen and money lenders of the village. There is very less acquaintance with Newspapers, magazines and information sources which keep them away from the actual situation of the overall market for their produce and hence, they get very less information about government rates of the market which would otherwise benefit them.

ii) **Consequences of poor marketing systems:** The inappropriate marketing system is so deep

laden in India that about 5% of the amount is deducted from the farmer's produce in the name of donations, 'dharmada', 'chanda' etc. The farmers are paid low price, as they lack appropriate knowledge about market prices, their fluctuations, government policies etc. Thus, by keeping the rates secret, the farmers are cheated. Before the sale, large amounts of grains are taken from the

farmers as samples. By declaring the product to be of substandard quality minimum prices are paid for it.

iii) Future plans for effective marketing:

a) Improving the literacy rate: It is very much required to spread the education to each every farmer so that they can read are write.

b) Conducting seminars: Farmers shall be given various inputs about increasing their sales and revenue by organizing seminars on marketing systems.

c) Use of technology: Indian farmers shall get well worse with the latest technology like using anroid phones, data cards, using technology in their farming activities to increase the produce of better quality.

d) Unified market : A well- organized domestic marketing system will integrate by developing extensive connectivity across a network of demand centers and supply regions, creating uniformity in the market arena.

e) Direct Marketing: In direct marketing, the farmers directly sell with the produce consumers. These markets have helped in mitigating the problems of fragmented supply chain. Direct marketing skips multiple layers in their transactions and benefits by skipping of intermediary margins.

f) Private wholesale markets: These have not yet developed in India and states need to liberalize the marketing regulations to promote development of private markets.

g) Organised retailing: On the lines of SAFAL (the fruit & vegetable marketing subsidiary of Mother Dairy) which is an example of indigenously organised retailing network. SAFAL operates in Delhi out of approximately 400 retail outlets, and sells about 350 tonnes of fresh produce daily in Delhi-NCR markets.

h) Farmer Producer Organisations (FPOs): Organising producers into formal management practices help to take collective decisions on cultivation to make the best use of market intelligence, as well creates opportunities for producers to get involved in value adding decisions and activities such as input supply, credit, pre-conditioning, processing, marketing and distribution.

i) Cooperatives in agricultural marketing: Cooperatives are organised to aggregate farmers for establishing scale in their production and marketing activities, besides easing access to credit and other services. So, these are the some of the future plans with respect to present facts.

Conclusion:

According to current scenario the agricultural marketing system is not well developed and there is still much scope in adapting new technology in agricultural marketing system. The margin which actually belongs to farmer is taken up by middleman and traders over the years as the rate of agricultural produce mainly controlled by traders and middleman. Hence farmers are not able to overcome their financial situation due to poor marketing methods.

Agricultural marketing system in India still follows traditional methods and most of the farmers are illiterate so they get exploited by the system. They are not getting expected price for their produce, which leads to bankruptcy and suicide of the farmers. There is wide scope for adopting new technology in marketing system to make it transparent.

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A study of Consumer behavior towards E-purchase of Food

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ABSTRACT

E-purchase of food products is a new movement for achieving significant growth in retail marketplace place. The inclination towards 'online' mode rather than physical marketplace due to value maximization. The main objective of this paper is to investigate consumer behavior on selling methods of food products, using e-shops in Delhi NCR, India. An empirical data collection method was used, in which 434 respondents were questioned from the different area of Delhi NCR. The finding shows general acceptance of consumer towards e-purchase of food products in which 29 percent are female respondents whereas remaining respondents are Male. The results also show, nearly half of the respondents did not support e-purchase of food products because they had the concerns regarding the quality and freshness of the food products. E-purchase of food products in India is still at a nascent stage.

Key Words: E-purchase, marketplace , food products

INTRODUCTION

The Online Shopping in India is one of the latest purchasing modes. In the past few years, it has be the most preferred way to purchase of lifestyle product due to its simplicity & easiness. Like lifestyle product internet has also growing as a delivery channel for grocers. In India for example, LocalBanya.com, BigBasket.com and Aaramshop.com have been using the internet to sell or deliver perishable products such as vegetables, Groceries, food product etc. Now days, so many companies have an online presence besides operating physical stores.

Most of the research concerning e-groceries has been carried out in the European countries or in developed countries west. Despite its growing importance, academic research in this E-grocery or online shopping for food or food ordering is negligible in India. The working couple or nuclear families are increasing day by day in metro and they don't have time to purchase food product or groceries from local kirana shop like old days. In view of the high demand for Food product and the introduction of online groceries businesses in India, there is an inherent need to investigate the Consumer behavior towards online purchase of grocery. Additionally, this study

would throw some light on the feasibility of selling perishables online in India. Although this study is limited by the methodology and samples used, it can serve as a basis for future exploration. It is hoped that this study would benefit perishable food product retailers, particularly e-grocers and those that are planning to project into this new retail format in future. Towards this end, this study was carried out with the objective of to analysis the Consumer behavior towards E- purchase of Food in India.

REVIEW OF LITERATURE

Services are basically firm's performance that one party offers to another and that is intangible and does not result in transferring ownership of anything. Its output may not be linked to physical, tangible product. Marketers and firms offering services have dilemma of finding differentiation with that of what is offered by competitors. The competitors try to evolve at almost similar pace than that of its peers thus throwing challenges to service quality (Ehrenberger, 1992). Quality is not only meeting customer's requirements and expectations but also compliance of customer's specifications and fitness for use. Quality is not only profit to the maker, values to the user rather it is satisfaction to the both. Quality creates win – win situation, erases the "We Vs They" adverse relationship that is often seen. The customer defines quality in two ways – one by 'continuing the business relationship' and the other 'by taking his business elsewhere'. The aim of the firm has to be zero defects and nothing less. (Colins 1996). According to PWC India, In 2013, Asia-Pacific rose as the most grounded business-to-Consumer (B2C) ecommerce area in the world with offers of around 567.3 billion USD, a development of 45% more than 2012, positioning in front of Europe (482.3 billion USD) and North America (452.4 billion USD). Globally, B2C ecommerce sales increased by 24% over 2012. This reflects the huge untapped potential of ecommerce by retail companies, both in their country of origin and across borders. Since the ecommerce industry is fast rising, changes can be seen over a year. The sector in India has grown by 34% (CAGR) since 2009 to touch 16.4 billion USD in 2014. The sector is expected to be in the range of 22 billion USD in 2015 (Internet and Mobile Association of India (IAMAI), CRISIL, Gartner, PwC analysis and industry expert). Indian consumers are increasingly venturing online. The country is expected to lead the growth of the internet in Asia in next few years. Increasing in urbanization and changing lifestyles of urban Indian may have contributed to this phenomenon. There were about 243 million internet users in India at the end of 2014, representing almost 19% of the total population (According to Internet Live Stats). By 2020, e-Tailing in India is expected to account for 3% of total retail. Further, orders per million are expected to more than double from five million in 2013 to 12 million by 2016, which will mean more opportunities for both consumers and e-Tailing companies. It

should be noted that most of the online expenditure in India was on consumer goods such as online travel booking, books, CDs, clothing and flowers, computing products. Almost no academic research has been conducted on Indian e-grocery development.

In India, online groceries shopping started in late 2000s. In the initial years only few companies launch online grocery company only in the metros but in the 2015 large number of company's deals in grocery segment even in the group B cities. But development of e-grocery is in nascent stage with so advantage & disadvantage over traditional grocery shopping. According to strauss & frost, advantage of buying over the internet is the ease of comparing prices against other (strauss & frost, 1999). Another advantage of online shopping is to do shopping any time of the day & anywhere in the area. There are some disadvantages of online shopping like touch & feel factor, security concern etc. Keh & shieh mentioned in his research that groceries are high touch products & consumers usually want to see, touch & smell products before purchase (Keh and shieh, 2001). Some consumers had concerns about the security of online grocery transactions (Marganosky and cude, 2000). In India large population believe in traditional method of shopping but still some percentage ready to adapt new technology for online grocery shopping.

RESEARCH METHODOLOGY

This study was based on empirical data collection, through which an effort was made to analysis the trend of consumer purchase for E-grocery. The study may be broken down into several phases. In the first phase, literature review was explored and detailed discussions were done with participants of online retailing. Following that, a preliminary questionnaire was developed to analysis the trend.

Sample Size

Convenience sampling method was used for data collection. 500 respondents were questioned from different area of Delhi NCR. Out of which 434 were included. Due to contradictions in responses and incompleteness of answer 66 were excluded. The mall intercept technique of data collection was utilized for the study. The research was focus on Delhi, Gurgaon, Noida, Ghaziabad & Sonipat. These places were chosen because of good mix of major ethnic & levels of education & income distribution which could affect the attitude towards online grocery shopping.

Questionnaire design

The Questionnaire was designed with an 'easy to understand' format in English language. The Questionnaire was dividing into five parts. Only two part of the questionnaire is relevant for

this paper. It was designed to analysis the consumer perception toward online grocery shopping. It begins with a direct question to the respondents asking whether they purchase groceries online or not. Then they were extent their response with the reasons.

FINDINGS

Demographic characteristics of the respondents

Respondents were asked about their demographic profile which includes gender, age, occupation, and city while one of the objectives of this question was to understand the sample personality of E-shopping.

Gender

One major commonly accepted criterion of development is gender. Gender is a socio-economic variable connecting roles, accountability, constraints, chance and requirements of males and females in an economy. Out of 434 respondents the percentage of male respondents is 71% whereas the percentage of the female is 29%. It also concluded that majority of the male consumers are using online shopping for purchasing of food products and services both for self and their family as compared to female consumers.

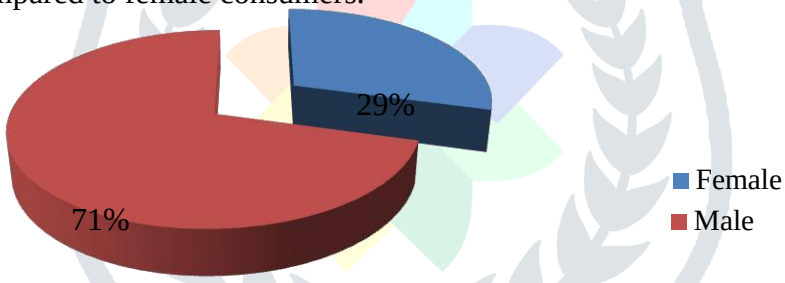

Figure- 1 Gender wise distribution of the respondents

Age

Age is a significant demographic variable not only determines an individual's physical and mental maturity but also depicts his or her life experiences. It determines whether one is economically active or dependent upon others. Out of 434 respondent 76.3 percent of the respondents are the age group of 21 to 30 years, 14.5 percent of the respondents belong to the age group of less than 20 years, 6.2 percent of the respondents belong to the age group of 31 to 40 years, 1.8 percent of the respondents are in the age group of 41 to 50 years and 1.2 percent of the respondents are in the age group of above 51 years.

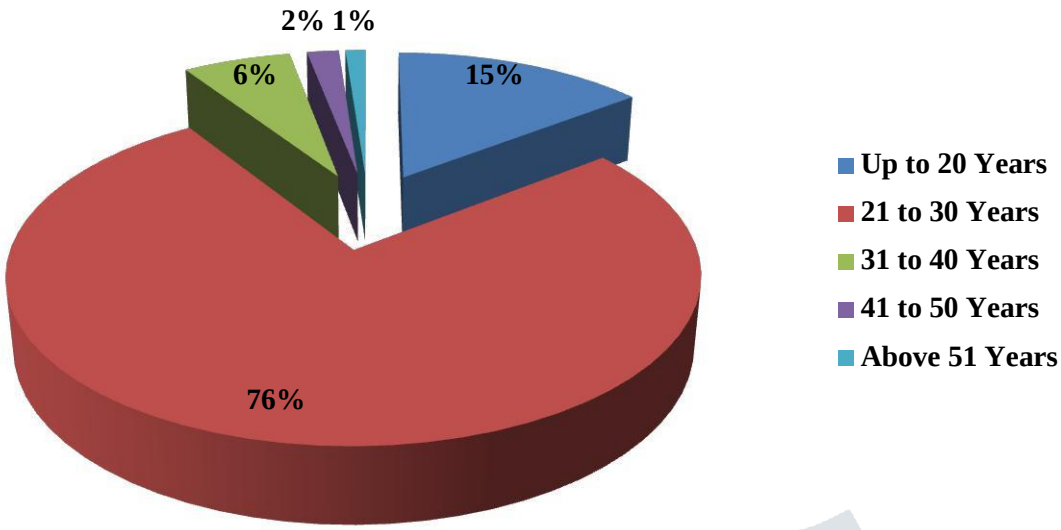

Figure 2: Age wise distribution of the respondents

Occupational Level

Occupation determines the social status of a family. This is due to the fact the different occupations choose the different privileges and economic benefits. 67.7 percent of the respondents are students, 31.6 percent of the respondent are employee either in government sector or private sector, and less than 1 percent of the respondents are doing business.

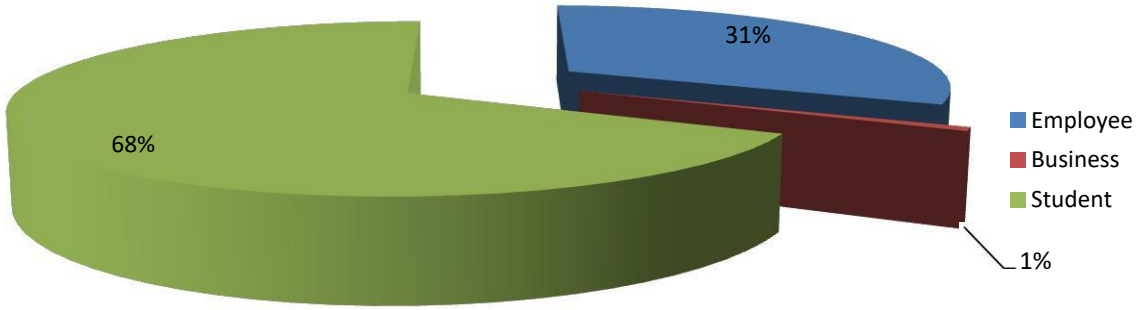

Figure 3: occupational status of the respondents

City

Out of the total respondents taken for the study, 24 percent of the respondents are from New Delhi region Delhi NCR, 20 percent of the respondents are from Gurgaon region of Delhi NCR, 18.9 percent of the respondents are from Noida region of Delhi NCR, 13.6 percent of the

respondents are from Sonipat region, 12.4 percent of the respondents are from Greater Noida region, and 11.1 percent of the respondents are from Ghaziabad region of Delhi NCR.

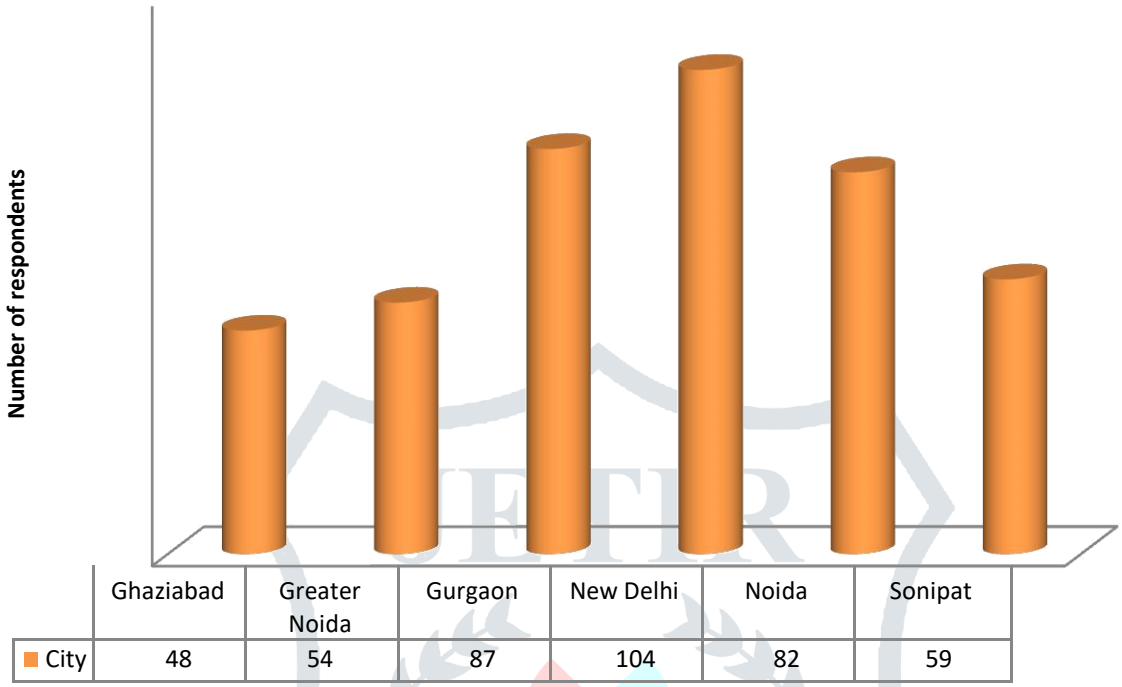

Figure 4: City distribution of the respondents

Online Shopping for food product

After Demographic questions, we asked respondents were they go for online purchasing or shopping for food product or not. In this section the results of percentage analysis for the consumer who goes for online shopping food products along with their demographic characteristic. The below table describes the respondent's intention for online food purchase. It is understood that out of the total respondents taken for study, 50.7 percent of the respondents are decided to purchase food product from online method whereas 49.3 percent of the respondents are still using conventional method to purchase food product.

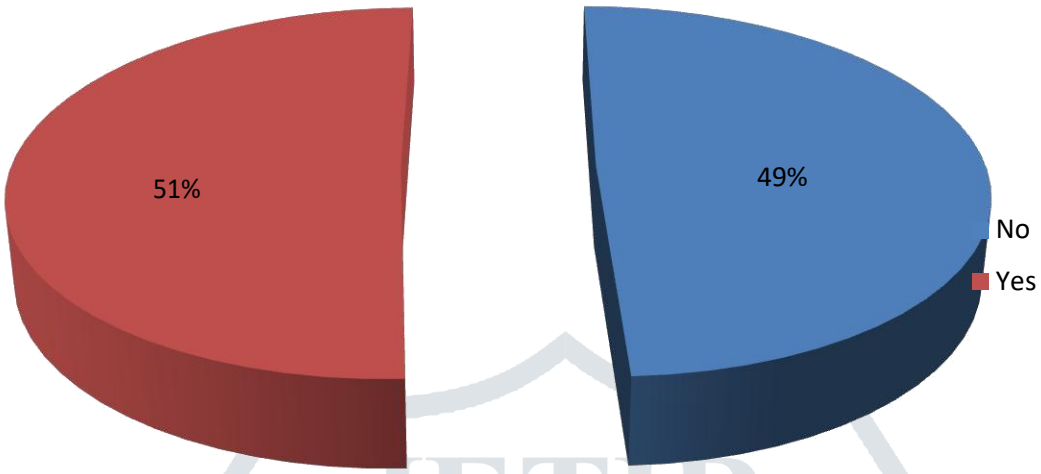

Figure 5: Online food shopping or not

Conclusion

The survey indicates that Indian have mix opinion about online grocery purchases. Study shows that majority of the male consumers are using online shopping for purchasing of food products and services both for self and their family as compared to female consumers. Outcome shows that majority of students are using online shopping for their purchase over the employed person of businessman. This study shows that majority of respondents go for online shopping due to heavy discounts and attractive offers they get through online grocery websites as compare to traditional market. The results also show, nearly half of the respondents did not support online grocery shopping because they had the concerns regarding quality & freshness of the food products. Online grocery shopping in India in India is still at initial stage & lot support should be provided to the startup companies to sustain profitable growth. E-grocers also demonstrate to the consumer that online grocery purchase is easy, safe, convenient & profitable.

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STUDIES ON RECIPE STANDARDIZATION AND ORGANOLEPTIC EVALUATION OF PRETZEL TRIANGLE

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Abstract:
Pretzel is a type of baked bread product made from dough most commonly shaped into a twisted knot. Pretzels are divided in to soft and hard pretzels. Pretzels originated in Europe, possibly among monks in the Early Middle Ages. The traditional pretzel shape is a distinctive non-symmetrical form, with the ends of a long strip of dough intertwined and then twisted back in to itself in a certain way. Salt is most common seasoning for pretzels. Pretzel triangles are made from replacing 2.5% and 1.5% of refined wheat flour by soya flour and flaxseed flour respectively. It is low cost and high nutrition based product. The chemical analysis revealed that pretzel triangles enriched with soya flour and flaxseed flour makes important contribution to protein, carbohydrate, fiber, etc. The percent carbohydrate, protein, fat found in pretzel triangles was 66, 9.62, 19.2 percent respectively. The resultant pretzels were evaluated for its sensory quality on 9 point hedonic scale to decide best quality.

Keywords: Bakery products, pretzels, Sensory Evaluation, Physical-Chemical Properties.

Introduction

Pretzel is a bakery product originated in Europe, possibly among monks in the Early Middle Ages. The traditional pretzel shape is a distinctive non-symmetrical form, with the ends of a long strip of dough intertwined and then twisted back in to itself in a certain way. Salt is most common seasoning for pretzels. In the 18th century, southern German and Swiss German immigrants introduced the pretzel in North America. The immigrants became known as the Pennsylvania Dutch, and in the time, the popularity of many homemade pretzel bakeries had spread. Hard pretzel originated in United States in 1850, the Sturgis Bakery in Lititz, Pennsylvania, became the first commercial hard pretzel bakery. In 1949 highly innovative American Machine And Foundry Co., of New York City developed the "Pretzel Blender" for large scale production.

In 2003 Pennsylvania Governor Ed Rendell declared April 26 as "National Pretzel Day" to acknowledge the importance of the pretzel to the state's history and economy.

Materials and methods

The raw materials utilized during present investigation like Refined Wheat flour, soy flour, flaxseed flour, sugar and packaging material were procured from local market of Pune, Maharashtra.

Organoleptic evaluation of prepared pretzels:

The prepared pretzel triangles was evaluated for sensory characteristics like color, flavour, texture, consistency and overall acceptability by 5 semi-trained panel members comprised of academic staff members of college of Food Technology, MIT, Pune. Judgment was made through rating of products on a 9 point Hedonic scale with corresponding descriptive terms ranging from 9 'Like Extremely' to 1 'Dislike Extremely'.

Chemical analysis of prepared pretzels triangle:

The randomly selected samples of pretzel triangles will be analyzed for the weight, peel percentage**,** pulp percentage.

Moisture

Moisture content will be determined by drying a known quantity of the sample in an oven at 55 ± 2 ^{o}C till it gave a constant weight. It will be calculated and expressed in %, taking the weight of fresh sample as initial weight (Ranganna, 2009).

Crude Fibre

Fibre will be determined by subjecting the sample paste to simultaneous acid-base treatments, cooled in desiccators and weighed to determine the percentage crude fibre content (AOAC, 2004).

Total ash

Ash will be estimated by direct incineration of sample; igniting it in a Muffle Furnace at 550°C till greyish white residue (AACC, 2000; Method No. 08-01).

Total carbohydrates

Carbohydrates were estimated by phenol H_2SO_4 method AOAC (2000)

Protein

Protein content will be determined by using Kjeldhal Apparatus as described in AACC (2000) Method No. 46-30.

Total fat

Total fat content will be determined using hexane as a solvent in Soxhlet apparatus as per the procedure given in AACC (2000) Method No. 30-25.

Method of Preparation:

Treatment:

S_0- Only wheat flour used.

S_1- Wheat flour was replaced by 2.5% soya flour and 1.5% flaxseed flour each.

S_2- Wheat flour was replaced by 5% soya flour and 1.5% flaxseed flour each.

S_3- Wheat flour was replaced by 7.5% soya flour and 1.5% flaxseed flour each.

Ingredients: (Per 100gm)

All the ingredients are taken according to recipe and treatments were given.

Sr. No.	Ingredients	S_0(gm.)	S_1 (gm.)	S_2 (gm.)	S_3 (gm.)
1	Refined Wheat Flour	100	93.5	88.5	83.5
2	Soya Flour	0	5	10	15
3	Flaxseed Flour	0	1.5	1.5	1.5
4	Sugar	8	8	8	8
5	Cumin	6	6	6	6
6	Chili Powder	1	1	1	1
7	Water	50	50	50	50
8	Baking Powder	4.7	4.7	4.7	4.7
9	Salt	1.4	1.4	1.4	1.4
10	Margarine	17.64	17.64	17.64	17.64
11	Chat Masala	1	1	1	1
12	Butter	1	1	1	1

Processing method:

Weighing of all the ingredients

↓

Mixing the ingredients except chat masala and butter

↓

Addition of water (26.21%)

↓

Kneading

↓

Preparing balls of the dough

↓

Sheeting

↓

Moulding

↓

Placing the molded pieces in the greased trays

↓

Baking (150^{0}C for 15 minutes)

↓

Cooling

↓

Seasoning with butter and chat masala

↓

Packaging

↓

Labelling

↓

Storage

Flowchart: Preparation of pretzel triangles

Result and Discussion

Sensory evaluation of prepared pretzel triangles

Data pertaining to sensory evaluation of prepared pretzel triangles with respect to color, flavor, taste, texture, appearance. Data indicated in above table: 2 showed that Sensory evaluation of prepared pretzel triangles was analyzed by semi trained panalist of college of food technology. Panelist scored the highest for S1 in color (8.5), flavor (7.8) and texture (8.02) in appearance (8.7) and its taste was recorded 8.5.The least score (7.5) was recorded for S3. It is revealed from organoleptic evaluation that panelist had preferred control sample in appearance and color, but they equally preferred the taste and texture of control along with that of S1.

Sample	Color	Appearance	Texture	Taste	Flavor	Overall acceptability
S_0	8.7	9	8.2	8.5	8.5	8.6
S_1	8.5	8.7	8.02	8.5	7.8	8.3
S_2	7.5	8.0	7.6	7.2	7.5	7.5
S_3	7.0	7.6	7.9	8.1	7.6	7.6
SE±	0.154	0.136	0.108	0.155	0.123	0.157
CD at 5%	0.453	0.444	0.354	0.507	0.403	0.473

Chemical analysis of prepared pretzel triangles:

The prepared pretzel triangles were analyzed chemically to know nutrient contents of final product. The different methods were used and randomly selected samples are analyzed. Data represented in below table is chemical parameters found in prepared pretzel triangle.

parameter	Value (per 100 gm.)
Moisture	3.6 %
Carbohydrate	66 %
Protein	9.62%
Fat	19.2%
Calcium	280 mg
Crude fiber	2.5%
Ash	1.3 %

*Each value represents the average of the three determinations.

3. Conclusion:

The prepared pretzel triangle is type of snack product. It is bakery product so that the easy to prepare and not a deep fried product which is healthy and better than other deep fried snacks. The replacement of what flour with soya flour and flex seeds makes it highly nutritious and beneficial for health.

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This happens only in Rural India

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Abstract: This paper talks about advertising of rural products in rural markets. This is about the products which are produced at village level or brought from urban areas and the customers for these products are the villagers of that village as well as nearby villages. The objective of the study is to understand about the advertising strategies used in the villages for selling the products; these products are not identified by any brand name. The customers may or may not be aware about the product. Although it is studied in various earlier researches that mouth publicity is the most used strategy but there is much more to this. The study is conducted in twenty villages of Junnar taluka and the respondents were the entrepreneurs in these villages. Entrepreneurs were selected randomly irrespective of their scale of business. Personal interviews were conducted with all the respondents. There were forty entrepreneurs in the study. The research conducted resulted in showing some advertising strategies which are used effectively in rural areas and they are quite different than the ones we read and study in advertising and management books. The study is limited in terms of not taking into its scope the turnover these entrepreneurs have.

Key Words: Rural, Rural Entrepreneur, Rural Customer, Village level Advertising

Introduction

India has more than six lakh villages[1] therefore rural market in India is certainly more than its urban counterpart and hence there are more rural customers than the urban ones. Irony is most of the studies talk about the urban market and urban customers and advertising of these products. There are products going from urban areas to rural areas and vice versa but there are also some products which are grown in rural areas and they are sold there. Although in villages many entrepreneurs enjoy the monopoly status but this is not always the case. Therefore they do take the help of advertising. There is advertising done but without even knowing that this is advertising and still achieving the result of products and services being sold. Most of them depend on mouth publicity but there are other ways also. Some of the ways are very interesting, it is mouth publicity but with a twist.

Rural, Rural Entrepreneur, Rural Customer, Village level Advertising

Rural India- The definition of rural and village as given by government of India is considered for the study. India has three criteria for defining rural areas and they are- Any habitation with a population density of less than 400 persons per sq. km., where at least 75 percent of the male working population is engaged in agriculture and where there exists no municipality or board.[2]

Village - Village means revenue village declared by govt. of India. The revenue village is a well-defined unit and has been used as a unit for data collection in all the censuses in the post independence period. The village in the administrative sense is the 'mauza' a settled area with defined boundaries, for which village records have been prepared.[3]

Rural Entrepreneur - A person living in any of the villages of Junnar Taluka of Pune District and engaged in any business activity irrespective of the scale of operation of the enterprise and irrespective of the sector is considered rural entrepreneur for the study.

Rural Customer - A person residing in any village in Junnar Taluka of Pune District and buying the goods and services from the rural entrepreneurs based in the village is considered rural customer for the study.

Village level Advertising- Advertising as told by the rural entrepreneurs, the way for other people to know about their products and purchase from them.

Objective of the study

To study whether advertising has any role in selling rural or urban products to rural customers in selected villages of Junnar Taluka.

Research Methodology for the study

This research falls under the category of descriptive research where the researcher reports the observed facts in the area of study.

Geographical area of study - Junnar Taluka in Pune district in Maharashtra state of India was the area for the study. It has 181 villages, twenty were selected randomly for the study.

The respondents - Two entrepreneurs were selected from each of these twenty villages. There was no restriction kept about age, scale of business, gender etc. of the entrepreneur. There were 40 respondents. None of them undertook any course for marketing or advertising.

Data Collection - The data was collected through personal interview with each of these forty entrepreneurs. Although there was a questionnaire but the researcher also heard and penned down any other information which had some link to the main topic. The objective was to understand the advertising strategies they use for selling their products. Case study method was used for the study.

Difference between Rural and Urban customer

There is one striking difference between rural and urban customer. Urban customer is buying each and everything for fulfilling the daily requirements but rural customer still possess the power to produce major part of the daily requirements. This makes the rural customer not only producer but also seller for the extra produce at home. So every rural customer is an informed buyer, atleast for the products which are grown or manufactured in village.

Advertising which is not considered advertising

One common factor with all the respondents was that they said we do not earn that much which we can spend for news paper or radio advertisement. They are aware about mouth publicity as way of advertisement and depend on that. On probing further, some of them told more about the way they advertise, these could be called the rivulets of mouth publicity. They do not call it advertising. Some small but effective strategies were noticed during the study and surprisingly they are not considered advertising.

The Rural Advertising found in selected villages of Junnar Taluka

The study presents the various ways these entrepreneurs told, they use to sell their products. All of them said they have not learnt marketing; this is what they got from trial and error approach. Every one of them uses some or other advertising practice but the study wants to bring out the ones which were quite unique.

The beauty parlour in Aalephata earns its customers by saying no to the demands for beauty treatments of customers which could be harmful for them. This generated trustworthiness in the minds of customers and they recommend other customers to take suggestion from this parlour before jumping for any beauty treatment. This strategy has helped to bring in customers from nearby villages also. Sometimes they come just for consultation.

Narayangaon mobile shop runs well because the shopkeeper goes by himself to the homes of elderly people and recharges their mobile phones, also helps them to make calls and any other phone related functions. He explains to them the how to use phone, what not to do with the phone, how they should be careful about keeping phone away from heat, water etc.

The spices and stationary store owner in Udapur asks some women to come and help her while making and packing spices they get paid for it and also get spices at some discount. This in turn makes them know about the purity of spices because they made it themselves and therefore they buy and also gives guarantee to others that they can buy without any worry.

Gents salon in Otur specialises in haircuts and beards, in his salon he places a photo of some celebrity in front of the mirror, this is the advertisement, which means today's special, get your haircut in style of a particular character from movie or some TV serial. He said now a days most of the young boys are asking for beard and moustache like Chatrapati Sambhaji Maharaj after the popular serial.

General Store in Gaymukhwadi is able to sell grains, pulses and things like this so well. The reason behind this is the shopkeeper has employed some women for cleaning these food articles. These women are the selected ones who are known in the village for removing all the small stones, mud and any other impurities very well. People buy from this shop because then they can use it without spending time in cleaning which is a time taking process.

Wage Workers bring business for the mandap decorator of Khamundi village. He has employed 5 people but if it is big work he calls more workers and pay them therefore these workers keep on spreading word about the facilities available with the mandap decorator. He is famous for providing all under one roof. The worker who brings a contract gets bonus apart from the daily wage. This gives work and money to all the people engaged in this business.

Ladies tailor in Wadgaon Anand does not stop only on stitching clothes for village ladies she started conducting tailoring classes for ladies. There may be many ladies tailors in and around the village but there is only one ladies tailoring class available. After these two business initiatives she took a third one. She stitches bags for a saree shop in Junnar market. The material is provided by the shop she just has to stich and give. She has also involved few other ladies in this and now all these ladies earn well. A stich has stitched the fabric of their life pretty well.

A beautician in village Pimpalwandi offers some beauty services free and this is her advertising strategy. She started her parlour with few services and used to give them at low price this attracted customers then she added more services and started giving some of them free. This works good for her.

In Warulwadi the photocopy shopkeeper writes on plain paper about his shop and takes many copies of it and spreads this in village. At time of Ganpati festival he gives free the photocopies of the schedule of programmes to be conducted in the village during the 10 days of festival, this promotes his business. School and college going students are his prominent customers.

The poultry farm in Gaymukhwadi had normal business and the owner was able to earn his livelihood but when the bird flu disease spread he faced the problem, some birds died and some had to be killed. The real trouble began when he started again i.e. after the disease was gone and he bought healthy birds. People were still under the shadows of fear and they were not buying any eggs or chicken. At this time to regain the trust, for one week everyday he used to tell his neighbours, today we all family members will eat egg curry or chicken if you see all of us alive tomorrow and doing well probably you will believe my words that now the disease has eloped. This definitely generated some confidence in people. For next one week he sold eggs and chicken at lower prices and then slowly he was back in business.

These advertising practices definitely are mouth publicity but even mouth publicity needs some solid work to be done behind it. It is not so easy, these strategies adopted by village entrepreneurs are often considered to be of no importance but these are keeping them afloat in their business and region. If they do not use their brains and just depend on the customer to say good about them, they will perish very soon. The above strategies are the ones used by the respondent entrepreneurs.

Conclusion

It is time to look and learn from the rural entrepreneurs and rural customers. They may not be tech savy and brand aware but they know the rules of life and how to wade through the difficult times. We need to change our glasses and then only we will be able to reach the rural customer in a better way. At present only few advertisements are able to reach to the hearts of rural population. If we want to sell products to the rural customer we need to adopt the rural advertising way.

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Advertising in rural markets: Indian Prospective

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Abstract

More than 70% of India's populace dwells in rural territories. Around 33% of the national salary is gotten from agribusiness and associated exercises that utilize around two-third of the populace. In sheer numbers, the volume of procurement is amazing. Be that as it may, data and investigation into the rural advertise isn't comparable with its size and its potential for development. The general comprehension among advertisers and sponsors is that the provincial populace is to a great extent uneducated, hones farming as a profession, and is far-expelled from the advancement of urban India. The provincial economy keeps on being totally subject to the impulses of nature. Therefore, utilization and spending designs are firmly connected to the nature of the storms. Notwithstanding, because of endeavours by different associations and organizations, the drive towards women' strengthening what's more, the examples of overcoming adversity of miniaturized scale credit activities by ladies' self help groups in numerous states, there is a more noteworthy mindfulness utilization of new ideas and items in provincial India

Keywords: *Rural Marketing, Indian Market, advertising, development*

Introduction

In a nation of more than one billion individuals, where over 70% of the populace lives in provincial regions, the sheer number of the rural masses requires that advertisers contact them for the marketing of different products and enterprises. Notwithstanding the way that around 40% of the Indian populace is impoverished, there is yet incredible breadth for promoting things of need in the rural hinterland. Throughout the years, there has likewise been a developing interest for different items that were prior considered 'urban'.

Rural markets

The Indian economy is largely agrarian and rural. As per census 2001, more than 70% of the Indian populace lives in rural area. A rural territory is characterized as a 'Non-urban region with a populace under 5000 occupants and populace thickness under 400 individuals for each square kilometre'. As indicated by authority measurements, around 33% of the national income is gotten from rural and partnered exercises, which utilize around two-third of the working power (India 2003). Marketing in rural India represents a few difficulties, aside from the topographical separation and remoteness of different towns. In any case, the expansion of the media, particularly the expanding scope of the electronic media in provincial India, has given presentation to different items and administrations, which were up to this point thought about the space of urban clients. This has brought about interest now and again and the goal to secure such items in different cases. Over the most recent multi decade or somewhere in the vicinity, various organizations, including multinationals, have started to charm the rural customer.

Rural market research

Notwithstanding an expansive undiscovered market, rural statistical surveying, as per exchange examiners, contains only 10% of the general Rs. 500-crore statistical surveying completed in the nation. The Indian readership overview (IRS) and national readership study (NRS), which are drawn out each a few years, incorporate a great deal of information on rural markets and consumption patterns. Truth to be told, IRS 2003-2004 incorporates selective data on provincial markets. This comprehensively incorporates data on the current framework for item stocking, purchasing behaviours, display and appropriation by retailers in rural advertises in India. The IRS field reports was led with an example of 5,500 businesspeople crosswise over 2,900 towns. The report incorporates data about merchandise from 25 generally utilized

Fast moving customer Goods (FMCG) item classes, with more than 100 brands. The IRS and NRS likewise incorporate data on media access and reach in rural zones. The IRS covers data about non-traditional media, for example, melas/fairs, and so on, the fragment on provincial market has data on power associations and the quantity of hours power is gotten, possession and durables, for example, tractors, water pumps, generators, steel pantries, and so on.

The absence of enthusiasm for rural markets that stamped corporate methodology before has changed for good with more corporate seeing the potential. The accessibility of rural information has without a doubt encouraged their basic leadership concerning wandering into the hinterland. While separate figures for rural advertising from the over Rs. 10,000 crore promoting use for each annum in the nation may not be accessible, the patterns demonstrates that the rural segment is currently considered important. In the last one-a-half decades, many publicizing offices have opened special cells to manage rural marketing and correspondence. Tables 1.1-1.3 will give a diagram of the aggregate workforce in the nation, evaluated circulation of families by occupation and the family salary and per capita earning in provincial India.

Table 1.1 Population by category of workers (2001 Census)

(In millions)

	Rural	Urban	Total
Total Population	740.03	280.50	1020.53
Total workers	310.07	90.18	400.25
Marginal workers	80.10	0.83	80.93
Main workers			
(i) Cultivators	120.47	0.29	120.74
(ii) Agriculturallaborers	100.31	0.43	100.74
(iii) Household industry workers	10.17	0.47	10.64
(iv) Other workers	10.33	10.60	20.93

Source: Basic Economic Data, India 2003

Table 1.2 Estimated distributions of households by occupation (rural)

Category	1989-90	1995-96	1996-97	1998-99
Housewife	0.63	1.12	1.07	1.04
Cultivator	50.52	41.02	40.86	40.89
Wage earner	26.45	35.30	35.23	35.22
Salary earner	9.86	11.11	11.20	11.26
Professional	1.01	0.64	0.70	0.72
Artisan	3.20	3.45	3.51	3.44
Petty shopkeeper	5.37	4.86	4.95	4.99
Businessman	0.81	0.37	0.43	0.44
Others	2.15	2.13	2.03	2.00
Total	100.00	100.00	100.00	100.00
Total number of household	102.335	118.173	119.290	122,810

Table 1.3 Market information surveys of households (MISH)

1999-2000 HH Income	
Urban	Rs. 1,02,928
Rural	Rs. 56,630
1999-2000 per capita income	
Urban	Rs. 19,267
Rural	Rs. 9,481

Source: NCAER's India Market Demographic Report 2002

In the event that we dissect the above table, more than 310 million individuals from India, out of an aggregate of 418.25 million working individuals (all India, both urban/rural), which works out to around 43% of the rural populace, is engaged with one sort of employment or the other in provincial India and consequently has buying power. This gives an incredible chance to organizations to wander into the rural marketing.

Some extremely intriguing bits of knowledge rise up out of Table 1.2. While there is a decrease in the level of cultivators and workers, there is around two % increment in the classification of compensation workers. In the artisan class, there has been a huge, more than three-overlap, spurt. This mirrors an expansion in cottage enterprises in a time of around 15 years. This may likewise incorporate independent work in this classification. Table 1.3 mirrors the family unit (HH) and per capita income of Indians. In the most astounding level of income there are 2.3 million urban family units as against 1.6 million families in provincial India, a figure that spells extraordinary potential for products for rich shoppers in rural India. Table 1.4 contains some reassuring information on the expansion in the family income over some undefined period. As obvious from the above table, there has been a decrease in the low-wage classification of families from around 53% to more than 21%, which is an extremely reassuring sign. There has been a positive development in every single other class, flagging more salary to rural families over some undefined period.

Table 1.4 Households in different income categories

Rural (Percent)

	1989-90	1992-93	1996-97	1997-98	1998-99
Up to Rs 35,000	52.99	39.72	28.11	24.61	21.41
Rs.35,001-Rs.70,000	35.64	31.76	37.04	38.08	38.41
Rs.70,001-Rs.105,000	9.42	14.16	16.58	17.71	18.96
Rs.105,001-Rs.1.40,000	1.04	6.00	7.60	8.02	8.72
Above Rs. 1,40,000	0.90	8.37	10.67	11.58	12.51
Total	100.00	100.00	100.00	100.00	100.00
Total number of households (000)	1,823	2,062	2,184	2,219	2,247

SOURCE: India Demographic Report 2002

Myths about the rural market

One of the myth is that 'upmarket' implies urban India. The truth, be that as it may, is that if month to month family unit wage is taken as a parameter to section the 'upmarket' crowd and MHI of Rs. 5000+is taken as the benchmark, at that point Table 1.4 reflects empowering information for advertisers. One of the myths is that the rural shopper is fundamentally an agriculturist, which is half-truth. Businesspeople and individuals in administration contain 21% of the families, which works out to 26.8 million family units. Their financial profiles are like urban profiles, as indicated by the review. This class, as per the research finding, expended 45-60% of the merchandise in rural India, in this way making it the most prolific target. Another myth is that rural shoppers are 'not worth making a fuss over as they purchase free unbranded items instead of marked assortment'. In reality, 18 classifications of marked merchandise represented 80% utilization, as per the survey.

Dynamic of rural purchase behaviour

Numerous components add to making a provincial purchaser's obtaining conduct unique in relation to that of his urban partner. The joint family framework wins in rural zones. A family may comprise of 10 to 15 individuals. The job and errands of relatives are characterized. Senior citizens are held in high regard. Buys are not really made by the clients, but rather regularly by young men who are requested to get things from the nearby kirana shop.

Family members, including young girls, their friends, and relations, go in a gathering to fairs and buy items which they ordinarily don't find the opportunity to purchase, particularly unmentionables, individual cleanliness items, and beauty care products. Not at all like urban family units, purchasing isn't orderly in rural territories. It is for the most part turned to when a thing like flour, tea leaves, oil, and cleanser runs out. As indicated by different field overviews and research contemplates, moms, grandmas, and those accountable for family unit errands ask their youngsters, by and mainly male kids, to go out rapidly and purchase the item from the shop. Young ladies may have their very own selection of items and brands yet they adventure out for buys once in a while. In rural territories, there is strict isolation of people. It is as yet a shut society where issues, for example, love, undertakings, sex, and sexuality are not talked about straightforwardly. Specialists feel that any correspondence that mirrors any of these issues would put off watchers. A young lady is viewed as the pride of the family (*ghar ki izzat*) and portraying her in a coquettish setting raises eyebrows. Generalizations persevere unequivocally.

Media effect and its measurement in rural India

Today, Rural India is the trendy expression for advertisers. Associations are moving their concentration towards this enormous and generally undiscovered market. Yet, the issue for them is in contacting this colossal greatness of the rural masses with differed cultural, social foundations and talking a couple of hundred lingos.

- **Media penetration and gap in provincial India**

  The development in customary media has been very noteworthy; be that as it may, it has not been considerable. Provincial India comprises of around 127 million family units of which just 54% interacts with any of the ordinary media, similar to squeeze, TV, satellite, radio or film. That implies approximately 238 million are holding up to be tapped by the ordinary media. It ought to be recognized that distinctive media blend is expected to pass on messages to provincial shoppers. There is a need to comprehend what bids to urban clients may not be fitting for their rural partners attributable to their diverse way of life. The whole correspondence and furthermore the vehicles for the imparted message therefore must be unique. It has been seen that beneath the-line correspondence like option and inventive methods for correspondence assumed a key job in building consolation and trust, thus it is fundamental.

- **Changing attitude of the rural consumers: Rural consumerism**

  Because of the expansion in education rates and the infiltration of traditional media, the discernment and state of mind of the rural buyer is changing, moving towards legitimate consumerism. Not just this, demeanour and utilization propensities for provincial purchasers are additionally changing and winding up more present day in a urban sense.

Changing attitude

Past	Present
Simple living and high thinking	Consume while it lasts
Poverty stricken choices	Urbane choices
Collectivity	Individuality
Simplicity	Status driven
Security	Risk taking
Achievement	Achievement with accumulation
Patience	Expediency, convenience
Restrain	Indulgence
Durability	Durability with aesthetics

Broad strategies of rural advertising

The common methods for publicizing in provincial regions through various existing media and all the option and imaginative media comprehensively rotate around three methodologies, specifically,

- Influencer strategy
- Participatory strategy
- Show-and-tell strategy

Influencer technique:

The job of the influencer or impacting correspondence can't be disregarded the extent that provincial India is concerned. The promotions that spin around this very methodology really rely upon the impact of various persuasive individuals or potentially occasions in the towns to put over the message effectively with more impact and buy expectation. A case of this sort of commercial might be marked underwriting by any compelling individual in the town like the 'Mukhiya' or the 'schoolmaster'.

Participatory system:

Occasions like distinctive celebrations and diverse amusements and sports rivalries really have a high investment level in the ruralIndia as different wellsprings of stimulation are less in those regions. In this way, these occasions and shows offer extraordinary chance to achieve provincial India cost viably. Distinctive brands support diverse occasions and shows in provincial towns which is really a savvy approach to promote with the participatory technique.

Show-n-tell system:

Numerous brands are wandering into various approaches to instruct their provincial purchasers about their brands and their utilization through various shows and occasions. This sort of activities really makes enormous mindfulness about the brand among the intrigued individuals in rural India. Distinctive wellbeing related notices like Polio mindfulness and AIDS awareness programs include an 'indicate n-tell' system of promoting.

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COLD PLASMA: EMERGING NON-THERMAL TECHNOLOGY IN FOOD PROCESSING

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Abstract:

It was observed that since many years cold plasma technology was used for sensitive materials but now a days trend it moving towards the disinfection of food materials too. While maintaining quality of fresh food commodities cold plasma technology has been seen as advantageous for inactivation of the micro organisms. Looking towards the improvement of food safety Cold plasma is an emerging non thermal technology. Cold plasma is a novel and emerging non thermal technology that uses energetic, reactive gases for the inactivation of spoilage micro organisms on meats, poultry, fruits and vegetables commodities. This technology is used for purification and disinfection of fruits and vegetables without changes in organoleptic properties. Developing interest for fresh produce represents the challenge to the food business of providing safe and secure food with negligible processing and treatments. Cold atmospheric plasma has potential in the food manufacturing area to inactivate microorganisms, accordingly enhancing sustenance and security without loss of physicochemical or organoleptic properties. The present investigation is carried out to understand the importance, microbial inactivation mechanism current status as well as different aspects of cold plasma technology. Different applications of cold plasma technology are also analysis with emphasis on food and agro based applications.

Keywords: *Cold Plasma Technology, Food Processing, Agricultural produce, emerging non thermal technology.*

Introduction :

Everything surrounding to us is known as universe and the matter present on earth mostly found as solid, liquid and gas among this the fourth states of matter is Plasma. The discovery of the term 'Plasma' was first carried by scientist Irving Langmuir in 1928.Then he defines plasma as the fourth state of matter which is the combination of partially or wholly ionized gases [1]. With the consideration of various properties of the plasma, its application in the different fields which include textile, electronics, life sciences, packaging etc [2]. For the surface disinfection of fruits, seeds, and spices the sterilisation methods such as heat, chemical solution are used but they are very time-consuming and there is effect on the nutritional content. Looking towards the conventional techniques like heat, chemicals and UV treatment Van de Veen et al. reported that the activity of cold plasma is more on the bacterial spore. The spoilage of the food commodity is occurs due to the activity of different food enzymes and contamination by different micro organisms . In the food industry the presence of pathogenic micro organisms is responsible for causing health risks [3,4]. Hence the control of these microbes is very important in the food industry. For the destruction of infectious microbes There are a various methods such as: thermal technologies, which include sterilization, pasteurization, ohmic heating, etc. and non-thermal technologies, include high hydrostatic pressure, pulsed electric fields, high voltage arc discharge [3,4]. The thermal technologies are responsible for the change in quality attributes and loss of essential nutrients, while the non thermal technologies are expensive and for the processing skilled and trained personnel required hence for applying in the processing it is technically difficult. ACP: atmospheric cold plasma, a non-thermal plasma

technology, is proposed as a potential alternative to traditional methods for decontamination of foods [5]. This technology does not require extreme process conditions and offers great opportunities for food product preservation [5], where the heat is not desirable for it in conjunction with maintenance of sensory attributes of the treated foods. This article briefly summarizes relevant aspects of ACP including plasma generation, microbial inactivation mechanism and plasma applications in food processing.

Cold atmospheric plasma has potential in the food processing area to inactivate microorganisms, there by enhancing food safety and security [1]. Developing interest for fresh produce represents the challenge to the food business of providing safe food with insignificant handling treatments. It is pivotal that foods are provided with no microbial contamination as numbers of products are eaten in its raw form. Subsequently, there is much enthusiasm for novel methods for safe foods and killing micro organisms without influencing its quality. One such developing innovation that has indicated guarantee is the utilization of cold atmospheric plasma (CAP) technology. An overview of the cold plasma technology is presented with its potential applications in food processing sector. Among the all states of matter Plasma is considered as the fourth state of matter [6]. The idea of the fourth state of matter results from the possibility that phase changes happen by dynamically giving energy to the matter, for example, the one from the solid state to fluid up to the gas state. A further phase progress might be thought as the one from the gas state to plasma state, regardless of whether these states is come to step by step by giving increasingly vitality to the system. Plasma can be viewed as a specific ionized gas, which retains some one of kind features which recognize it from a (ideal) gas.

What is plasma?

Plasma is ionized gas that comprises of a substantial number of various species, for example, electrons, positive and negative particles, free radicals, and gas molecules, atoms in the ground or energized state and quanta of electromagnetic radiation (photons) [7]. It is viewed as the fourth states of matter on the planet. It tends to be produced in the expansive range of temperature and weight by methods for coupling vitality to gaseous medium. This vitality can be mechanical, thermal, atomic, radian or conveyed by an electric current. Cold atmospheric plasma is a novel non thermal food processing innovation that utilizes energetic, responsive gases to inactivate spoilage microorganisms on meats, poultry, natural products, and vegetables. This adaptable sanitizing technique utilizes power and a carrier gas, for example, air, oxygen, nitrogen, or helium; antimicrobial synthetic chemical agents are not required. The essential methods of activity are because of UV light and responsive chemical substance results of the cold plasma ionization process. A wide exhibit of cold plasma frameworks that work at atmospheric pressure or in low pressure treatment chambers are a work in progress.

How plasma is generated?

The most generally utilized strategy for creating and maintaining a low-temperature plasma for mechanical and specialized application is by applying an electric field to a neutral gas [12]. Any volume of a neutral gas dependably contains a couple of electrons and ions that are formed, for instance, as the aftereffect of the collaboration of radioactive radiation with the gas. These free charge carriers are accelerated by the electric field and new charged particles might be made when these charge carriers collide with molecules and atoms in the gas or with the surfaces of the cathodes. This leads to an avalanche of charged particles that is eventually balanced by charge carrier losses, so that steady-state plasma develops. Accelerated electrons collide with gas atoms to excite or ionise them. Ionisation of gas atoms releases more electrons; this cascaded reaction can generate a rich abundance of highly reactive chemical species which are capable of inactivating a wide range of microorganisms including food borne pathogens and spoilage organisms.

Cold Plasma Technology in Foods:

Cold Plasma Technology in food industries depends on a gas release innovation a viable, practical, naturally safe technique for basic cleaning. The Vacuum Ultraviolet (VUV) energy is successful in the breaking most natural bonds (i.e. C-H, C-C, C=C, C-O and C-N) of surface contaminants this breaks separated high atomic weight contaminants. A second cleaning activity is done by the oxygen species made in the plasma (O2+, O2-, O3, O, O+, O-, ionized ozone, energized oxygen, and free electrons). These species respond with natural contaminants to frame H2O, CO, CO2, and lower atomic hydrocarbons. The subsequent surface is ultra clean/disinfected. The plasma initiated atoms and particles cause atomic 'sandblasting' and can separate natural organic contaminants.

Main Applications of Plasma Technology:

1) Disinfection of packaging materials:

Cold Plasma can be utilized to inactivate vegetative micro organisms and spores on food material packages. Particularly for temperature delicate items, this can have an clear advantage compared to heat treatments. What's more, plasma can likewise decrease the quantity of water utilized for cleansing of packaging materials. As cold plasma is a gas, the packaging material with irregular shape are effectively treated.

2) Disinfection of Food products:

At the point when microorganisms are situated at the surface of the food commodities cold plasma can be utilized for inactivation of both vegetative cells and spores. As the treatment is done at low temperature, the consequences for food quality and appearance of the item are negligible.

Applications of atmospheric cold plasma

The processing and operating cost of the cold plasma technology is very low due to that it plays an important role in the many applications. The different applications of these technology in various areas are: food and nutrition industry, medical and clinical [8], materials processing, material analysis, surface modification. ACP technology applies on various material which having distinct advantages for decontamination of foods [9]. ACP is increasingly under research for decontamination of fresh produce fruits and vegetables [10]. ACP technology majorly used to treat a variety of vegetables: fresh tomatoes, cherry tomatoes, lettuce, carrots, cucumbers and broccoli. The tomatoes and the lettuce were easier to decontaminate than the carrots, probably because of the surface structure. The technology is also used to treat various fruits and spices such as strawberries, apples, melons and mangos pears, spice e.g. red pepper, nuts. To inactivate the surface flora of the fresh meat and poultry and meat products, e.g. bacon, ham and ready to eat meat) and cheese the ACP technology is used. ACP is useful to control the microorganisms in the cereal industry because it doesn't generate too much heat which means it may damage food nutrition less. Recently, some scientists show that ACP is suitable for inactivation of the enzymes from fruit or vegetable origin [11]. ACP is a powerful tool for surface decontamination of not only foods but also food packaging materials (plastic bottles, lids and films) without adversely affecting their bulk properties, and does not result in any liquid effluents (residues). As the spices having antimicrobial activity ACP technology in combined with the essential oil (e.g. clove oil) to decontaminate the cellulose-based food packaging and to inactivate the surface microorganisms [12].

Advantages of Atmospheric Plasma :

1) Atmospheric cold plasma is zero moisture process.

2) It is suitable method for a food manufacturing condition.

3) Energy requirement for the processing is very less.

4) Reversion of a Reactive gas species after treatment.

5) Time requirement is very less.

6) It is emerging ultra-fast sterilization technique used for preservation.(sterilization takes only few minutes)

7) It is surface acting treatment so there is no effects on nutritional values.

8) The Process is suitable for thermo labile commodities operates at ambient temperatures.

9) It is a sterilisation method which inactivates all kinds of pathogens.

10) Capital cost is very low.

11) There is use of natural gases including nitrogen, argon, air, hydrogen and oxygen so it is Environmentally friendly technology[13].

Future Scope

It is observed that the Cold plasma technology is used for sterilization and inactivation of the surface of the of packaging polymers purpose. Cold plasma is used in the preservation of the food commodities so there there is a huge application in food processing. The amount of energy consumptions and stability depends up on the type of discharges used for treatment. Based on this parameters for the application of plasma should be optimized for maximum efficiency at low cost of operation. Many researchers successfully applied plasma on foods (solids and liquids) for the microbial inactivation but they did not explain its effects on the nutritional qualities and toxicology of treated foods. There is a necessary that application of plasma on foods should be recognized as GRAS after intense study and research (in vitro and in vivo) in this field. Future studies should be done on applications of plasma on food surfaces to change its physical and chemical properties with cost effective and to increase the shelf life of the food products.

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Paradigm shift In Rural Marketing in Digital Era.

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Abstract:

'India lives in villages'. The Indian rural market with its vast size and demand base offers great opportunities to marketers. In the recent years, rural market has acquired significance and attracted the attention of marketers as 68.84% population of India reside in 6,38,000 villages and overall growth of economy has resulted into substantial increase in the purchasing power of the rural communities. Government campaign "Digital India" can connect maximum number of rural Indians to all over the world through Internet. Impact of digital India in the future of E-Commerce in Rural India; represent the various opportunities for vendors, consumers, E-Commerce Industries and factors influencing trust in rural Indians. ICT is becoming the facilitator of socio-economic development in rural India with its obvious facilities by way of health, education, financial services and employment avenues, etc. It can help the bridge gaps by providing 'e' and 'm' services. ICT offering meant for rural sector can be classified into three categories: Those solutions which aim are aimed at empowerment, those which would do enablement, those for market expansion.

Keywords: Rural market, E-Commerce, Digital India, socio-economic development, empowerment

Introduction

A country whose middle class population is as big as the entire population of USA is a market which no FMCG player can afford to overlook. In addition, as the fruits of economic growth become available to the masses and more people start to move up the economic strata, the Indian market only keeps on expanding. More importantly with a population where the median age is only 27, consumerism is on the rise in India with growing aspiration levels. This has been further aided by government's efforts to expand financial inclusion and creation of social security nets. With rural India accounting for more than 700 million consumers and accounting for 50 percent of the total FMCG market, there exists huge opportunity at the so called 'bottom of the pyramid'. The market in India is fragmented with roughly half the market being dominated by unbranded, unpackaged, home-made products, operating mostly in the rural markets. The potential of the non-urban market is something which all FMCG players are very keen to tap. FMCG players are busy analyzing emerging consumer trends and identifying new consumer segments and accordingly drawing up plans and strategies to capture market share. On top of that, with growing penetration of telecom and internet, e-commerce is emerging as a viable alternative for traditional retail and kirana outlets. Thus, the choice of distribution channels in order to reach out to a larger market now forms an integral part of the planning process for FMCG players too.

What does the Rural term imply? There is a no single answer. Collins and cobuild Dictionary (2001) Describe the word as "Places far away from towns and cities. However census of India(2001) defines rural as 'that what is not urban'. Delivering a better standard of living and quality of life will be the new role of rural marketing. Rural markets have undergone rapid transformation during the last ten years today, the rural consumer is exposed to a variety of products and services and specific brands. The companies entering rural markets have a major role to play by carrying developmental message to less informed rural

population. Late C. K. Pralhad, the Management Guru, in his famous book on "The Fortune at the Bottom of the Pyramid", has rightly said, "The real source of market promise is not the wealthy few in the developing world or even the emerging middle income consumers. It is the billions of aspiring poor who are joining the market economy for the first time." The attractiveness of rural India has further increased due to the recent efforts of Indian government have launched several schemes such as Mahatma Gandhi National Rural Employment Guarantee Scheme.(MGNREGA),Jan Dhan Yojana, Direct Benefit Transfer(DBT)etc. that have changed the dynamic of rural India.

Defining Rural Market

Census of India	Definition of Rural Market
	Place which satisfy following criteria: 1.Minimum Population ≥ 5000 2.Population Density ≥ 400/sq.km 3. 75 per cent of the male working population is engaged in agriculture
Reserve bank of India	location with population up to 10,000 will be considered as rural

A Simple Definition from Marketers' View would be "any market that exists in an area with less than 10,000 populations, low density of population and without significant infrastructure facilities is a rural market".

What is Digitalization in India?

Digital **India** is a campaign launched by the Government of **India** to ensure that Government services are made available to citizens electronically by improved online infrastructure and by increasing Internet connectivity or by making the country digitally empowered in the field of technology.

Three primary forces driving Digitization:

- **Consumer pull**: Consumers and particularly Generation C (the generation of young people who, by 2020, will have always lived in a primarily digital world) are already fully adapted to the digital environment. They naturally expect to always be connected, are willing to share personal data, and trust referrals from their closest friends more than from well-known brands.
- **Technology push**: The increasing affordability of broadband is expanding the reach of technology to billions of consumers. In parallel, low-cost smart devices are being deployed in every industry. Cloud computing and the vast information-processing machinery it requires, is developing rapidly.
- **Economic benefits**: The economic benefits to be captured through digitization are quantifiable. A surge of capital has poured into the new digitization technologies and companies, and the public markets reward early movers with unprecedented valuations

1. Customers must complete a brutally honest self-assessment to understand their digitization readiness. The primary motivation for becoming digitized is to meet customers' steadily increasing high expectations. This requires more than simply automating existing processes. It requires reinventing the entire business process.
2. Security is a top driver of IT Spend and will become increasingly important in proportion to the amount of digitations. According to Forrester, over 60 percent of enterprises were expected to experience a security breach in 2015 and security spending to increase, as much as double in some sectors. Security vulnerabilities can cost a business millions of dollars in liability so security for every business must be prioritized.

3. It's not a matter of whether a business becomes digitized; it's a matter of when**.** In order to survive long-term, all businesses will need to adapt and transform. And although the digitization pay-off may occur immediately for some industries, for others, the wait is much longer. The healthcare industry is one such sector.

E-COMMERCE

E-Commerce or electronic commerce, deals with the purchasing and selling of Products and services over an electronic platform, mainly the internet. E-Commerce has various categories such as Business to Business (B2B), Business to Consumer (B2C), Consumer to Business (C2B) and Consumer to Consumer (C2C) (Source: E-commerce in India accelerating growth). E-commerce is an ability to allow business to communicate and to perform transaction anytime and anyplace. The power of e-commerce allows geophysical barriers to vanish, making all consumers and businesses on earth potential customers and suppliers. eBay and Amazon E-Commerce companies are good example of e-commerce businesses are able to post their items and sell them around the Globe or world. The E-Commerce sector growth was based on rapid technology adoption like increasing use of devices like smartphones and access to the internet via broadband, 3G, etc. which led to an increased online Consumer base which helps to this growth.

E-COMMERCE INDUSTRIES DYNAMIC ALTERATIONS AND RURAL AREA OF INDIA

The rural areas are consuming a large number of industrial and urban manufactured products. Ecommerce industries would be reviewed and made alterations of their techniques or models. Industries have always been fascinated by rural India, but due to lack of internet access rural market not establishing properly. In last few years some big companies like ITC, Tata etc. shown their presence in rural areas to get advantage of big opportunity in E-Commerce. Rural India also grabs the benefits of this medium by providing Internet Facilities. The article "snapdeals logs on rural India" in TOI (2014)] says E-Commerce companies already plans to tap into rural or slum areas in India like Dharavi in Mumbai and villages in Rajasthan and Haryana. Snap deal plans to set up approximate 5000 e-commerce kiosks across 70,000 rural areas in India. These kiosks will include PCs and tablets for people to go online and shop. From a technology point of view, the adoption of the e-Commerce platform across enterprises and consumers will be a big game changer. e-Commerce is changing the way people shop in our country and it is proving to be a compelling channel in any company's go-to-market strategy. On the consumer side, the large scale adoption of technology by students or next-gen consumers is going to be another big game changer. As technology adoption by government and entrepreneurs increases, it will further accelerate the growth of the IT sector.

- **Rural Connectivity**

  The government has been putting efforts to connect the village panchayats and getting various services delivered with the help of rural connectivity. In this whole gamut, dependence on IT infrastructure will be crucial as it will give the communities a more reliable and quicker way to access outside products, services, information and social linkages. For companies or external providers of products and services, it will improve access to rural communities.

- **Empowering the youth and rural India**

  The Prime Minister also assured help to the youngsters in their startups. "Why can't we make quality electronic goods that are globally competitive? I assure all help to youngsters in startups. I think in the times to come we will get even more active in this," he said. "Design in India is very important. Just like Make in India is important. The talent of our youth must be utilized. And we must focus on designing in India," the Prime Minister added. Union telecom minister Ravi Shankar Prasad added, "The story of Digital India is not about numbers of laptop and phones, it is an idea where we conceive of not only IT-enabled services but IT-enabled society." The government announced that BSNL already has 55 Next Generation Network in place to replace 30-year-old exchanges; their number will grow to 683 by year end. BSNL also has 53 active Wi-Fi hotspots, and aims to have 2500 Wi-Fi hotspots by the end of 2015. National Scholarship Portal will offer all details and performing all key procedures from a single platform, while the government is also launching an app that will make it possible for citizens to take appointments

and pay fees for government hospitals using their smart phones. Similarly, Indian citizens can now connect their phone number with their Aadhaar authentication number for streamlined data verification. Additionally, the government is launching apps for Swachh Bharat Mission, PayGov and MyGov, and setting up National Centre for Flexible Electronics and National Insititute for IoT (Internet of Things). RIL chairman Mukesh Ambani, said that with Digital India, the government has moved faster than the industry. He added that Reliance Jio Infocomm will invest Rs 2,50,000 crore as part of Digital India programme. The company will also roll out a best-in-class internet network.

- **The M&E industry is transforming lives**

  The Indian Media and Entertainment (M&E) Industry, one of the most vibrant and exciting industries in the world, has had a tremendous impact on the lives and the Indian economy. As the M&E industry widens its reach, it plays a critical role in creating awareness on issues affecting, channeling the energy of and building aspirations among India's millions. The global M&E market has witnessed signs of steady growth over the past 3-5 years. Increasing digitization across sub-sectors of M&E industry, rate increases in TV, channel packaging by MSOs, innovative strategies to monetize digital content, rapid growth of new media powered by increasing Smartphone penetration are likely to be the key levers of growth for the Indian M&E industry. A well thought out, consistent and long term outlook on regulation is also the key to create an M&E industry that is world class in scale and plays its part in transforming India. The phased progress in digitization has been the stepping stone for the industry's growth and success, thereby bringing about a paradigm shift in key indicators, particularly within the domains of TV and film sectors. The Ministry of Information and Broadcasting (MIB) introduced several initiatives with a view to harness the power of technology and create a framework to drive growth in the existing broadcasting landscape in India.

- **India goes more mobile**

  The total internet user base in India grew to approximately INR 214 million with almost INR 130 million going online using mobile devices. Digital media advertising grew 38 percent-faster than any other advertising category. Mobile, social and video emerged as star categories in advertising owing to the proliferation of smartphones, 3G, 4G and off-deck mobile apps. Increasing competition and upgradation and sharing of network infrastructure by telecom operators are just two of the factors expected to propel growth in data. As providers introduce numerous package options for mobile data at further reduced rates, use of data is likely to increase, and is expected to be the driver of revenue and profit for telecom companies – in contrast to the voice service driven growth of previous years. This is leading to a rapid increase in internet based consumption of music, radio, TV programming, video gaming, video-on-demand services and even full-length films. As a result, numerous players have started to create specialized content for the small screen as well as to facilitate the viewing of existing content on mobile screens. Social media has become one of the most effective and influential mediums today. Digital ad spends to grow by 31% by 2021.Growing internet penetration and data consumption is likely to help increase digital advertisement spends in India at a compounded rate of 30.8 per cent between 2016 and 2021, according to a recent report**.** Further, mobile advertisement spends and social media aided digital video advertisement spends are expected to grow at 50.9 per cent and 40 per cent annually between 2016 and 2021 respectively, said the Digital First Journey report by KPMG. Enablers such as government's 'Digital India' initiative, growing usage of affordable smartphones, rising internet penetration in rural India and rapid growth of digital payments has further strengthened the digital infrastructure.

DIGITAL FUTURE

Report of Serving India's Digital Consumer (2013) CII - AT Kearney White Paper on Serving India's Digital Consumer states some happenings in a digital India estimated by 2020

1. 600 Million Mobile Internet Users
2. 200 Million Broadband Connected Devices
3. 300 Million of users of instant messaging Services
4. 900 Million monthly app downloads
5. 80 Million annual m-commerce purchases
6. 40%-50% Smartphone Penetration

CONCLUSION

The Digital India programme are looking promising and will revolute the E-Commerce sector through the internet and broadband to remote corners of India. It's not only increase trade, efficient warehousing and will also explore a huge market for product buying and selling. Most of the products consume and sold by rural citizens in local market that means the products may not get an effective price due to lack of demand for the products in the limited local market. Limited demand implies a low turnover resulting low income for the E-Commerce industries, as these consumers are not conscious of the quality The entire scenario of India is changing through E-Commerce industries that should be brought to the international platform by achieving the Digital India Project, but this all depends on the success implementation of this Project otherwise it doomed to fall.

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Development and Nutritional Assessment of Protein and Fibre Rich Snack bar

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Abstract:

The objective of present investigation was to explore the possibility of nutritionally enhancing snack bar with protein and fibre content. Snack bars are 'on the go snack' and nutritional improvement provides an option for healthy snacking for all age group consumers. The high protein and fibre content help boost energy levels giving sense of satiety and fullness of stomach after eating. The formulations were developed with protein and fibre rich ingredients such as soy flour, amaranth, oats, rice flakes, peanuts, and flax and chia seeds. The developed formulations were evaluated for sensory and nutritional quality parameters. The sensory evaluation by semi-trained panellists indicated preference for formulation containing peanut (15%), amaranth (10%), soybean (7%), oats (5%), flax seed (1.5%) and chia seeds (1.5%). The nutritional composition showed improved protein (13.96%), fibres (2.36%), iron (25.77 mg/100g), and calcium (150 mg/100g) compared to control sample of snack bar. The study concluded for protein and fibre improvement in snack bar and thus delivering a healthy snacking option for all consumer age groups.

Keywords: snack bar, protein, fibre, nutrition.

Introduction:

Snack foods are very popular and very well known throughout the world. 'Snack foods' term is used for energy- dense, nutrient poor foods. By contrast, the term 'snacking' refers to eating between meals, irrespective of whether the food consumed was a 'snack food' or any other food item (Hess *et al., 2016).* In 2016, the sales volume of snack bars in the Indian packaged foods market amounted to about 1.83 million metric tons, an increase of 31 % from 2011.The Indian snack bar market is expected to reach USD 185 million by 2023, witnessing a double-digit CAGR, during the forecast period. The Indian snack bar sale has recorded a historic CAGR of 20.1 %, during the past 5 years. Snack bar is still a niche category in India, which accounts for less than 1 % of the global snack bar market [Mordor intelligence Report].

The recent pattern for consumption of healthy, innovative and practical food, which occurred recently, has leaded the market of snack bars to a gradual growth [Michelle *et al.*, 2011] The development of gluten free bars with combination of healthier breakfast cereals such as oats, rice flakes, amaranth in addition to soy flour and peanuts, flax seed, chia seeds to increase the level of proteins and dietary fibres.

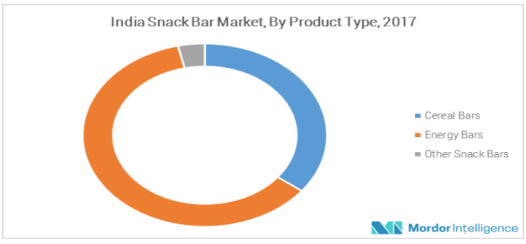

Fig 1. [reference: Mordor intelligence]

The purpose of this study was to develop a gluten free, nutritionally enhancing snack bar with enhanced levels of protein and fibre. The study also aims to evaluate the influence of breakfast cereals and other components on sensory properties as well as nutritional improvement on bars. It also delivers a RTE

food category with a focus on convenience and as 'portable nutrition' [Isadora *et al*, 2017]. Proteins is a macronutrient that we need in relatively large amounts of it to stay healthy. Protein bars are a great way to supplement your diet to ensure we are getting the right amount of protein. According to Harvard school of Public Health, dietary fibres is beneficial for digestive health, and a high-fibre diet is linked to the lower risk of heart disease.

The protein rich sources used for snack bars includes soybean flour, amaranth, oats, peanuts, etc. Soybean comprises approximately 37-42 % protein *[*Sean *et al, 2015]*. Amaranth, a pseudo-cereal contains on average 13.1-21.0 % protein and popping of amaranth grains affects the protein digestibility. [Muyonga *et al*, 2014]. Cowpea protein content also found to be higher i.e. 20.57% -24.95 % [Waltram *et al*, 2016].

Flax seeds emerges as nutritionally rich source of dietary fibers (35 %), high quality protein (28-30%) and alpha linoleic acid [Kajlia *et al*, 2014]. Chia seeds characterized for 25 % fiber content, which helps to keep final product stay fresh longer [Rahman *et al*, 2015].

Incorporation of protein and fibre rich sources in diet will provide the fullness and fulfill the hunger as well deliver the essential nutrients as per recommended daily intake.

Material: The basic raw ingredients obtained for this work are locally available oats, rice flakes, amaranth, soy flour, peanuts, flax and chia seeds as well as the ingredients used for binder solution such as sugar, confectioner's glucose syrup, butter obtained from Pune local market.

Methodology:

All the dry ingredients (oats, rice flakes, amaranth, soy flour, peanuts, flax and chia seeds) were roasted separately for 5-7 minutes; amaranth being puffed at high temperature (120^0C). Simultaneously, the preparation of binder syrup (glucose syrup, sugar, water, butter) was carried out, until the TSS reaches 85-90^0 brix and temperature 105^0 C. Further, the dry ingredients were added to the binder syrup and stirred to homogenize the mixture. The mixture was poured on trays lined with butter paper and sheeted giving surface cuts. The bars were baked for 120^0 C - 20 min, until there was slight brown colour. Then further cooling was carried out. Chocolate coating was applied on single side of bars and allowed it to set. Each bar of weight 45 g was cut into rectangular piece and packed into PP (Polypropylene) and stored at cool place [Michelle *et al*, 2011].

Table1. Formulation of snack bars with four different components.

Ingredients	Formulations (g/ 100 g)				
	Control	A	B	C	D
Dry ingredients	**60%**	**60 %**	**55 %**	**55 %**	**55 %**
Rice flakes	30	20	20	20	20
Amaranth	-	10	10	10	10
Oats	30	05	10	10	10
Peanuts	-	15	-	-	-
Soy flour	-	07	-	-	-
Cow pea flour	-	-	10	-	-
Green gram flour	-	-	-	10	-
Ragi flour	-	-	-	-	10
Flax seeds	-	1.5	2.5	2.5	2.5
Chia seeds	-	1.5	2.5	2.5	2.5
Binder solution	**40%**	**40 %**	**45 %**	**45 %**	**45 %**
Sugar	13	13	15	15	15
Glucose syrup	17	17	20	20	20
Butter	02	02	02	02	02
Water	08	08	08	08	08

Process flow-sheet:

Weighing of ingredients as per formulations

↓

Preparation of dry ingredients

↓

Preparation of binder solution

↓

Mixing of dry ingredients with binger solution

↓

Sheeting on trays and surface cuts

↓

Baking

↓

Cooling

↓

Dark chocolate coating

↓

Setting at room temperature

↓

Final cuts

↓

Packaging

↓

Storage

Sensory evaluation:

Sensory evaluation of five samples was carried out by 10 semi-trained panellist on 9 point hedonic scale. The developed bars were evaluated for sensory evaluation on the basis of appearance, taste, colour, flavour, texture and overall acceptability. Scores were given on hedonic scale ranging from 9 to 1 representing like extremely to dislike extremely respectively.

Analysis of Physico-chemical parameters:

The following physico-chemical parameters were analysed: moisture (dried at 105 C), fat (soxhlet apparatus), total protein (kjeldahl method, N x 6.25), ash and crude fibres, in accordance with AOAC methods of analysis, carbohydrates by anthrone method. To estimate total energy value of each bar formula, the conversion used was 4 kcal g^{-1} protein, 4 kcal g^{-1} carbohydrates, 9 kcal g^{-1} fat [Appelt *et al*,2015].

Statistical analysis:

The data obtained for sensory evaluation is the average obtained from 10 observations. The physico-chemical analysis values are the mean values of 3 replicates performed.

Results and discussions:

The results for physico-chemical parameters regarding moisture, ash, carbohydrates, proteins, fats, carbohydrates and micro-nutrients such as calcium and iron are presented in Table 2 [Leilane *et al*, 2015].

Table 2. Chemical composition of Protein and fibre rich Snack bar

Nutrients	Formulations				
	Control	A	B	C	D
Moisture (%)	7.4	7.03	6.83	6.54	7.52
Ash (%)	1.2	1.5	1.2	1.3	1.3
Carbohydrate (g)	65.3	53.99	64.3	63.89	66.89
Protein (g)	3.88	13.96	7.7	8.93	6.77
Fat (g)	17.2	29.2	24.7	23.8	24.56
Fibres (g)	2	2.56	1.97	2.08	2.24
Calcium (mg/100g)	84	150	97.03	92.8	127
Iron (mg/100 g)	21.59	25.77	24.23	26.72	29.03

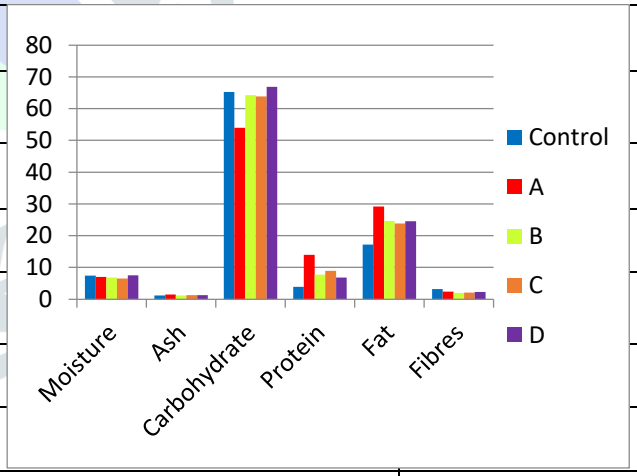

Fig 2. Graph representing proximate analysis of all samples along with control.

Table 2 shows the comparative result of the nutritional composition of formulations using different flours in each sample. The results indicated that the bars with soy flour (7 %) contain good amount of protein (13.96%) and fibres (2.56 %) as compared to control and rest of the formulation

[Cadiolia *et al*, 2011]. The levels of fat content in the sample A found be higher due to peanuts and flax seeds.

Table 3 represents the average sensory scores for all the five formulations of snack bar. The results showed higher acceptance for formulation A compared to control and other formulations (B, C, and D).

Table 3. Average score awarded by panelist for sensory acceptance of bars formulations.

Formulation	Sensory parameters					
	Colour	Appearance	Texture	Taste	Flavour	Overall acceptability
Control	7.5	7.4	7.0	7.4	7.35	7.5
A	8.2	8.0	8.05	8.25	8.1	8.2
B	7.9	7.5	7.5	7.1	7.55	7.7
C	7.8	7.5	7.7	7.2	7.6	7.7
D	7.9	7.9	8.0	8.0	7.9	8.0

The overall acceptance of formulation A found to be the highest score as compared with others. Hence, all formulations scored between 7 'liked moderately' to 8.5 'liked very much'. The addition of soy flour and peanuts to the bars resulted in change in texture and flavour which was preferred by sensory panellist [Yadav and Bhatnagar, 2016].

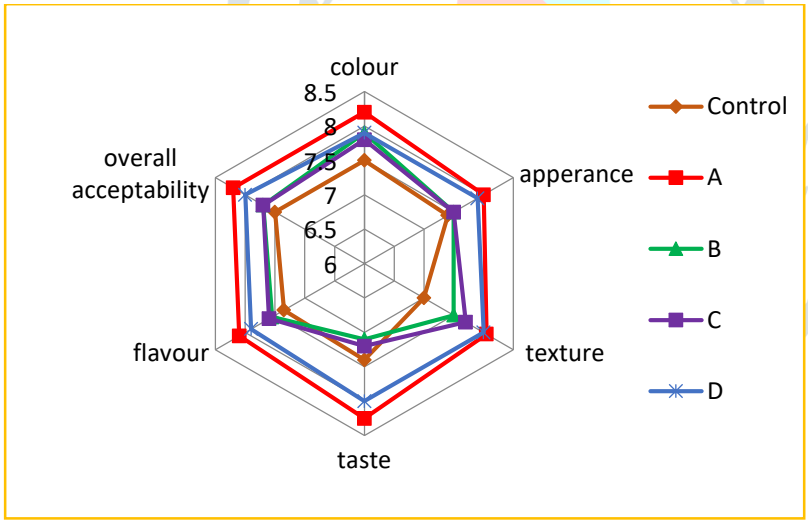

Fig 3. Radar diagram representing average sensory score of all five samples.

The results is clear that formulation A is nutritionally rich containing good amount of protein (13.96 %), dietary fibres (2.56 %) and minerals such as calcium and iron. Being rich in proteins and fibres, it will provide the feeling of satiety as well boost our energy levels.

Conclusion:

The addition of soy flour in developing snack product adds value to product. The developed snack bars delivers a good amount of protein (13.96%) and fibres (2.56 %) which founds to be acceptable. The textural parameters of soy flour and peanut incorporated bars were found to be satisfactory. The snack bars developed with breakfast cereals incorporating peanuts and soy flour can be utilized as a healthier snacking option for all age group people as it enhances the levels of proteins and fibres in our diet. Hence, the development of protein and fibre rich snack bars proves to be a nutritional treat to enjoy healthy snacks and 'on the go snack'.

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Medicinal Properties of Onion and Garlic: A Review

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Abstract

The target of this review is to refresh and evaluate the restorative properties of garlic and onion incorporates safe capacities, antibacterial activity, antifungal activity, antivirus activity, detoxification, against oxidant operator, counteract platelet total, decrease in circulatory strain, bringing down of cholesterol-and triglyceride, avoidance of arteriosclerosis, antithrombotic, anticancer impacts. The logical research demonstrates that the wide assortment of dietary and therapeutic elements of garlic can be ascribed to the sulfur mixes present in or created from garlic. Synthetic examination of garlic cloves have uncovered a centralization of sulfur-containing mixes (1—3%). In spite of the fact that garlic delivers expansive number of sulfide mixes from a couple of sulfur containing amino acids, their capacities are unique in relation to each other like allicin, diallyl, mono, di, tri, tetra, hexa and hepta sulfides, vinyldithiins and ajoenes. Allyl, propyl disulfide and other natural sulfide or sulfur mixes diallyl disulphide, allinase, alliin (S-allyl cysteine sulphoxide).

Allium cepa is exceedingly esteemed for its helpful properties. It has been utilized as a nourishment cure from time immemorial. Research demonstrates that onions may help make preparations for some ceaseless sicknesses. That is most likely in light of the fact that onions contain liberal measures of the flavonoid quercetin. Studies have demonstrated that quercetin secures against cascades, cardiovascular ailment, and malignancy. Also, onions contain an assortment of other normally happening synthetics known as organosulfur com-pounds that have been connected to bringing down pulse and cholesterol levels. Albeit once in a while utilized particularly as a restorative herb, the onion has an extensive variety of helpful activities on the body and when eaten (particularly crude) all the time will advance the general soundness of the body. The globule is anthelmintic, calming, sterile, antispasmodic, carminative, diuretic, expectorant, febrifuge, hypoglycaemic, hypotensive, lithontripic, stomachic and tonic. At the point when utilized consistently in the eating routine it balances propensities towards angina, arteriosclerosis and heart assault. This is utilized especially in the treatment of individuals whose manifestations incorporate running eyes and nose. The onions capacity to alleviate clogs particularly in the lungs and bronchial tract, is difficult to accept until the point that you have really seen the outcomes. The illustration of contamination, blockage and colds out of the ear is likewise amazing. The onion will soothe stomach agitated and other gastrointestinal disarranges and it will likewise reinforce the hunger. Pharmacologically know as Allium cepa, onion is found in each family. The purple cleaned onion tastes extraordinary. Furthermore, it has a few medical advantages and is a piece of many home cures and magnificence arrangements.

Keywords: *Allium cepa,* Garlic, Antioxidant, Hypertension, Antimicrobial.

Introduction

Onions (Allium cepa) and Garlic (Allium sativa) are large used as upgrading vegetables for their smell and taste in various types of nourishment items around the globe. It was guaranteed by numerous scientists that onions were first developed in Iran and West Pakistan. There is extension for discussion on the inception of garlic yet it is for the most part acknowledged that garlic was started in china. With various flavors and fixings it is seen that garlic and onions are most prominent for improving the trial of numerous dishes. Other than culinary reason, both garlic and onions are utilized for remedial purposes everywhere throughout the globe. The

distinguishing kind of onions is because of essence of allyl propyl disulphide a sulfur containing blends. The red and yellow shade of outer skin of onion is aftereffect of essence of colors like anthocyanin and quercetin shades. Both onions and garlic have antifungal action which is because of essence of the phenolic factor i.e. catechol.

India is major producer as well as consumer of onion and garlic. India produces about 20% of world's onion. Onion is produced in many states of India. The major share of onion production is in Maharashtra, Madhya Pradesh, Karnataka Andhra Pradesh, Bihar, Gujarat, Haryana, Rajasthan, articulate Pradesh, Tamil Nadu and Odisha. China is the world leader in production (120.88 lt) contributing to 77.07 per cent of world tonnage followed by India at 5.29 per cent (8.3 lt), S.Korea at 2.08 per cent (3.27 lt) and Russia at 3.98 per cent (2.54 lt). India is the second largest producer of garlic in world. Garlic was grown in India in 2007-08, over 1.69 lh with 8.3 lt production. [Reference] Kerala is leading producer of Garlic in India followed by Assam, Andhra Pradesh, Himachal Pradesh, West Bengal and Sikkim.

Hippocrates the "Father of Medicine" maybe the best healer that at any point lived, composed 2500 years prior "Let your food be your medicine, let your medication be your nourishment." Garlic, more than some other sustenance fits into Hippocrates' depiction of a perfect sustenance, that which is both a super nutritious sustenance and a supernatural occurrence prescription. Dietary Supplement Health and Education Act in 1994 made home grown dietary enhancements promptly accessible to U.S. customers. An investigation has demonstrated that 42% of the U.S. populace utilizes correlative and elective prescription, with 13% revealing the utilization of home grown items. Home grown treatments are broadly utilized around the world. All the more as of late, half of patients with bosom or gynecologic malignancies utilize integral and elective drug, and as much as 5% of this populace takes the natural enhancement, garlic. Wellbeing properties of garlic (Allium sativum L.) rely upon its bioactive mixes. Crude garlic is generally utilized, however this vegetable is likewise a required part in many cooked dishes. Garlic has played an imperative dietary and restorative job since the commencement of humanity. Garlic is a nature's help to humanity. Garlic has been utilized since time immemorial as a culinary zest and therapeutic herb. Its utilization in China was first made reference to in A.D. 510, and Louis Pasteur originally considered the antibacterial activity of garlic in 1858. While prior preliminaries propose it might gently bring down cholesterol and triglyceride levels in the blood. Over 5000 years garlic has been expended both as nourishment and utilized for prescription by old researchers. Garlic, Allium sativum L. is an individual from the Alliaceae family, has been generally perceived as a significant zest and a prevalent solution for different infirmities and physiological issue. The name garlic may have started from the Celtic word 'all' which means impactful.

Nutritional Content

The regular onion contains

Sr no.	Parameters	Values(per 100g)
1	Moisture	88.6-92.8
2	Protein	0.9-1.6
3	Fat	0.2
4	Sulfur	5.2-51
5	calories	23-28

[Reference]

The regular garlic contains

Sr no.	Parameters	Values(per 100g)
1	Manganese	23
2	Vitamin B6	17%
3	Vitamin C	15
4	Selenium	6
5	Fiber	0.6

[Reference]

Chemistry and chemical changes in garlic

At the point when garlic is pounded or generally harmed assaulted by microorganisms, smashed, cut, bit, got dried out, pummeled or presented to water, the vacuolar compound alliinase quickly lyses the cytosolic cysteine sulfoxides (alliin). The briefly framed compound, allicin, involves 70– 80% of the thiosulfinates. Normally, alliin is changed over to allicin by alliinase. Allicin immediately disintegrates to different mixes, for example, diallyl sulfide (DAS), diallyl disulfide (DADS), dithiins and ajoene. In the meantime, g-glutamyl cysteine is changed over to S-allylcysteine (SAC), through a pathway other than the alliin– allicin pathway.

- Garlic contains at least 33 sulfur compounds, Sulfur compounds: alliin, allicin, ajoene, allylpropyl disulfide, diallyl trisulfide (DATS), S-allylcysteine (SAC), vinyldithiins, S-allylmercaptocysteine and others.
- Several enzymes (Allinase, peroxidase, myrosinase, catalases, superoxide dismutases, arginases, lipases),
- Amino acids (arginine, glutamic acid, asparagic acid, methionine, threonine)
- Proteins (glutamyl peptides)
- Vitamins (B1, B2, B6, C and E),
- Se, Ge, Te and other trace minerals 7. Biotin, nicotinic acid, elements, lipids, prostaglandins, fructan, pectin, adenosine.

Medicinal Properties

Ayurveda which is ancient Indian science of medicine accept the importance of onion and garlic in the treatment of many short term and chronic diseases. It was mentioned in Ayurveda, that onion and garlic cures many diseases. Garlic and Onion are mostly *Rajasic*, but also contain some *Tamasic* action. Garlic and onion are avoided by spiritual adherents because they stimulate the central nervous system and can disturb vows of celibacy but for genral people it is advised. Onion recommended in treatment of swelling. For hurting ear, squeeze of onion or onion oil is prescribed in Ayurveda. For enhancing the vision, the juice or onion should be consumed daily in a dosage of 10-15ml. The glue of onion is connected over clogged pore to treat them. The glue of onion is marginally warmed and connected over they are influenced with sciatica, joint agony and torment in the nerves. The juice of onion is introduced into the nostrils in instances of nasal dying. Onion juice is also advised to men facing sexual problems. It was also mentioned in Ayurveda that onion juice is useful for treatment of erective dysfunction. Sweet assortment of onions are cut into cuts, broiled in ghee and devoured frequently to expand the imperativeness and sexual power. The onion seed is powdered and devoured in measurements of 3-5g with pomegranate juice to enhance sperm check.

Onions and garlic are both part of the allium family of vegetables that contain substances to possibly benefit your health in many ways, reports the American Institute for Cancer Research. While onions and garlic cloves do give off strong odors, the sulfur compounds responsible for those aromas are the same substances that provide health benefits if you eat onions and garlic. **Fighting Infections**

The both onions and garlic may enable you to battle diseases. Onions may lessen the side effects of bronchitis and the normal cool, and they likewise can battle destructive microscopic organisms, takes note of the November 2002 issue of "Phytotherapy Research." Garlic has both antibacterial and antifungal properties, as per the Linus Pauling Institute, and it additionally may fortify your safe framework generally speaking, making you less helpless against contracting contaminations.

Onion has properties united to those of garlic, yet in a milder degree, and the ingestion of its oil and impact upon the framework is to some degree like that of the oil of garlic. Onions don't concur with all people, particularly dyspeptics, in whom they support the creation of flatus, which, in any case, is a typical indication among every one of the individuals who eat to a great extent of them; bubbling, in an extraordinary measure, denies them of this property. Sugar and onion-juice shape a syrup, much utilized in household practice, for hack and different affections of the air-tubes among kids. A cooked onion utilized as a cataplasm to suppurating tumors, or to the ear in otitis, has demonstrated valuable. A soaked tincture of onions made with great Holland gin, has been discovered useful in rock and dropsical affections. A cataplasm of onions beat with vinegar, connected for various days, and changed 3 times each day, has been found to fix corns and bunions.

Fighting Cancer

Onions and garlic may likewise enable you to oppose malignancy. The American Institute of Cancer Research says the substance mixes inside allium vegetables, for example, onions and garlic can moderate or prevent malignancy cells from multiplying in different places in the body, for example, the lungs, colon, throat and bosoms. The exacerbates that onions and garlic contain can likewise diminish the rate at which disease tumors develop, or even stop tumor development out and out, reports the American Institute of Cancer Research. The Linus Pauling Institute says garlic, specifically, may be particularly compelling as a weapon against gastric and colorectal malignant growth.

Fighting Heart Disease

Devouring onions and garlic additionally may enable you to avert coronary illness. Onions are wealthy in common synthetics called flavonoids, which can shield you from coronary illness, says Vegetarian Nutrition.info., and onions additionally may decrease your danger of blood clusters, which can prompt heart assaults and different types of coronary illness. Garlic may likewise diminish your danger of blood clumps, help keep your corridors adaptable and help lessen your pulse.

Immune Booster

Garlic mixes may affect your safe framework, helping you avert or recuperate all the more rapidly from ailment. An examination distributed in a 2001 issue of "Advances in Therapy" that included 46 solid subjects who took a garlic supplement or fake treatment discovered that the individuals who expended garlic were less inclined to build up the basic cool and, in the event that they did, could recoup more rapidly than those in the fake treatment gathering. Dedication Sloan-Kettering specialists say garlic mixes are normal anti-toxins that may bolster invulnerable capacity by invigorating cells called t-lymphocytes and macrophages to increment in number and turned out to be more dynamic, helping them fend off conceivably destructive pathogens.

Adding Onions and Garlic to Diet

Allium vegetables, for example, onions and garlic are the most extravagant sustenance wellsprings of sound sulfur mixes, which prescribes eating them routinely to acquire their full medical advantages, instead of taking enhancements that may contain broadly fluctuating measures of the solid mixes. Onions and garlic have reciprocal tastes, so you may eat them together in similar dinners. You can likewise add onions to panfry dishes and utilize them to enhance soups, plates of mixed greens and plunges. The Linus Pauling Institute prescribes eating garlic cloves crude, or squashing or slashing garlic cloves before cooking them to enable them to hold their gainful mixes amid the cooking procedure.

CONCLUSION

In the present review, cancer prevention agent, antihypertensive, cardiovascular action, antimicrobial and antineoplastic activities of garlic have been appeared. . Garlic is a genuine super sustenance with regards to coronary illness. Various examinations have demonstrated that ordinary utilization of garlic can bring down our circulatory strain. Allicin in garlic has been observed to be a great antibacterial and antifungal. In any case, it has likewise been accounted for that higher groupings of garlic powder cause impressive cell damage in the liver of rodents, which isn't seen at lower focuses; extra proof is expected to decide the amount required by people to limit malignant growth. Garlic separates have been appeared to apply anthelmintic action against regular intestinal parasites.

Onions privileged insights a great deal of phytoncids slaughtering pathogenic microorganisms, this is the reason it is broadly utilized as solution for catarrhal maladies: influenza, angina, suppurative lung irritation, catarrh and hack. Onion is utilized for the treatment of bronchial asthma. Onion keeps from prostatic hypertrophy. Indeed, even in old Egypt onion decoction was viewed as an aphrodisiac. Onion counteracts atherosclerotic plaques. Onions diminish blood coagulation, counteracts atherosclerosis and other cardiovascular ailments. One onion knob can have indistinguishable impact from cardio aspirin. This vegetable enhances kidney work and assimilates nitrogen from blood. Onion additionally has an anticarcinogenic effect. It invigorates assimilation and controlled insides work expelling dynamic microorganisms. As small observe, onion is exceptionally advantageous to your wellbeing. Restorative properties of onion surpass those in numerous medications, which typically have side effects. Several parts of the plant have a place in conventional meds. The seeds of onion assuage dental worms and urinary sicknesses. The stalks of onion are a wellspring of Vitamin A, thiamin and ascorbic corrosive. They are utilized in both delicate and develop stages.

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"TO STUDY THE CONSUMER ACCEPTANCE FOR AMUL MILK IN PUNE CITY"

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AMUL is a dairy cooperative which is marketed by Gujarat cooperative Milk Marketing Federation. The main USP of Amul brand is its low pricing. It hits at the transnational's by reducing its prices on its product portfolio. The competitive advantage is its "backward integration" strategy, which helps substantially in cost reduction. Amul spends very less on its advertising budget, but spends it very wisely and effectively. It has the power of an umbrella brand Amul, which is highly respected brand name. Thanks to its brand mascot, the Amul girl, the co-operative has been able to get away with spending just 1% per cent of its revenues on advertising. In contrast, its competitors spends anywhere between 7-10% on advertising.
The study was carried out to achieve the prescribed objectives of the study it was needed to follow systematic and scientific approach to interpret the results of the study. Methodology includes the detail description of the study area, source of the data, sampling techniques, analytical tools and other information. The marketing mix for Amul milk was conceded along with study of all P's of marketing mix. The awareness of Amul milk was created by using the promotional kit viz. includes- kiosk, umbrella, posters, flyers, coupons, etc. The data was primary was collected from the selected locality by personal interview and door to door survey. The promotion offer was broadcasted and the data during the promotion was compiled. The sell before the promotion activity, during the promotion activity and after the activity was analyzed and interpreted to conclude the mentioned study.
During the survey it was witnessed that Chitale being the local brand was consumed maximum. After the promotion activity of consumer acceptance for Amul Milk was studied and analyses efficaciously. It was seen that around 33% of the area potential was acquired successfully by Amul and it is estimated that it will increase gradually.
Keywords- Amul Milk, Marketing, Promotion, Consumer Acceptance

1. Introduction

Amul began the dairy cooperative movement in India and formed an apex cooperative organization, Gujarat Co-operative Milk Marketing Federation Ltd. (GCMMF), which today is jointly owned by some 2.2 million milk producers in Gujarat, India. Amul was formally registered on December 14, 1946. The brand name Amul, sourced from the Sanskrit word *Amoolya*, means priceless. It was suggested by a quality control expert in Anand. Some cite the origin as an acronym to AMUL (Anand Milk Union Limited).The Amul revolution was started as awareness among the farmers. It grew and matured into a protest movement that was channeled towards economic prosperity. (GCMMF, Amul, Ltd)

Amul has spurred the White Revolution of India, which has made India one of the largest milk producers in the world. It is also the world's biggest vegetarian cheese brand. Success of Kaira District Co-operative Milk Producers' Union Limited and setting up of District Co-operative Milk Producers' Unions needed a state-level organization for entire Gujarat. (GCMMF, Amul, Ltd).The Amul Model of dairy development is a three-tiered structure with the dairy cooperative societies at the village level federated under a milk union at the district level and a federation of member unions at the state level. (Chand, 2005)

AMUL is a dairy cooperative which is marketed by Gujarat cooperative Milk Marketing Federation. The main USP of Amul brand is its low pricing. It hits at the transnational's by reducing its prices on its product portfolio. The competitive advantage is its "backward integration" strategy, which helps substantially in cost reduction. Amul spends very less on its advertising budget, but spends it very wisely and effectively. It has the power of an umbrella brand Amul, which is highly respected brand name. Thanks to its brand mascot, the Amul girl, the co-operative has been able to get away with spending just 1% per cent of its revenues on advertising. In contrast, its competitors spends anywhere between 7-10% on advertising. (Chand, 2005)

GCMMF is India's largest food products marketing organization. It is a state level apex body of milk cooperatives in Gujarat, which aims to provide remunerative returns to the farmers and also serve the interest of consumers by providing quality products, which are good value for money. GCMMF markets and manages the Amul brand. From mid-1990's Amul has entered areas not related directly to its core business. Its entry into ice cream was regarded as successful due to the large market share it was able to capture within a short period of time - primarily due to the price differential and the brand name. (GCMMF, Amul, Ltd).

At the time Amul was formed, consumers had limited purchasing power, and modest consumption levels of milk and other dairy products. Being a co-operative organization Amul adopted a low-cost price strategy to make its products affordable and attractive to consumers by guaranteeing them value for money. Amul also introduced higher value products.

2. Objectives

1. To create awareness of Amul milk
   H_0 – The awareness created was beneficial to increase sale of Amul Milk
   H_1 – The sale of Amul milk was unaffected even after the awareness

2. To study the consumer acceptance for Amul milk
   H_0 – The consumer acceptance was found more for Amul milk
   H_1 – There was no considerable consumer acceptance for Amul milk

3. Methodology

The said study was conducted the Pune city region. The target market places were selected after discussion with the higher officials of GCMMF Amul Pune. The area selected for the study was- Mira society, Shankarsheth road, Pune

The study entitled "To Study the Consumer Acceptance for Amul Milk in Pune City" was carried out to achieve the prescribed objectives of the study it was needed to follow systematic and scientific approach to interpret the results of the study. Methodology includes the detail description of the study area, source of the data, sampling techniques, analytical tools and other information.

3.1. **Structure of methodology**

3.1.1. **Study Area:**

Pune city- the urban area of Pune District (Maharashtra) was selected for study at Mira society, Shankarsheth road, Pune

3.1.2. **Source of data:**

Primary as well as secondary data were collected to meet the prescribed objectives of the study. Primary data were collected from distributors, retailers, customers from the study area by survey and tool for asking questions with the structured questionnaire. While the secondary data was collected from the UG, PG, PhD-Thesis available, Research articles, Research papers, Review of Internet and several marketing and research methodology books.

3.1.3. Research Design:

A research design is a plan, structure and strategy of investigation so conceived as to obtain answers to research questions or problems. The plan is the complete scheme or programme of the research. It includes an outline of what the investigator will do from writing the hypotheses and their operational implications to the final analysis of data. (Jayendrasinh, 2015)

3.1.4. Survey Method:

Convenient sampling method was used for the survey method. Standard questionnaire were prepared for the consumer survey.

3.1.5. Sampling unit:

To study the given objectives and to satisfy it, the consumers of milk in the selected area were selected as a sampling unit.

3.1.6. Sample size:

The 400 residents of the region were selected for the study.

3.1.7. Data collection tool:

Structured schedule was used for survey. Standard questionnaire was prepared for the data collection.

3.1.8. Analytical tool:

Graphical analysis by using statistical tools and MS-Excel were used to satisfy the given objectives of the study.

3.1.9. Limitation of study

- This study is limited only for Mira society.
- The sample size is very small so the result cannot be applied to the population.
- Sometimes respondents may give biased opinion for the question.

3.2.Sampling of product

Sampling of Amul Milk and Butter milk was done at Mira Society, Pune on the World Yoga Day program organized in the society multipurpose hall. Free sample butter milk was served to the people. Instantaneously, the awareness about Amul milk and other Amul products was introduced to them.

3.3.Consumer Survey

A survey was accompanied in selected area to know the total consumption of Milk in the area and to know the potential for Amul Milk.

Permission was taken from the chairperson and the member after the authorized permission; door to door survey was conducted selected area. Standard questionnaire was prepared for the customer survey.

3.4.Promotional offer

After knowing the potential of the prescribed area and promotional offer was planned for the consumers. People were introduced about the offer through personal interviews and kiosk activities. Door to door awareness of promotional offer was created.

3.5.Data collection

Data of the milk brands consumed and quantity of daily milk consumed was collected by personal interview process.

3.6.Analysis of the activity

After the activity work was completely, the results were analysed mainly with respect to the response of consumers. Consumers were interviewed and maximum constrains and response was tried to yield from them for analysing the acceptance of Amul Milk and measure impact of promotional activities done. The response of all the customers was noted with all details before and after the activity.

4. Results and Discussion

This chapter deals with the findings of project entitled "To study the consumer acceptance for Amul Milk in Pune City" which have been arrived at after subjecting the data to necessary tabulation and analysis keeping in view the objectives of study and research methodology. The results so observed are incorporated in this chapter.

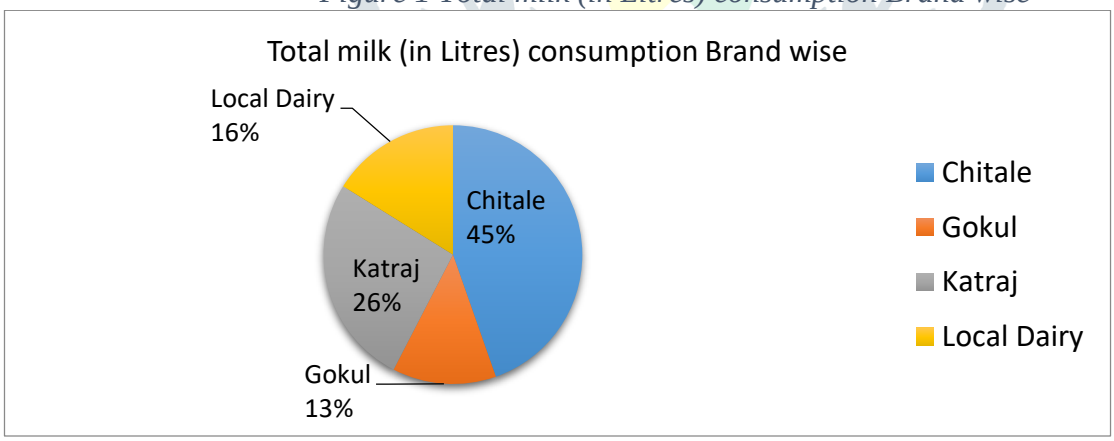
4.1. Awareness of Amul Milk

The goal of sampling activity was to help consumers to better understand Amul products. Free sample of butter milk was served to the people. Instantaneously the awareness about Amul milk and other Amul products was introduced to the people.

4.2.Study of Consumer acceptance

The 400 residents in the area were surveyed to know the potential of the region. From the collected data using standard questionnaire, it was easier to know the potential and the consumption of the area. Total known consumption in the area noted of about total 316 litres. Following table shows the brand-wise consumption of milk in the area.

Figure 1 Total milk (in Litres) consumption Brand wise



From the above data it is seen that total 316 litres of milk is consumed in the area. It was seen that Chitale being the local brand and existed since long time in Pune city, the rate of consumption is higher of about 45%. It is also observed that Katraj Milk being the resident brand has quite higher consumption of 26 %. From this data it was anticipated that there was potential of 316 litres for Amul milk.

4.3.Data Analysis and Interpretation

From the collected data before the activity, during activity and collected data after the activity it was compiled and compared statistically.

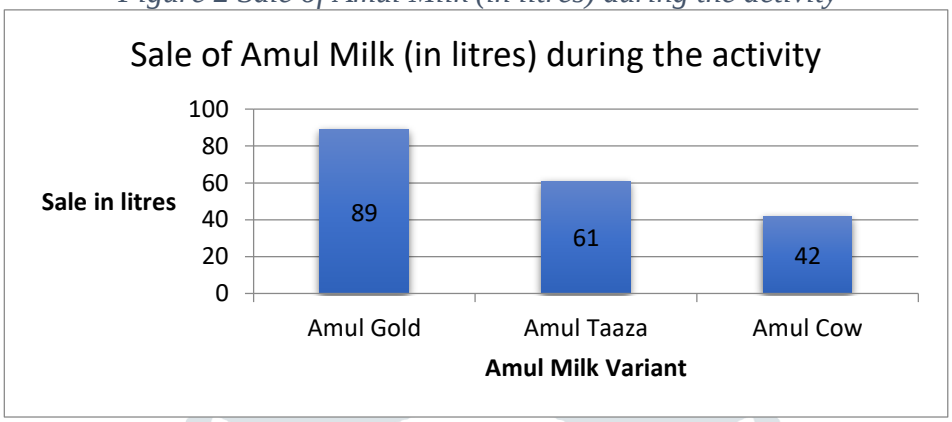
4.3.1. **Before the promotional activity**

Before the activity the area for the Amul Milk was new so the sale was 0 before the activity.

4.3.2. **During the promotional activity**

During the activity of Rs. 5/- off on purchase of one litre of milk was announced. Total 96 customers visited for the purchase of the Amul milk

Figure 2 Sale of Amul Milk (in litres) during the activity

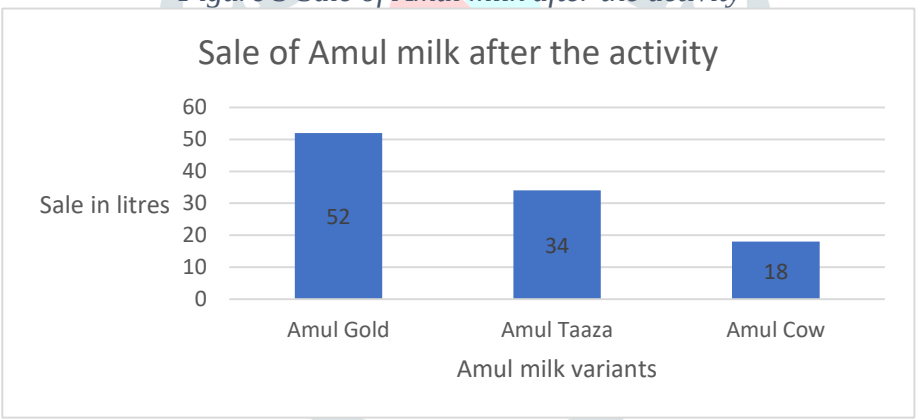


From the above data it is observed that the total sale of Amul Milk during the activity was 192 liters, as compared to the total consumption of the area about 60 % of the market was accomplished.

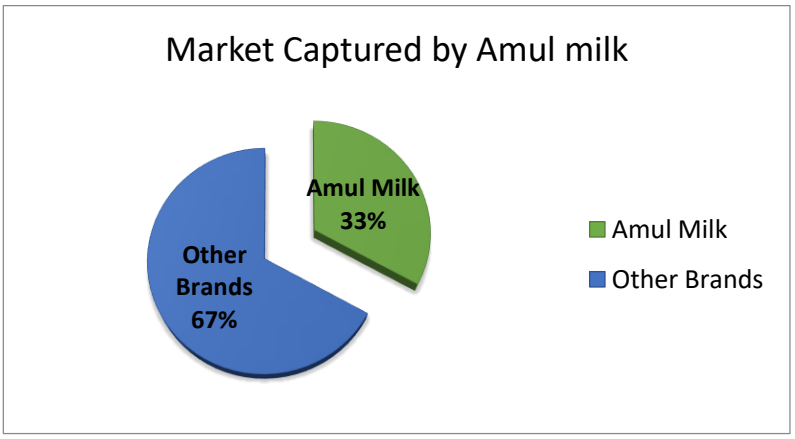
4.3.3. **After the promotional activity**

After the activity, the discount coupons were distributed. The coupons were distributed for the customer loyalty towards the brand.

Figure 3 Sale of Amul milk after the activity



According to above data it was observed that about 234 customers became regular and loyal consumers of Amul milk. Out of Total potential of 316 litres of the area about 104 litres was the contribution of Amul milk. This penetration was only within 15 days of time. Of about 33% of the potential of the area was converted towards Amul Milk.



5. Conclusion

As per the specified objectives and anticipated hypothesis the study was accomplished successfully.

The objective to study the awareness of Amul milk was beneficial to increase sale of Amul Milk in the intended area. Various promotion activities such as survey, posters, flyers, Amul umbrella and Amul kiosk had significant effect on the sale of Amul milk. The effect of awareness is noted in 5.2.

And the most important objective of consumer acceptance for amul milk was studied and compiled using the collected data through various questionnaires and surveys as stated in Chapter 4.

During the survey it was witnessed that Chitale being the local brand was consumed maximum. As discussed in 5.3, 45% of total consumption of milk was of Chitale Milk.

During the promotion activity, when there was the promotional offer of Rs.5/- off on purchase of one litre of Amul milk, Amul milk acquired of about 60% of the total consumption in the locality as exhibited in 5.4.2

The overall consumer loyalty and the consumer acceptance was observed and it was noted that Amul milk had captured of about 33% of the potential of the area within short time span. The observation is described in 5.4.3. There was extensive acceptance for Amul milk in the locality.

It was seen that around 33% of the area potential was acquired successfully by Amul. And it is estimated that it will increase gradually.

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Organic Farming in India: An overview

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Abstract

The advancement of technology and development in agriculture has enabled our country to provide food security. But every coin has two sides; this all advancement in agriculture has directed to imbalance our ecosystem. Under such condition, serious concerns have been expressed regarding the use of heavy chemicals, pesticides and fertilizers in agriculture in terms of their negative impact on the human health and the environment. The phenomenon of 'Organic Agriculture' is the only solution to nurture the land and to regenerate the soil by going back to our traditional method of farming i.e., free from chemicals, pesticides and fertilizers. This is a possible step for sustainable development by choosing not to use chemicals, synthetic materials, pesticides and growth hormones to produce high nutritional quality food and in adequate quantity. This article provides an overview of organic agriculture, its present scenario in India, the main principles of organic agriculture and constraints faced in practicing organic agriculture in India.

Keywords – *Development, Fertilizers, Heavy Chemicals, Organic Agriculture and Pesticides.*

INTRODUCTION

Dr. A.P.J. Abdul Kalam stated "Organic agriculture, a holistic system that focuses on improvement of soil health, use of local inputs and relatively high intensity use of local labor, is an admirable fit for dry lands in many ways and the dry land offer many benefits that would make it relatively easy to implement."

Agriculture facilitates to meet the indispensable needs of human civilization by providing food, clothing, shelter, medicine and recreation. Hence, agriculture is the most important venture in the world. India's agricultural sector is still very important and considered to be the backbone of Indian economy. India has made significant advances in agricultural production in recent decades, including the introduction of high-yield seed varieties and increased use of fertilizers [1]. In the 1960s, the Green Revolution allowed developing countries, like India, to overcome continual food scarcity by producing more food and other agricultural products by using high-yielding varieties of seeds, modifying farm equipment, and substantially increasing use of chemical fertilizers. As the accessibility of land is declining day by day, application of fertilizers and pesticides has become essential to continue the production of major crops to meet the food grain demand. This allowed growth and sustainability of food grains but at the same time leads to increase in the use of chemical fertilizers and pesticides which cause serious damage to the environment and human health.

Reference [2] also reported that Indians take about 40 times more pesticides through food items than the average American intake, although the small amounts of pesticides that remain in the food supply will cause no immediate reaction but could cause health problems if routinely consumed over a long period. The commercialization of agriculture led to three kinds of changes, namely: economic changes, socio-cultural changes and environmental changes. All these changes have profound effects on human health such that the people are battling health problems, including a noticeable rise in cancer cases, reproductive health problems, mental retardation and kidney ailments. An answer to this havoc is the organic agriculture, an environmentally friendly agricultural approach which ultimately leads to proper human health.

ORGANIC AGRICULTURE

Organic agriculture is a holistic production and management system which is supportive of the environment, health and sustainability [4]. Organic agriculture is developing rapidly and today 172 countries of the world produce organic food. As per the estimates in 2014, there were 43.7 million hectares of organic agricultural land and the countries with the most organic agricultural land are Australia (17.2 million hectares), Argentina (3.1 million hectares), and the United States (2.2 million hectares) [5]. The Organic farming system in India is not new and is being followed from ancient time. As per the definition of the United States Department of Agriculture (USDA) "organic farming is a system which avoids or largely excludes the use of synthetic inputs (such as fertilizers, pesticides, hormones, feed additives etc.) and to the maximum extent feasible rely upon crop rotations, crop residues, animal manures, off-farm organic waste, mineral grade rock additives and biological system of nutrient mobilization and plant protection" [6]. The recognition of organic farming is progressively increasing and is now practiced in almost all countries of the world. Further, they also mentioned that the fast changing trend from chemical based agriculture to organic and eco-friendly system of farming is being a major concern at the national and global levels. According to the latest survey, India accounts 5.2 million hectares of organic land and 6,50,000 organic producers. India has the largest number of organic producers in the world [7].

On the contrary, the Green revolution has been the greatest success story and has brought a spectacular increase in production and productivity in the country. But after initial success, the scenario has changed today with the quest of short term gains without due consideration of long term sustainability resources, particularly soil, water and the environment have all now overstrained, and are getting increasingly depleted as reported by reference [8]. Now the concern is to sustain the agricultural and particularly crop production and productivity and take this agricultural sector to the frontier without damaging the resources and the environment. This results in an alternative system of an optimal, balanced, efficient and scientific management of land, water, biodiversity and external inputs. Hence, the system organic agriculture comes into the scenario. The significant element can be addressed by the fact that the Prime Minister Shri Narendra Modi declared Sikkim as the India's first fully organic state by implementing organic practices on agricultural land in 2016.

In the current scenario, food consumption practice is changing among the consumers and now they want to opt food which is free of all synthetic chemicals, fertilizers, and pesticides, i.e., they want to consume organic food which is not only sustainable for health but also environmental friendly. But, organic products are not so much popular among consumers, which in turn lead to lower acreage of organic produce by farmers and high market prices of organic food. There is a need to create awareness among producers and buyers regarding promotion of organic agriculture.

MAIN PRINCIPLES OF ORGANIC AGRICULTURE

The main principles of organic agriculture are the followings:

- Principle of Health: Healthy soil, plants, animals, humans = a healthy planet.
- Principle of Ecology: Emulating and sustaining natural systems.
- Principle of Fairness: Equity, respect and justice for all living things.
- Principle of Care: For the generations to come.

ORGANIC AGRICULTURE IN INDIA

The National Program for Organic Production (NPOP) was implemented and promoted by Agricultural and Processed food products, Export Development Authority (APEDA) in 2001 for enhancing organic agriculture practices. The standards made by NPOP have been developed under guidelines of international organic production standards such as CODEX and International Federation of Organic Agricultural Movements (IFOAM). The NPOP standards for production and accreditation system have been recognized by the European commission and Switzerland as equivalent to their country

standards. Similarly, USDA has recognized NPOP conformity assessment procedures of accreditation equivalent to that of the US. With these recognizes, Indian organic products duly certified by the accredited certification bodies of Indian are accepted by the importing countries [9]. Besides this, the Ministry of Agriculture also started various promotion schemes for small farmers. Fifteen Indian states have their own policy of organic farming since 2004, which is a good indication for Indian agriculture [10]. Reference [11] revealed that in a country like India, where labor is abundant and is relatively cheap, organic farming is seen as a good cost effective solution to the increasing costs involved in chemical farming. The increasing demand for organic food products in the developed countries and the extensive support of the Indian government coupled with its focus on Agri-exports are the drivers for the Indian organic food industry. However, the market of India is not flourished with the organic food products for consumers as compare with the western countries like Europe, U.S. etc.

By scrutinizing the report of GOI, Ministry of Agriculture & Farmers Welfare, 2015-16 it was found out that the certified cultivated area under organic farming has grown from 4.55 lakh ha in 2009-10 to 7.23 lakh ha in 2013-14, with around 6 lakh farmers practicing it [12]. But, still, the total area under organic farming is insignificant compared to the net sown area of 140 million hectares. In terms of exports also, exports of organic food at about 1.6 lakh tonnes and at an estimated value of USD 220 million is less than 1 per cent of global exports. Against this backdrop, to provide a major fillip to organic farming in India, the existing components of organic farming under the NMSA (National Mission for Sustainable Agriculture) have been put together under a new programme called “Paramparagat Krishi Vikas Yojana”. The programme envisages development of 10,000 organic clusters and provides chemical-free inputs to farmers and increase the certified area by 5 lakh hectare within a period of 3 years. Under this, every farmer in a cluster will be provided an assistance of Rs. 50,000 per hectare in 3 years towards conversion to and adoption of organic farming and towards market assistance.

CONSTRAINTS IN PRACTICING ORGANIC AGRICULTURE

The major problems faced while practicing organic agriculture is:

- → *Lack of Awareness:* Lack of awareness among the government policy makers and the practicing farmers is the major cause of restricting the growth of organic agriculture. The lack of awareness among the consumers about organic food products also holds back the growth.
- → *Marketing Problems:* It is found that before the beginning of the cultivation of organic crops, their marketability and that too at a premium over the conventional produce has to be assured. Inability to obtain a premium price, at least during the period required to achieve the productivity levels of the conventional crop will be a setback. It was found that the farmers of organic wheat in Rajasthan got lower prices than those of the conventional wheat [13].
- → *Shortage of Manure:* Organic manure (Biomass) availability is less than the required quantity also the available nutrient is less than the conventional manure.
- → *Less Yield Production*: The production availability of organic farms is less as compared with farm producing products by using conventional methods. the conventional farming system.
- → High Input Cost: The costs of the organic inputs are higher than industrially produced chemical fertilizers and pesticides, including other inputs used in the conventional farming system.
- → Inadequate Supporting Infrastructure: In spite of the adoption of the NPOP (National Programme on Organic Production) during 2000, the state governments are yet to formulate policies and a credible mechanism to implement them. There are only four agencies for accreditation and their expertise is limited to fruits and vegetables, tea, coffee and spices. The certifying agencies are inadequate.

SUGGESTIONS AND RECOMMENDATION

- → The farmers' should be made aware with the scientific information about organic agriculture.
- → Government should provide subsidies in organic produce to the farmers and facility of easy credit with lower rate of interest.
- → Higher prices should be determined by the government for organic produce than the conventional produce.
- → Agriculture universities should encourage the research in the field of organic farming.
- → Government, NGO's and extension workers should organize various workshops, seminars, conferences, etc. with the help of subject matter specialist for farmers.
- → Private companies should invest in the project of producing organic food products free from harmful chemicals.
- → At an individual level, should promote the use of organic produce by going for organic agriculture in their kitchen garden, buying organic products available in the market.

CONCLUSION

Organic agriculture is a holistic food production system works with the sustainable use of locally available natural resources. The need is to adopt a comprehensive approach for the promotion of organic agriculture by taking cooperation of all stakeholders, environmental friendly technologies, marketing infrastructure and financial support for quality and quantity organic food production . An environmentally sustainable system of agriculture like organic agriculture will be able to maintain a resource balance, avoid over exploitation of resource, conserving soil nutritional quality and s health, and biodiversity.

Isolation, screening and optimization of L-asparginase producer *Bacillus* sp. from agricultural soil

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Abstract: In recent years, microbial L-asparaginases have drawn particular attention because of their potential antineoplastic properties and significant application in food industries. In present study, total 67 bacterial isolates were isolated and screened for L-asparginase production from agricultural soil on a Modified M9 agar medium with phenol red as an indicator. Among 67, 19 isolates showed L-asparginase production ability. Among which one isolates *Bacillus* sp. showed highest production and was optimized for various condition for better results. The result suggests that optimum pH, temperature, source of carbon and source of nitrogen for L- asparginase production by *Bacillus* sp. was 8, 37^0C, 0.8% glucose and 1.5% yeast extract, respectively.

Keyword: *Bacillus* sp., enzymes, L- asparginase, optimization.

Introduction:

L-asparagine is an essential amino acid used for nutritional requirement of both normal cells and cancer cells. L-asparaginase is the enzyme that cleaves L-asparagine into aspartic acid and ammonia. Since several types of tumour cells require L-asparagine for protein synthesis they are deprived of an essential growth factor in the presence of L asparginase (Gosh et al., 2011). This enzyme is widely used in the treatment of acute lymphatic leukaemia mainly in children's. Lymphatic tumour cells require huge amount of L-asparagine for malignant growth (Bansal et al., 2010).

L-asparaginase was produced by wide range of organisms such as bacteria, fungi, actinomycetes, algae and plants However, microbes are good source as compared with others, because they can easily cultured, extraction and purification as well as the methods of this process from them is also convenient (Gupta et al., 2009; Kamble and Khade, 2012). Hence, the present study focuses on the isolation, screening and optimization of L-asparginase producer bacteria from agricultural soil.

Sample collection:

Four soil samples were collected from different agricultural field at a depth of 30 to 40 cm in and around Loni region, District Ahemednagar. The samples were collected into the sterile polythene bags and carried to the laboratory for further microbial analysis.

Isolation, identification and screening of bacteria:

The 1 g of soil sample samples was serially diluted with sterile distilled water. The last dilution were inoculated on nutrient agar medium by spread plate method and incubated at 37^0C for 24 hr. After incubation, well isolated colonies were purified and maintained on nutrient agar slant and stored at 4^0C. All the isolates from nutrient agar were inoculated on grown on Modified M9 medium (composition (g/l): KH_2PO_4 2.0, L-asparagine 6.0, $MgSO_4.7H_2O$ 1.0, $CaCl_2.2H_2O$ 1.0, glucose 3.0, and agar 20.0) supplemented with phenol red as indicator for screening the L-asparaginase producer (Prakasham et al., 2010) and the plates were incubated at 37^0C for 24 hrs. Those colonies that displayed pink red colour were consider as L-asparaginase producer and were identified on the basis of morphological and biochemical tests.

Enzyme production

L-asparaginase production by the isolate was carried out by submerged fermentation. The sterilised production media (composition (g/l): KH_2PO_4 2.0, L-asparagine 6.0, $MgSO_4.7H_2O$ 1.0, $CaCl_2.2H_2O$ 1.0 and glucose 3.0) was inoculated with a loop-full of log phase bacterial culture and was incubated in a rotary shaker at 37^0C at 200 rpm for 48 hrs. At the end of incubation, culture filtrates were obtained by centrifugation at 8000 rpm for 15 min and the supernatant was then used as crude extract for L-asparaginase activity.

Optimization of L-asparaginase production:

The effect of different parameters on the L-asparaginase production by the isolate was optimized for various conditions.

Effect of pH:

The effect of pH on L-asparaginase production was studied by growing the isolates in sterile production medium of different pH (5, 6, 7, 8, 9 and 10) and incubated at 37^0C for 48 hrs and assayed for enzyme activity. The pH was maintained by using phosphate buffer.

Effect of Incubation Temperature:

The effect of incubation temperature on L-asparaginase production was studied by growing the bacterial isolates in sterile production medium were incubated at different temperatures (25^0C - 45^0C) for 48 hrs and assayed for enzyme activity.

Effect of Carbon Source Concentrations

Glucose was used as carbon source at different concentrations (0.2 to 1.2%) were added into the production medium separately and incubated at 37^0C for 48 hrs and assayed for asparaginase activity.

Effect of Nitrogen Source Concentrations

Yeast extract was used as source of nitrogen at different concentration were added into the production medium separately and were incubated at 37°C for 48 hrs and assayed for enzymatic activity.

Assay of L-asparaginase activity:

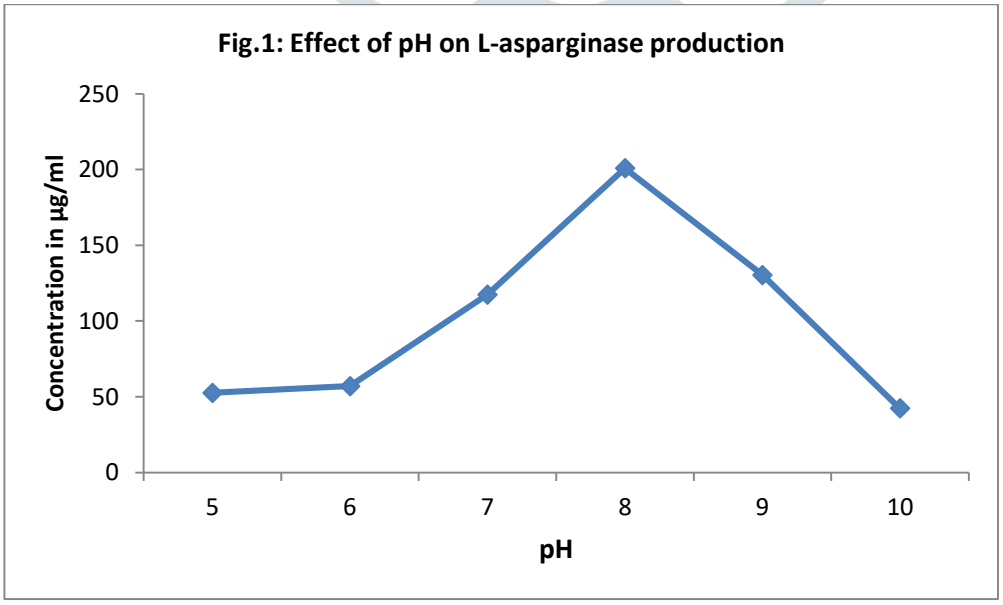
L-asparaginase activity was determined in culture filtrates by quantifying the ammonia formation using nessler's reagent. The enzymatic reaction mixture contains 0.5 ml of 0.04 M L-asparagine substrate, 0.5 ml of 0.05 M Tris-HCl buffer (pH 8.6) and 0.5 ml of crude enzyme. The enzyme substrate mixtures

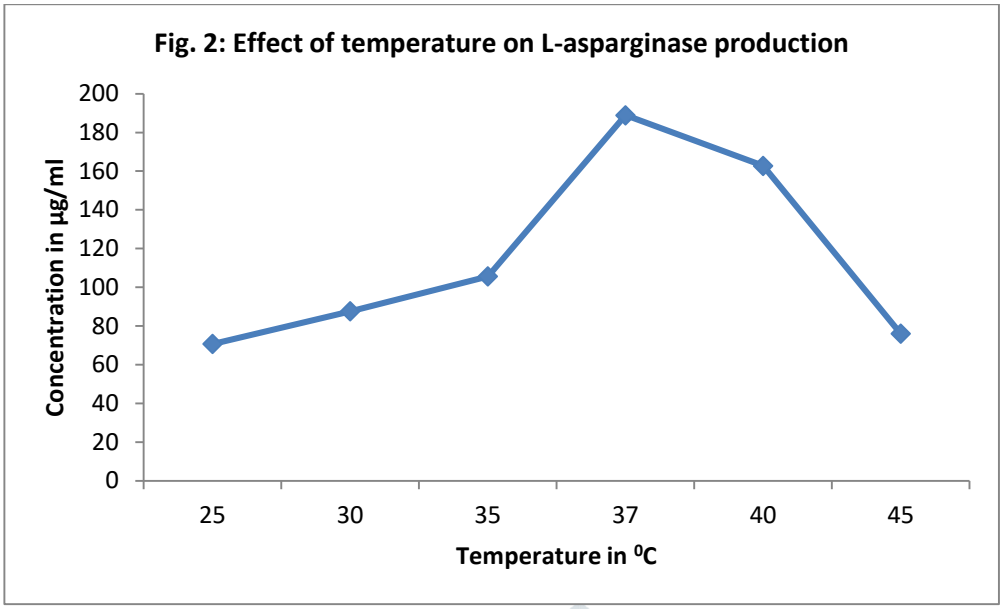
were incubated at 37°C for 30 min. After incubation period the enzyme activity was stopped by the addition of 0.5 ml of 1.5 M trichloroacetic acid. The liberated ammonia was coupled using nessler's reagent incubated at 20°C for 15 min for development of colour that was measured at 450 nm using UV-visible spectrophotometer. The liberated ammonia was determined by inference from the standard curve of ammonium sulphate.

Results and discussion:

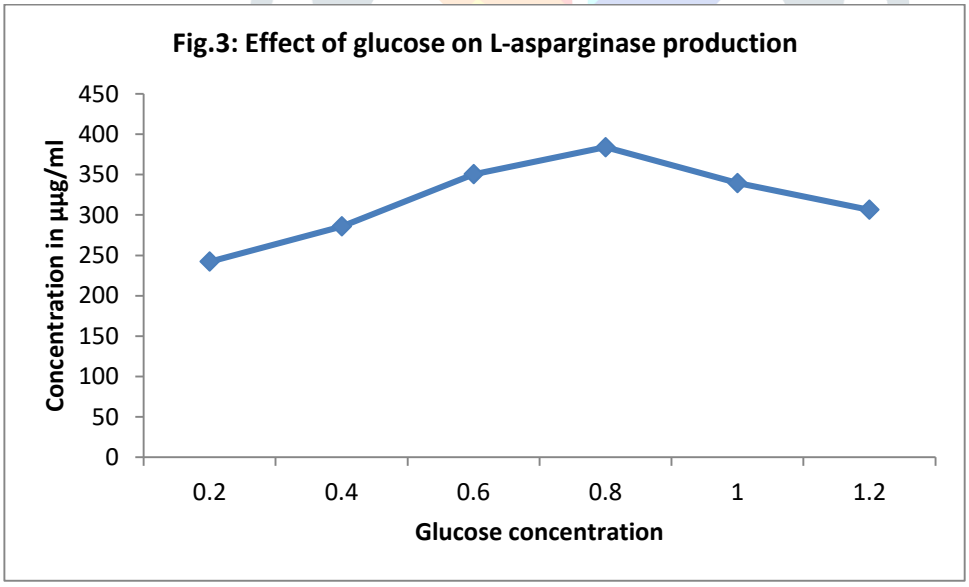
In present study, total 67 bacterial isolates were isolated from agricultural soil on nutrient agar. Among them, 19 bacterial isolates showed L-asparginase production ability on a modified M9 agar medium with phenol red as an indicator. Out of 19, one isolates showed highest production of L-asparginase which was identified as *Bacillus* sp. on the basis of morphological and biochemical tests. Further, *Bacillus* sp. was optimized for various conditions for better results. Similar studies were reported earlier (Kamble et al., 2012; Lalitha Devi and Ramanjaneyulu, 2016).

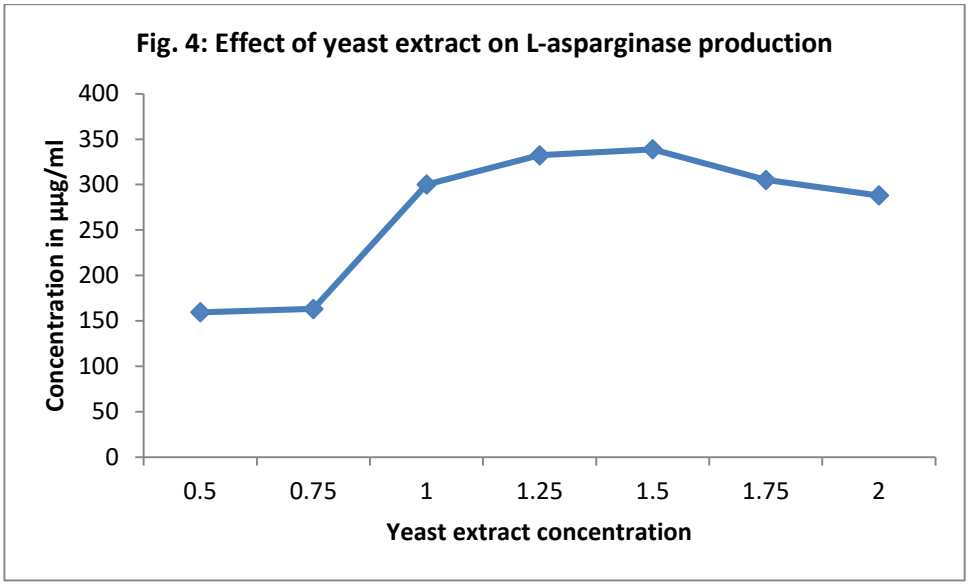
The extracellular pH has a strong influence on the microbial metabolism as well as product generation by microbes. Similarly, optimum temperature is also important as it affects the conversion efficiency of substrate into cell mass which affect the product formation, particularly when product is growth associated (Shah et al., 2010). Hence, in this study, pH and temperature were optimized to increase the L-asparaginase yield. The result suggests that as the pH increased, the enzyme production was also increased up to pH 8. Further increase in pH the enzyme production was declined (Fig. 1). The highest yield of enzyme was found to be at pH 8 (200.88µg/ml) that was considered as optimum pH. The temperature has significant effect on enzyme production as showed in Figure 2. The result suggests that as the temperature increased, the enzyme production was also increased up to 37^0C. Further increase in temperature the enzyme production was declined. The maximum production was achieved at 37^0C (188.88µg/ml). Our report of optimum temperature is in agreement with earlier report (Prasad Talluri et al., 2013).





The components of the fermentation medium should be supplied in an adequate quantity for growth, energy, building of cellular components and synthesis of fermented products where carbon and nitrogen sources play an important role (Shah et al., 2010). In present study we optimized glucose and yeast extract as source of carbon and nitrogen, respectively. The optimum glucose level was found to be 0.8% for maximum yield (3.83.88 µg/ml), while, below and above the 0.8%, the enzyme production was declined (Fig. 3). The optimum yeast extract level was found to be 1.5% for maximum yield (338.88µg/ml) while below and above the 1.5%, the enzyme production was declined (Fig. 4). These reports are correlated with previous study (Shah et al., 2010).





Conclusion:

In the present investigation, *Bacillus* sp. was isolated and optimized from agricultural soil. The result showed that optimum pH, temperature, glucose concentration as a carbon source and yeast extract as a source of nitrogen for L-asparaginase production by *Bacillus* sp. was 8, 37^0C, 0.8% and 1.5%, respectively. This clearly indicates that agriculture soil can provide a good source of L-asparaginase producing bacteria.

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Economic Analysis of Chemical Free jaggery in Kolhapur District of Maharashtra

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ABSTRACT

In India,Maharashtra stands second highest in production of sugarcane followed by Uttar Pradesh. As regards Maharashtra, about 0.96 million hectares of area with production of 57.04 million tons with productivity of 74 tonnes per hectare(2010-2011). Out of total production sugar in Maharashtra, Kolhapur region stands second highest contributing 14.98 percent and the sugar recovery is a bout 12.51 percent. In these study estimate the costs and returns of jaggery production and to estimate the value addition to Jaggery.

The data was collected for the year 2014-15 . The highest jaggery producing area Kolhapur district was purposively selected in which two tahsils panhala and karveer were selected randomly. Two villages was selected randomly from each tahsils on the basis of maximum number of units. From each village eight jagrrery producers were selected randomely. Total 16 jaggery units studied and made conculsion by using different statically tools. The per unit total investment was needed for the establishment at Rs.808509 jaggery processing units.

The per unit cost were estimated to Rs.3240745.98 for jaggery processing unit. The total cost of labour required for jaggery processing unit was Rs 580120.63 for 578.27 mandays respectively. The unskilled labour costs for operation like sugarcane cutting Rs180511.88. The labour cost on account of transportation of sugarcane from field to jaggery processing unit was Rs 106023.13, for cane crushing Rs72601.88, heating of juice Rs42039.06, transportation of residue Rs 37497.19 respectively.

The second component of skilled labour i.e. Adkari. The cost on *Adkar* was found less (Rs 98935).The most valuable factor in resource use structure was raw material or sugarcane which accounted for Rs2529437.50; also the share of fuel and electricity supply was 0.67 percent in total cost of production of jaggery. It i s also seen from table that very less amount of cost on account of material used was found (Rs108031.41). The total variable cost incase of jaggery production worked out to be Rs 679483.24 processing units.In the cost of Sugarcane was the (Rs.2529437.50) 77.77 percent jaggery processing units respectively. Labour, fuel and electricity charges were the other important items of cost accounting for17.84 percent and 0.66 percent respectively. The contribution of total fixed cost, in the total cost Rs.11571. was very major when it is compared with the variable cost. The percentage of fixed cost to the total cost was 0.36 percent to the Jaggery producers.The main component of fixed cost was land depreciation and interest on fixed capital.Where as raw material,labour cost and electricity charges incase of variable cost of jaggery production is the major items .

It was clear from the table that gross returns from Rs200873.01.TheB:C ratio for in case of jaggery production,gross returns were obtained Rs3774770.29 and net returns to Rs 522452.44.The estimated B:Cratio was 1.16. It can be revealed that per quintal cost of jaggery production was Rs 2834.31. Sugarcane cost and labour cost were the major items of total cost,contributing 77.77 percent and 17.84 percent,in jaggery production.The land value,depreciation and Interest on fixed capital more incase of jaggery.It is also noted from the table that the per quintal net returns from jaggery was Rs 455.30.The break-even point gives the size of business. The break even point of Jaggery iproduction it was337.97 qtls.in physical terms and Rs.1115300 in monitory terms.

Chow's test At overall level ,the regression coefficent incase of jaggery production only raw material (X1)is significant but labour cost(X3)is non-significant.The pooled regression taken for employing chow test and the result revealed that it is 5 percent level of significant (6.4243**).

It is observed that the return was increased to go value addition of the particular product . The farmer sale sugarcane and he received Rs 2204.34 and make sugar from sugar factory he received Rs 2414.34 (109.52%) and making jaggery he received Rs 2834.31 (128.57%).It is clearly observed that Jaggery making is profitable business.

Introduction

Sugarcane(*Saccharamofficinarum*)is important cash as well as sugar crop in the world.In sugarcane cultivation Brazil ranks first,India ranks second and also is an important commercial crop of the country occupying around 4.94 million hectares of land with an annual cane production of around 339.16 million tones,with producers of white sugar,seed and feed and jaggery are 70.70 percent,11.90 percent and 17.40 percent .

In India,Maharashtra stands second highest in production of sugarcane followed by Uttar Pradesh. As regards Maharashtra, about 0.96 million hectares of area with production of 57.04 million tons with productivity of 74 tonnes per hectare(2010-2011). Out of total production sugar in Maharashtra,Kolhapur region stands second highest contributing 14.98 percent and the sugar recovery is a bout 12.51 percent (2011-12).India occupies first position in production of jaggery in the world. In financial year 2009-2010, total production of jaggery in India was around 80 lakh tones. Jaggery and Khandsari are the major agro processing industries found in rural sector of our country. It is recorded that 70 per cent of world's jaggery production is in India (Dwivedi,2010).The Maharashtra,state is the largest producer and consumer of jaggery.Jaggery is specially used during'Makar Sankrant'for making"*tilgul"*. In Maharashtra, about 11 to 12 percent sugarcane was being used for jaggery preparation during the year 2005-2006 and jaggery from Maharashtra is also well known for its quality,which has wide demand in international market.India is largest exporter of jaggery in the world.In India,only UttarPradesh and Maharashtra produce export quality jaggery because they have specialized centers for jaggery production.Jaggery is used as medicine for the patient suffering from jaundice, arthritis, kidney problems, jointpains etc.and also as lactogenic and cardiactonic. Jaggery is also used as part of animal feed mixtures and in tobacco curing.Jaggery has anayurvedic and nutritious value. Anutritive valueof jaggery is a rich source of Phosphorus,Calcium,Iron and Vitamin Bascompared to sugar. Sucrose 65-85(%), Glucose fructose 10-15 (%),Water 3-10(%) Protein 0.25(%) Calcium(0.40%) Phosphate(0.045%) Iron (11mg/100gm) Vitamin'B' (20mg/100gm), Copper(0.80mg/100gm). Jaggery isvery rich in iron, which helps to maintain the haemoglobin level in blood for prevent in ganaemia.

Objectives of the study

1. To study costs and returns of Jaggery production.
2. To estimate the value addition to Jaggery.

METHODOLOGY

The data was collected for the year 2014-15 . The highest jaggery producing area in Karveer district was purposively selected in which two tahsils Panhala and Karveer were selected randomly. Two villages were selected randomly from each tahsils on the basis of maximum number of units. From each village eight jaggery producers were selected randomely. Total 16 jaggery units studied and made conclusion by using different statically tools

Capital investment pattern of jaggery processing units

The initial investment pattern in jaggery production unit was estimated and is presented in Table 1. The space(land) was most important factor contributing i.e.Rs 409297(50.62percent) for establishing Jaggery units . The results also evealed that,initial investment on shedwashig was Rs 84063(10.40 percent) .The investment on *Katta* was found to be Rs 56844 (7.03percent), on cane crusher Rs 44438(5.50 percent),on furnace Rs 42344 (5.24percent) on Roof Rs39281(4.86percent), on*Kahil*(boilingpan) Rs 35000(4.33percent) followed by investment on Generator machine Rs 23313 (2.88percent) respectively to the Jaggery processing units.It could be seen from the bove discussion that a per unit total investment was needed for the establishment at Rs.808509 jaggery processing units.

Table1 Capital investment in establishment of jaggery processing units

Sr.No	Items	Jaggery unit	
		Number /units	Value(Rs.)
1.	Land(ha)	0.25	409297 (50.62)
2.	Shed	1	84063 (10.40)
3.	Furnace	1	42344 (5.24)
4.	*Katta*	1	56844 (7.03)
5.	Roof	1	39281 (4.86)
6.	*Vafa*	1	18875 (2.33)
7.	*Chimney*	1.56	20297 (2.51)
8.	Canecrusher	1	44438 (5.50)
9.	Generatormachine	1	23313 (2.88)
10.	Electricmotor	1	15688 (1.94)
11.	Juicestoragetank	1	3525 (0.44)
12.	Filterplates	1.41	402 (0.05)
13.	Ironscrapper	1.81	607
14.	Differentshapeofblock		
A	0.5Kg	13.43	179
B	1Kg	37.34	571
C	2Kg	29.69	513
D	5Kg	36.25	776
E	10Kg	27.65	772
F	*Vadisache*	0.25	102
G	*Modak*	1.06	19
15.	*Kahil*/boilingpan	1	35000
	Plasticpipes(ft)	1	1559
17.	Zarya	2.78	793
18.	Oil engine	0.15	2990
		1	3444
20.	*Hate*	3.91	1439
21.	*Bhare*	2.38	953 (0.12)
22.	Ash-spade	2.19	183 (0.02)
23.	Crates	1.09	244
			808509

(Figures in the parentheses are percentages to the total)

2) Resource use and cost incurred in jaggery production.

The information on per unit per season resource use and their cost in jaggery making is worked out and presented inTable 2.The per unit cost were estimated to Rs.3240745.98 for jaggery processing unit. The total cost of labour required for jaggery processing unit was Rs 580120.63 for 578.27 mandays respectively. The unskilled labour costs for operation like sugarcane cutting Rs180511.88. The labour cost on account of transportation of sugarcane from field to jaggery processing unit was Rs 106023.13, for cane crushing Rs72601.88, heating of juice Rs42039.06, transportation of residue Rs 37497.19 respectively.

Table.2 Average category wise resource use and cost incurred on jaggery processing unit.

N0. Sr.	Particulars	jaggery processing unit	
		Quantity	Value(Rs.)
A	Rawmaterial		
1.	Sugarcane used (tons)	1011.78	2529437.50
B	Labour cost		
1	Sugarcane cutting(man days)	704.05	180511.88 (5.57)
2	Sugarcane transportation(man days)	341.53	106023.13 (3.27)
3	Crushing(days)	357.84	72601.88 (2.24)
4	Juice heating(man days)	207.78	42039.06 (1.30)
5	*Gulvi*(days)	124.06	42512.50 (1.31)
6	Transportationofresidue(man days)	336.09	37497.19 (1.16)
7	*Adkari* (man days)	500.56	98935 (3.05)
	Total(mandays)	2571.93	580120.63 (17.90)
C	Chemicals		
1	HydrousPowder(kg)	456.36	75845.31 (2.34)
2	Phosphoric Acid(ml)	159.54	13782.43 (0.43)
	Total		89627.74 (2.77)
D	Clarifying agents		
1	Lime(kg)	230.85	6108.55 (0.19)
2	*Bhendi* Powder(kg)	5.81	5774.06 (0.18)
3	Edible Oil(kg)	30.23	2225.94 (0.07)
4	Milk powder(kg)	27.98	3454.12 (0.11)
5	Milk(lit.)	26.28	841 (0.03)
	Total		18403.67 (0.57)
	ChemicalsandClarifyingagents (C+D)		108031.41
E	Fuel and electricity		
1.	Diesel (lit.)	94.43	5194.34 (0.16)
2.	Electricity		16365.23 (0.50)
	Total	124.06	21559.57 (0.67)
E	*Khadi cloths*	-	1596.88 (0.05)
	Grand total		3240745.98 (100.00)

(Figures in the parentheses are percentages to the total)

The second component of skilled labour i.e. Adkari. The cost on *Adkar* was found less (Rs 98935).The most valuable factor in resource use structure was raw material or sugarcane which accounted for Rs2529437.50; also the share of fuel and electricity supply was 0.67 percent in total cost of production of jaggery. It i s also seen from table that very less amount of cost on account of material used was found (Rs108031.41).Among individual contribution of chemicals used incase of inorganic jaggery highest contribution was made by hydrous powder Rs75845.31 followed by phosphoric acid Rs13782.43, lime Rs 6108.55,*bhendi* powder Rs 5774.06,milk powder Rs3454.12 and edible oil Rs2225.94.

3 Cost and returns from jaggery production.

Cost of jaggery processing.

The costs incurred in jaggery production it could be seen from the Table3 that the total variable cost incase of jaggery production workedout to be Rs 679483.24 processing units.In ,the cost of Sugarcane was the (Rs.2529437.50) 77.77 percent jaggery processing units respectively. Labour,fuel and electricity charges were the other important items of cost accounting for17.84 percent and 0.66 percent respectively. The contribution of total fixed cost,in the total cost Rs.11571. was very major when it is compared with the variable cost.The percentage of fixed cost to the total cost was 0.36 percent to the

Table 3 The category wise per season pattern of costs and returns from jaggery production

Sr. No.	Particulars		Jaggery producer	
			Units required	Cost(Rs.)
1	Land	ha.	0.24	4722.66 (0.15)
2	Depreciation of Building	-	-	1876.30 (0.06)
3	Interest on Fixed capital	-	-	4972.92 (0.15)
	Total fixed cost	-	-	**11571.87 (0.36)**
4	Sugarcane cost	Tons	1011.78	2529437.50 (77.77)
5	Total chemicals and clarifying agents cost	-	-	108031.41 (3.32)
6	Total labourcost	-	-	580120.63 (17.84)
7	Fuel and electricity charges	-	-	21559.57 (0.66)
8	Khadi cloths	-	-	1596.88 (0.05)
	Total variable cost	-	-	**3240745.98 (99.64)**
	Total cost	-	-	3252317.85
	Returns	-	-	-
1	Crushing days	-	124.06	-
2	Jaggery produced	ton	114.74	3774770.29
3	Net returns	-	-	522452.44
4	B:Cratio	-	-	1.16
5	Per kg cost of jaggery (Rs.)	-	-	28.40
6	Recovery %	-	-	11.39

(Figures in the parentheses are percentages to the total)

Jaggery producers.The main component of fixed cost was land depreciation and interest on fixed capital.Where as raw material,labour cost and electricity charges incase of variable cost of jaggery production is the major items .

To sum up it concluded that jaggery production the major items of production cost were raw material cost(sugarcane),labour cost and cost on account of chemicals with exception in less chemical and clarifying agents used inorganic jaggery.

Returns from jaggery production

Per unit per season gross returns from jaggery production were calculated and presented in table It was clear from the table that gross returns from Rs200873.01.TheB:C ratio for In case of jaggery production,gross returns were obtained Rs3774770.29 and net returns to Rs

522452.44.The estimated B:Cratio was 1.16..

Per quintal cost and returns from jaggery production

From theTable,4 it can be revealed that per quintal cost of jaggery production was Rs 2834.31.

Table 4 Per quintal cost a nd returns from jaggery production

Sr. No.	Particulars	jaggery production cost	
		Cost	Percent to total
1	**Sugarcane cost**	**2204.34**	77.77
2	Chemicals and Clarifying agents	94.15	3.32
3	Labour charges	505.56	17.84
4	Khadi cloths	1.39	0.05
5	Fuel and electricity charges	18.79	0.66
6	Landvalue	4.12	0.15
7	Depreciation	1.64	0.06
8	Interest on Fixed capital	4.33	0.15
I	**Totalcost**	**2834.31**	**100.00**
1	Total returns	3289.61	-
2	Net returns	455.30	-
3	B:Cratio	1.16	-

(Figures in the parentheses are percentages to the total)

Sugarcane cost and labour cost were the major items of total cost, contributing 77.77 percent and 17.84 percent,in jaggery production.The land value,depreciation and Interest on fixed capital more incase of jaggery.It is also noted from the table that the per quintal net returns from jaggery was Rs 455.30.

5 Break-even analysis

The break-even point was worked out for the estimating the minimum quantity of jaggery that should be produced in order to have no profit no loss in the business.The Break-even point for sample jaggery producers was calculated and presented inTable 5.

Table 5 Break-even analysis

Sr. No.	Particulars	jaggery
1	In Physical terms (qtls)	337.97
2	In Monitory terms (Rs)	1115300

The break-even point gives the size of business.It is observed from the table for inorganic jaggery it was337.97 qtls.in physical terms and Rs.1115300 in monitory terms. It is indicated that minimum quantity of jaggery,each category have to producet o equal costs and returns.The time period Required for achieving the break-even level of output was relatively longer for jaggery units(146days)Chow's test At overall level,it can be revealed from the table independent variable viz.,raw material (X_1), labour (X_2)and chemical cost(X_3)explained the variation in the net price per quintal of extent of 88 percent, which is 92 percent for jaggery,respectively.At overall level The regression coefficent incase of jaggery production only raw material (X_1)is significant but la bour cost(X_3)is non-significant.The pooled regression taken for employing chow test and the resul t revealed that it is 5 percent level of significant (6.4243**).

Value chain analysis -

Sr.No	Sugarcane	Sugar	Jaggary
1 price (Q)	2204.34	2204.34	2204.34
2 Cost		210.00	629.97
3 Sale price	2204.34	2414.34	2834.31
4 percent increase	(100)	(109.52)	(128.57)

I t is observed that the return was increased to go value addition of the particular product . The farmer sale sugarcane and he received Rs 2204.34 and make sugar from sugar factory he received Rs 2414.34 (109.52%) and making jaggery he received Rs 2234.31 (128.57%).It is clearly observed that jiggery making is profitable business.

Conculsions:

The per unit total investment was needed for the establishment at Rs.808509 jaggery processing units.

The per unit cost were estimated to Rs.3240745.98 for jaggery processing unit. The total cost of labour required for jaggery processing unit was Rs 580120.63 for 578.27 mandays respectively. The unskilled labour costs for operation like sugarcane cutting Rs180511.88. The labour cost on account of transportation of sugarcane from field to jaggery processing unit was Rs 106023.13, for cane crushing Rs72601.88, heating of juice Rs42039.06, transportation of residue Rs 37497.19 respectively.

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The total variable cost incase of jaggery production worked out to be Rs 679483.24 processing units.In ,the cost of Sugarcane was the (Rs.2529437.50) 77.77 percent jaggery processing units respectively. Labour,fuel and electricity charges were the other important items of cost accounting for17.84 percent and 0.66 percent respectively. The contribution of total fixed cost, in the total cost Rs.11571. was very major when it is compared with the variable cost. The percentage of fixed cost to the total cost was 0.36 percent to the Jaggery producers.The main component of fixed cost was land depreciation and interest on fixed capital.Where as raw material,labour cost and electricity charges incase of variable cost of jaggery production is the major items .

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It can be revealed that per quintal cost of jaggery production was Rs 2834.31. Sugarcane cost and labour cost were the major items of total cost,contributing 77.77 percent and 17.84 percent,in jaggery production.The land value,depreciation and Interest on fixed capital more incase of jaggery.It is also noted from the table that the per quintal net returns from jaggery was Rs 455.30.The break-even point gives the size of business.It is observed from the table for inorganic jaggery it was337.97 qtls.in physical terms and Rs.1115300 in monitory terms.

Chow's test At overall level,it can be revealed from the table independent variable viz.,raw material (X_1), labour (X_2)and chemical cost(X_3)explained the variation in the net price per quintal of extent of 88 percent, which is 92 percent for jaggery, respectively.At overall level The regression coefficent incase of jaggery production only raw material (X_1)is significant but labour cost(X_3)is non-significant.The pooled regression taken for employing chow test and the result revealed that it is 5 percent level of significant (6.4243**).

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Studies on Preparation of Rice Crisps

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Abstract – Rice crisps is cold extruded and fried snack product mainly available in onion and garlic flavor. The present investigation is carried out with objectives to increase the nutritional value and shelf life of rice by making the rice crisps. Various trials were taken for the formulation of recipe with varying quantity of different raw materials like cooked/steamed rice, chickpea flour, onion powder and garlic powder mainly. The result outcome of this research is that good flavored (onion and garlic) rice crisps. This product is good source of proteins, carbohydrates and minerals like sulphur and copper. As per the sensory evaluation of the product by using 9 point hedonic scale method by the semi trained panel members, rice crisps having good consumer acceptability can be prepared .The prepared rice crisps can be stored for long time with nitrogen packaging.

KEYWORDS – Cold extrusion, Nitrogen packaging, Rice crisps, 9 point hedonic scale.

Introduction

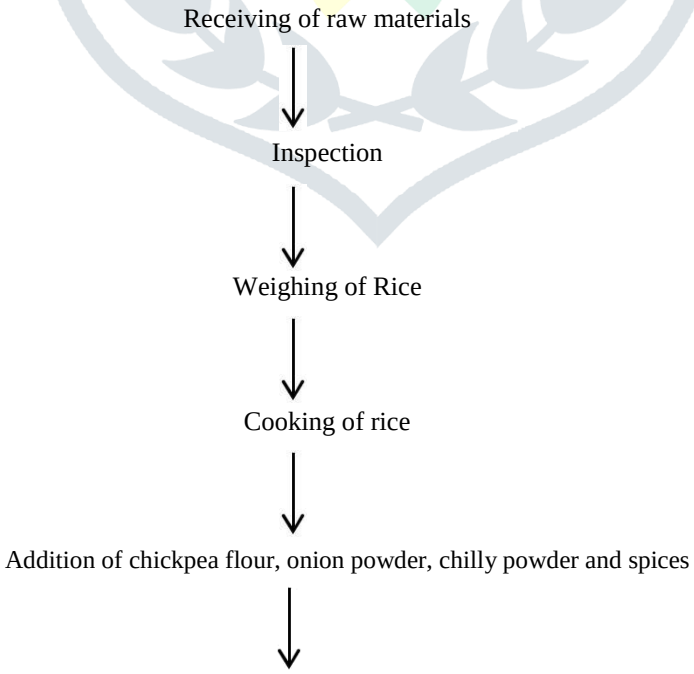
Rice crisps are extruded snack food product as like *chakali*. They are prepared and eaten in several different cuisines. In our product, we have used steamed rice and combined with chickpea flour and flavoured with addition of onion and garlic powder. It is cold extruded fried food product. It is a Ready To Eat food product. Rice is distinct from rice starch, vitamins and minerals such as Molybdenum and copper. Rice is a particularly good substitute for wheat, which causes irritation in the digestive systems of those who are gluten-intolerant.

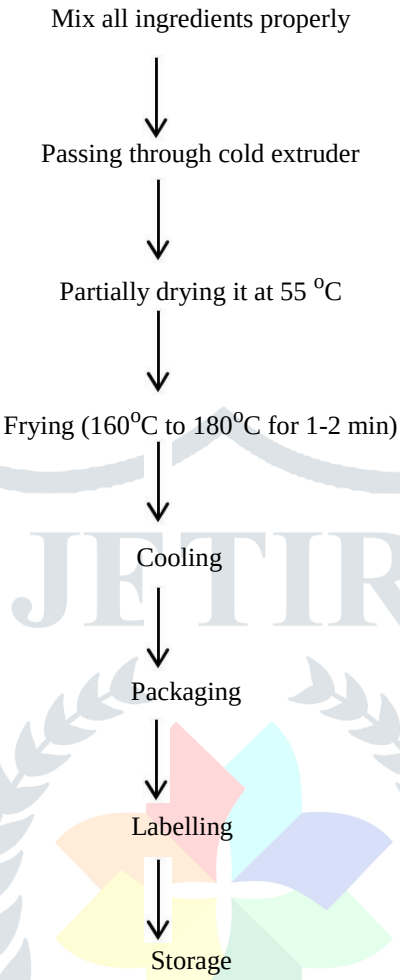
Materials and method

Raw material

The raw materials required to prepare rice crisps such as steam rice, chickpea flour, onion powder, chilly powder and spices.

Methodology





Optimization of Rice crisps

The optimization process was carried out with the formulation of steamed rice, chickpea flour, onion and garlic powder composition was optimized by sensory evaluation of final product by semi-trained panel members.

Table No.1 Optimization of Rice crisps

Ingredients	**T1(g)**	**T2(g)**	**T3(g)**	**T4(g)**	**T5(g)**
Cooked/steam rice	78	80	82	83	84
Chickpea flour	13	12	10	9	8.5
Salt	2	2	2	2	2
Onion powder	1.5	2	2.5	3	3.5
Garlic powder	1.5	1.5	1	1	1
Spices	4	4	4	4	4

Sensory evaluation of Rice crisps:-

The sensory evaluation of prepared rice crisps was carried out as per the 9 point hedonic scale method. The semi-trained panel of 5 members was there for sensory evaluation. Panelists were instructed to evaluate how much they like appearance, texture and overall acceptability of chicken pops on hedonic scale.

Result and Discussion

Nutritive value of steamed rice

Steamed rice is rich in many carbohydrate, vitamins and minerals essential for human health.

Table No.2 Chemical composition of steamed rice

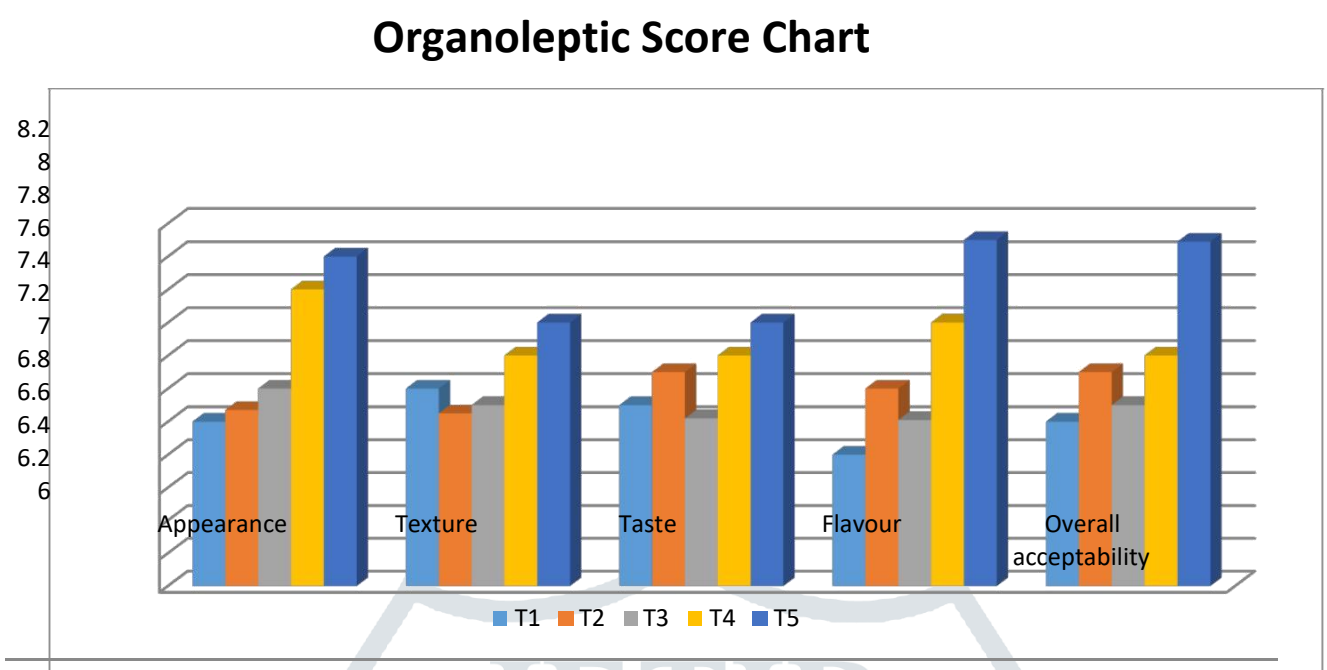
Nutrients	**Per 100g**
Energy (kcal)	130
Moisture	68g
Carbohydrate	28.17g
Protein	2.69g
Fat	0.28g
Phosphorus	43mg
Potassium	35mg
Calcium	10mg
Niacin	1.476mg

According to Table No.2 steamed rice is an excellent source of carbohydrates, minerals and vitamins.

Table No.3 Sensory evaluation of Rice crisps

Sample	**T1**	**T2**	**T3**	**T4**	**T5**
Color & appearance	7.0	7.07	7.2	7.8	8.0
Texture	7.2	7.05	7.1	7.4	7.6
Taste	7.1	7.3	7.02	7.4	7.6
Flavors	6.8	7.2	7.01	7.6	8.1
Overall Acceptability	7.0	7.3	7.1	7.4	8.09

With holding to above Table No.3 According to sensory evaluation, sample T5 was found more significant than other four samples.



Graph No.1 Organoleptic Score Chart of Rice crisps

Physicochemical analysis of Rice crisps

Nutrients	**Per 100g**
Energy (kcal)	357.2
Carbohydrate	65.7g
Fat	15.9g
Protein	6.8g
Ash	0.26g
Moisture	4.37g
Phosphorus	6.8mg
Calcium	1.2mg

Table No.4 Physicochemical analysis of Rice crisps

The prepared product is of good nutritional value and contributes important nutrients. The results pertaining to chemical composition are narrated in above Table 4. The values related to chemical composition exploits that it contains energy 357.2 kcal, carbohydrates 65.7g, proteins 6.8g, fats 15.9g, saturated fat 2.1g and phosphorus 6.8mg.

Conclusion

The steamed rice and chickpea flour are good sources of nutrients like proteins, carbohydrates, phosphorus,calcium etc. Good quality Rice crisps can be prepared by using steamed rice and chickpea flour. The prepared rice crisps can be stored for specified time under prompt conditions like, suitable packaging (nitrogen packaging) and ambient temperature (preferably refrigeration).

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Awareness of Agricultural E- Literacy amongst the Farmer of Pune District

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Abstract

Now a days Government of India launching various Agricultural Apps for farmers which are useful for providing information about good farming and crop grow. Agricultural websites like mahaagri.gov.in , mkisan.gov.in etc. are various websites which are useful for farmers that gives information about various policies run by government for farming. For this research paper Authors have studied randomly selected farmers of Pune District and collected data about E- Literacy amongst them.

Keywords-: Agricultural Apps, Smart Farming

I. Introduction

Smart farming technologies have enabled farmers to reduce costs, maximize yields and profits, and still be incredibly efficient in the process. Smart Farming represents the application of modern Information and Communication Technologies (ICT) into agriculture, leading to what can be called a Third Green Revolution. [1]

Indian users comprise about 30% of the total volume of the global feature phone market, making it the second largest in the specified field. In 2015, India had 720 million mobile phone users, out of which 320 million were rural mobile phone users. This estimate also included 50 million Smartphone users with access to internet. According to 'The Rising Connected Consumer in Rural India', a study by the Boston Consulting Group, this share of rural India will jump to 48% by 2020 . Steps taken by the Indian government recently may make this happen sooner than predicted. Digital India, launched in 2015 by Indian Prime Minister Narendra Modi, aims towards the promotion of digital literacy and creation of digital infrastructure for empowering rural communities. Considering that 58% of rural households depend on agriculture as one of their most eminent source of livelihood, the role of Digital Agriculture needs to be considered within Digital India.[2]

Spreading agricultural related information to farmers in the poorest communities are made easier with the help of cloud computing, integrated IT systems, online education and proliferation of mobile phones. One of the benefits of such connectivity and information flow is that it helps farmers make better land management decisions. For example, it can enable soil condition to be monitored in conjunction with weather information in order to better plan the planting and harvest season. Similarly, Geographical Information Systems can be used to provide pre-emptive information on pests and animal diseases so farmers can respond accordingly to the level of risk. Optimizing the use of fertilizer, seeds and water can also be done by utilizing mobile and cloud computing technologies. This helps farmers save money while reducing consumption.

Agricultural apps like SmartCrop, Mandi Trades, Kisaan Market serve as an online marketplace providing space for farmers to sell their produce after collecting information regarding market prices and for customers to compare and buy produce. State specific apps narrow down the user base and help to provide information regarding a specific area.[3]

India's Agricultural sector plays important role in Indian Economy, but Agricultural growth rate was comparatively slow with other countries.

Generally following are some reasons for above problems:

1. Lack of Water Resources
2. Irregular Rainfall
3. Traditional Technologies
4. Lack of High Skill Farmers
5. Unplanned Government Policies for Farmers
6. Increased in proportion of Non Agricultural land.

Etc.

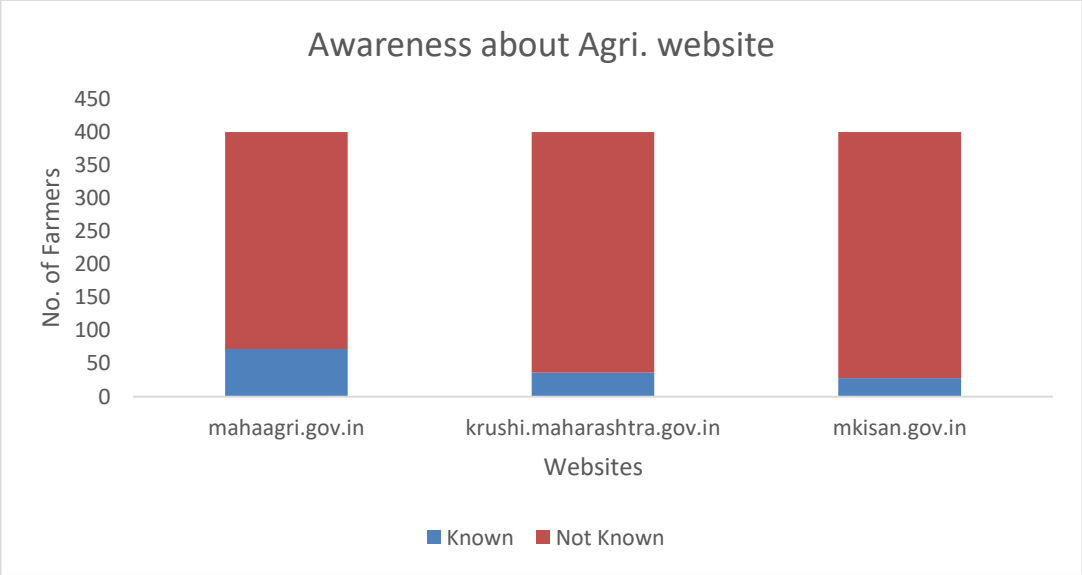
II. Research Methodology and Data Collection

For this research, authors have collected data from Pune District with Random sampling technique. Sample size is 400. i.e 400 farmer's data studies as a sample for analysis. Questionnaires are distributed and data collected through farmers about awareness of Apps for smart farming.

III. Analysis

1. Awareness about Government Websites amongst the farmers

Agri. Websites	mahaagri.gov.in	krushi.maharashtra.gov.in	mkisan.gov.in
No. of farmers about website awareness	72	36	28
Percentage (%)	18	09	07



By observing above graph, there is very low awareness about the Government Agricultural Websites.

2. Awareness about Government Apps amongst the farmers in association with Education.

Education → / Awareness of Agri Apps.? ↓	Below S.S.C	Above S.S.C
Yes	a=40	c=28
No	b=264	d=68

Ho: Education and Awareness of Agri. Apps are independent.

H1: Education and Awareness of Agri. Apps are dependent.

Above hypothesis is set for verifying an impact of Education of farmers on usage of Apps.

For proving hypothesis chi square test is used.

$$\chi^2 = \frac{N(ad-bc)^2}{(a+c)(b+d)(a+b)(b+d)} \rightarrow \chi_1^2$$

χ^2 = 13.2517

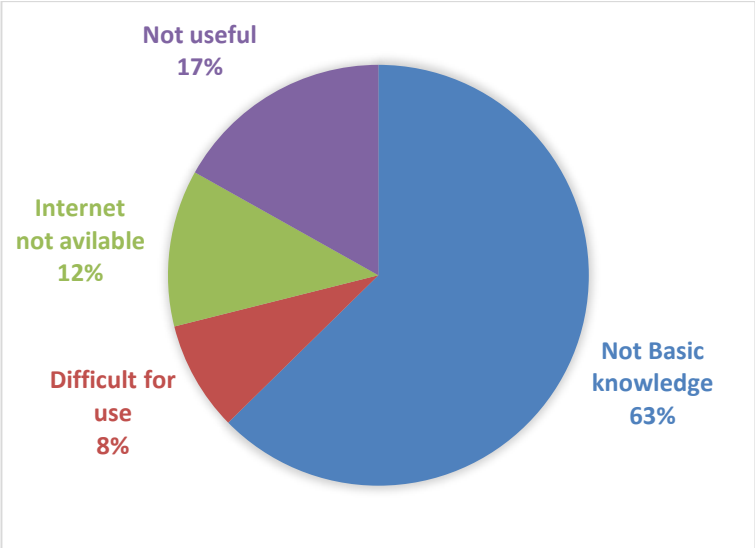
χ_1^2 at 5% L.S. is 3.841.

Calculated value of chi square is 13.25 which is greater than critical value 3.841. Hence We reject H0.

i.e Education and Awareness of Agricultural Apps. are dependent.

3. Reasons of unawareness about Apps amongst the farmers.

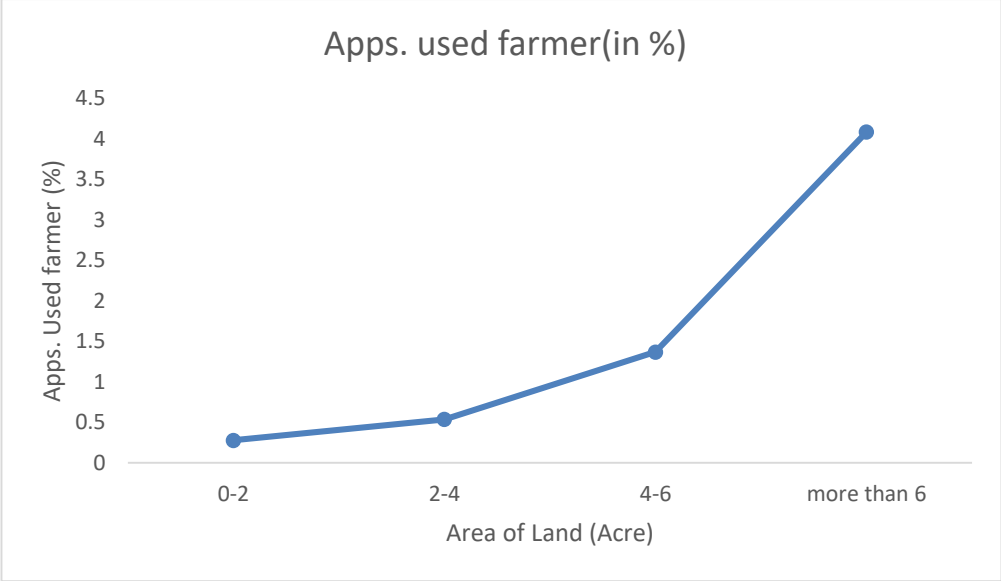
Reasons of unawareness about Apps.	Not Basic Knowledge	Difficult for use	Internet not available	Not useful
No. of Farmers	208	28	40	56



Above table shows most of the farmers does not have basic knowledge about the usage of apps.

4. **Awareness about Government Apps amongst the farmers in association with Land area**

Area of Land (In Acre)	No. of farmers	Apps. used farmer	Apps. used farmer
0-2	186	24	0.1290
2-4	122	20	0.1639
4-6	64	14	0.2187
more than 6	28	8	0.2857



Above graph shows that as the land area increases, maximum farmers use Agricultural Apps

IV. Conclusion

1. There is very low awareness about the Government Agricultural Websites amongst the farmers.
2. Educated farmers prefer to use Agri. Apps as compared to uneducated farmers.
3. Farmers are not able to use Apps because they don't have basic knowledge about the usage of apps.
4. Farmers with small land area, have low interest for use of Apps.

V. Suggestions

- It would be beneficial, if Government can circulate the various Government Policies, Websites and Apps for Agriculture through Media.
- It would be necessary, if Government arrange some training sessions for farmers, so that E-literacy will spread amongst the farmers.

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Development of Nutritionally Enriched Khakhra

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ABSTRACT –

Snack foods, being one of the major food categories of the global health and wellness market, are becoming a major focus of new product development in the food industry. Generally, a snack is a smaller portion of food than our regular meal can consume between meals. Snacks are of different varieties can make quickly, satisfy the consumers, less perishable, more durable and more portable than prepared food. Khakhra is a very thin, crispy, crunchy, healthy and flavoured snack product usually served as a breakfast dish and mostly common in the Gujrat and Rajasthan. The present study was conducted to determine the sensory quality and nutrient content of khakhra prepared with the incorporation of rajma flour (Kidney beans) as a protein source and Spinach as it is rich in iron and has many health benefits. This khakhra were prepared by using 700 g wheat flour, 300 g rajma flour and 500 gm spinach leaves paste along with some spices, and veg Manchurian seasoning is also used. This nutritionally enriched khakhra were evaluated organoleptically using nine point scale. It provides (195.9) Kcal energy, (5.2 g) protein, (42.2 g) carbohydrates, (0.7 g) fat, (4.9 mg) iron, (3.0 mg) calcium, and (1.8 %) moisture as compared to control khakhra. Thus, the results of the present study suggest that the incorporation of Rajma flour and Spinach paste improves the nutritional quality of the product.

Key words - *Indian Traditional Snacks, Rajma flour, protein, Iron*

INTRODUCTION

Snack food is a portion of food which is smaller than regular meal and can be consumed between meals. It is convenient because it is quick and easy to eat. Snack food comes into variety such as processed food and traditional foods. Most of the snack foods are intended for immediate consumption and have shelf life of 1-2 days only. Mostly sold in loose, without packaging, or in small polythene or paper packages. The shelf life can be extended by using adequate packaging. Generally, Snack foods is considered unhealthy and should be avoided but same can be made nutritious if enriched with addition of fruits, vegetables, pulses or cereals into it which. It will not only solve health problems but also provide sufficient energy. (2,5) Therefore, an attempt to make local snacks item nutritious and if these snack foods are made part of diet it will be beneficial for poorer strata of our society.

Khakhra is a thin cracker common in the Gujarati and Rajasthan cuisines of western India, especially among Jain community. It is traditionally made from wheat flour and oil. Khakhra are individually hand-made and roasted to provide a crunchy and healthy snack that can be enjoyed with a selection of spicy pickles and sweet chutneys. Khakhra is made in several varieties, such as *methi* (fenugreek), *jeera* (cumin), *bajri*, *pudina*, garlic and *ajwain*, are among others. There are variations in the method of preparation, but generally the following method is observed. Wheat flour (and/or refined flour), salt and masala are mixed. Oil, water or milk are added and kneaded to make a soft dough. This dough is then rolled into small balls and flattened. These are then roasted over low heat and pressed via wooden press, until crisp and light brown in color. (1) The traditional Khakhra is enriched with protein by adding kidney bean flour. The nutritional and medicinal value of Kidney beans makes it suitable diet for asthma and diabetes patients, boosting their immune system. Such enriched Khakhra are great source of vitamin, minerals, proteins, dietary fibers and iron. It contains antioxidants that are beneficial to our health. Consumption of kidney beans on regular basis is good for hair and skin. These legumes are tasty and nutritious. They provide support for proper functioning of the nervous

system and brain (3). Red kidney beans have low sodium content and saturated fatty acids but are rich in unsaturated fatty acids (linoleic acid) (6). They are also a good source of soluble and insoluble dietary fiber and display health benefits, which include reduced risk of heart disease and colon cancer (7). However, red kidney beans' nutraceutical value is yet to gain popularity in the prevention of chronic diseases (8)

Spinach provides good amount of vitamin B6, riboflavin, folate, niacin, soluble dietary fibers and minerals. Spinach is rich in iron which prevents from diseases like osteoporosis, anemia which are result of iron deficiency (4).

Nutri khakhra was prepared by adding wheat flour, kidney bean flour and spinach paste (7,3,7 %) along with oil, water and some spices, green chili paste, lime, salt as per taste. Soft dough was prepared. After resting it for 20 mins it was sheeted into 1mm thick sheet and given circular shape. Khakhra was precooked on low flame and then cooled at room temperature. Baking was done at 160ºC temperature for 3-4 mins from both the sides, again cooled at room temperature and then packed in vacuum package and this change in production process enhanced the shelf life of 90 days.

METHODOLOGY

Selection of ingredients for enrichment

To ensure that the cost of raw material is within limits and also keeping commercial viability in mind the ingredients are selected in such a way that they are available in local market at reasonable cost.

PROCESS FLOW CHART

Sieving of Wheat flour and Rajma flour

↓

Addition of oil, cumin, green chili paste, spinach paste, salt, lime, veg Manchurian spices and water as per recipe.

↓

Kneading properly into soft dough

↓

Covering with muslin cloth and resting for 15 – 20 min

↓

Dividing dough into small balls

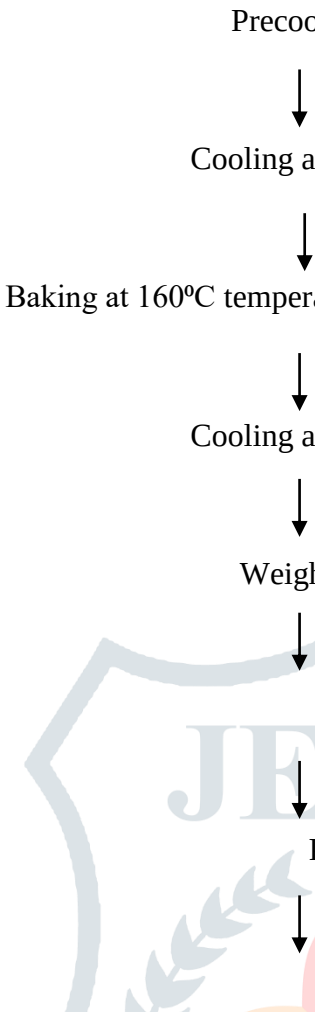
↓

Sheeting (1mm thickness)

↓

Cutting into circular shape with molds

↓



Organoleptic evaluation of nutri khakhra:

The organoleptic evaluation of prepared khakhra was conducted to find out maximum level of incorporation of selected nutritious ingredients such as red kidney bean flour and spinach.

Sensory evaluation of nutri khakhra:

Nutri khakhra was prepared with different levels of incorporation of selected nutritious ingredients. All the selected panel members were requested to evaluate the developed nutria khakhra. The judges were requested to score the recipes for different sensory characters namely color and appearance, taste, texture, flavor, mouth feel, overall acceptability by using nine point hedonic scale. Highly accepted variations were selected for nutritional analysis and shelf life study.

Nutrient analysis of nutri khakhra:

Nutrient analysis of nutria khakhra was done by chemical analysis in the laboratory. Various parameters considered for nutrient analysis were total energy, moisture, protein, carbohydrate, fat, ash, iron and calcium.

OBSERVATION AND ASSESSMENT:

The results obtained from the present investigation as well ae relevant discussion have been summarized under following heads:

Organoleptic evaluation of nutrients enriched nutri khakhra:

Nutrients enriched nutri khakhra was prepared by incorporating wheat flour, red kidney bean flour, spinach paste at different levels such as variation 1 (7, 3, 4); variation 2 (6,4,5); variation 3 (5,5,6); variation 4 (7,3,7) percent. The prepared nutri khakhra was evaluated for various sensory characteristic. The data which gives clear idea about sensory score of nutri khakhra is presented in table no. 1

The sensory score for color of nutri khakhra for studied variation varied from 6 to 8 highest score was observed in variation 4 (8), taste 6.5 to 8.5 and highest score was observed in variation 4 (8.5), texture 7 to 8.5 highest score was observed in variation 4 (8.5), flavor 6.5 to 8.8 highest score was observed in variation 4 (8.8), mouth feel 6.5 to 8.7 and highest score was observed in variation 4 (8.7).

Overall acceptability scores ranged between 6.5 and 8.5 like other sensory parameters the significantly highest score 8.5 was acquire by variation 4. On the whole, it can be said that addition of wheat flour, red kidney bean flour, spinach paste at the rate 7, 3 and 7 percent, respectively this nutri khakhra exhibited better acceptability than other variation. Hence such combination of ingredients for preparation of value-added nutri khakhra stands better.

Level of incorporation (%)

Variation	Wheat flour	Kidney bean flour	Spinach puree
1	7	3	4
2	6	4	5
3	5	5	6
4	7	3	7

Sensory evaluation-

The sensory evaluation of different organoleptic characteristics i.e., colour and appearance, taste, texture, flavour, mouth feel, and overall acceptability were carried out by semi trained panelists on 9 point hedonic scale with “9 as Like Extremely and 1 as Dislike extremely”. The average score was calculated for individual organoleptic properties. Sensory evaluation is carried out by 10 evaluators for various quality attributes on following scale:

Variation	Colour and appearance	Taste	Texture	Flavor	Mouth feel	Overall acceptability
1	6	6.5	7	6.5	6.5	6.5
2	6.9	7.2	7.5	7.2	7.3	7.2
3	7.5	7.6	6.8	7.9	6.5	7.2
4	8	8.5	8.5	8.8	8.7	8.5

Nutritional content of nutri khakhra:

As per new norms of FDA and FSSAI, it is mandatory to have nutritional value analysis displayed on food container. Hence same was carried out for nutria khakhra. The result for 100 gm sample is as follows.

The values for basic and value added nutri khakhra were moisture 2 and 1.8 percent, protein 3 and 5.2 percent, carbohydrate 2 and 4.2 percent, fat 0.5 and 0.8 percent, iron 1.1 mg/100 g and 2.5 mg/ 100g, calcium 10.4mg/100 g and 14mg/100g.

Nutrients	Values for traditional product	Values for enriched product
Moisture	2 %	1.8 %
Protein	3 %	5.2 %
Carbohydrate	2 %	4.2 %
Fat	0.5 %	0.8 %
Iron	1.1 mg/100 g	2.5 mg/ 100g
Calcium	10.4mg/100 g	14mg/100g

Biochemical and Microbial Analysis and Quality Control:

The quality testing is an important aspect of product before releasing into market. The Biochemical and Microbial analysis is established process for snack products testing and same was used for testing this product. The results are acceptable to release the product in market

CONCLUSION:

Value added Product "Nutri khakhra" can be prepared by incorporating nutritious ingredients. The simple and successful process can be used to improve the essential nutrient content with special reference to protein, carbohydrate, fat, iron, calcium. The developed value added nutri khakhra can be stored for 90 days.

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Preparation and characterization of Stuffed Chocolates : Lowering the risk of heart disease

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Abstract :

A growth of chocolate industry over the last decade has been driven in large part by an increasing awareness of the health benefits of chocolate, specially the dark chocolate. And when it is stuffed with different nuts as well as with dates then it is icing on the cake. Our innovative product consists of dark chocolate, cashew nut, almond, groundnut and dates as a stuffing of chocolate. Iron deficiency is the most common nutritional deficiency in humans and cardiovascular diseases are greater risk. So even being a chocolate product, it serves a health efficient benefits. Consuming dark chocolate can improve several important risk factor for heart disease.

Keywords: *dark chocolate, dates, nuts, stuffed chocolate, cardiovascular disease etc*.

Introduction:

Stuffed dark chocolate is prepared using dark chocolate as a main ingredient. Dark chocolate is rich in iron also contains antioxidant such as polyphenols (procynidine, cathechin, epicathechin) and is relatively low in sugar. It has reputation as a healthier alternative to other types of chocolate. In controlled trail, cocoa powder was found to significantly decrease oxidized LDL cholesterol in humans. It also increases HDL and lowers total LDL cholesterol. It contains an abundance of powerful antioxidant that do make it into the bloodstream and protect lipoprotein against oxidative damage.

Materials and method

The various ingredients used in the production of Stuffed Dark Chocolate are dark chocolate, dates, nuts, i.e. cashew nuts, almonds, peanuts, rice balls, choco flakes. The major ingredients used were dark chocolate (60/100g) and dates (14/100g) whereas nuts rice balls and choco flakes were used in minor amounts, with the total weight of each stuffed dark chocolate being 20g.

All the ingredients for the production were purchased from the nearby local market.

The analysis of stuffed dark chocolate for cholesterol and fat was given to test at 'Food Hygiene and Health Laboratory Hadapsar, Pune while the analysis for carbohydrate, protein, calcium, iron, microbial i.e. TPC and *E.coli* was carried out by the group members at MIT College of Food Technology, Pune.

Processing methods and preparation of stuffed dark chocolate

Primary preparation

1) Roasting of peanuts to enhance nutty flavour (70- 80℃ for 5- 10 mins)

2) De seeding the dates

3) Crushing the nuts

4) Melting of dark chocolate

Secondary Preparation

1) Preparation of stuffing using dates, crushed nuts, riceballs, choco flakes

2) Pouring melted dark chocolate into moulds

3) Placing stuffing in the chocolate poured moulds

4) Final filling of moulds with melted dark chocolate

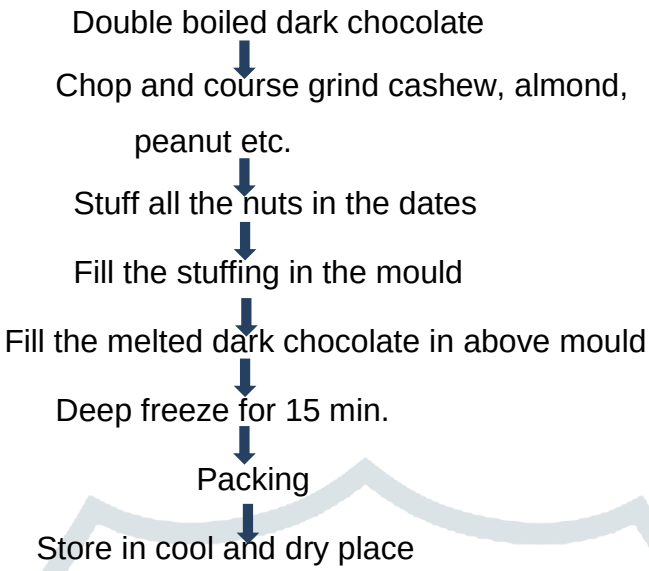
5)Freeze in freezer (15 mins)

6)Pack the product with primary packaging of aluminium foil and secondary packaging of plastic container or cardboard boxes.

Details

- ✓ The melting of dark chocolate should be done by double boiling method.
- ✓ Tapping is required before carrying out process of freezing to prevent trapping of any air bubbles in the moulds.
- ✓ The freezing temperature should be 0 to -5℃.

Methodology



Formulation

Ingredients	Quantity/100gm
Dark Chocolate	60
Dates	14
Peanuts	11.2
Cashew	4.6
Almond	4.6
Choco flakes	3.2
Rice flakes	2.4
Total	**100gm**

Trials taken and Problems Faced

We prepared five samples of product i.e S1, S2, S3, S4, S5

S1-It contains both dark and white chocolate

Problem- The combination white chocolate along with dates added too much sweetness to the product which lead to the rejection of the formulation and sample

S2-It contains waffle balls covered with dark chocolate

Problem- After a certain period of time the waffle balls losses its crunch making the product part soggy in texture imparting a bad mouth feel, this resulted in rejection of this sample.

S3-It contains jam in stuffing with dark chocolate

Problem- The jam along with the dates added too much sweetness to the product and also imparted an unpleasant texture and mouth feel. Due to these reasons this sample was rejected.

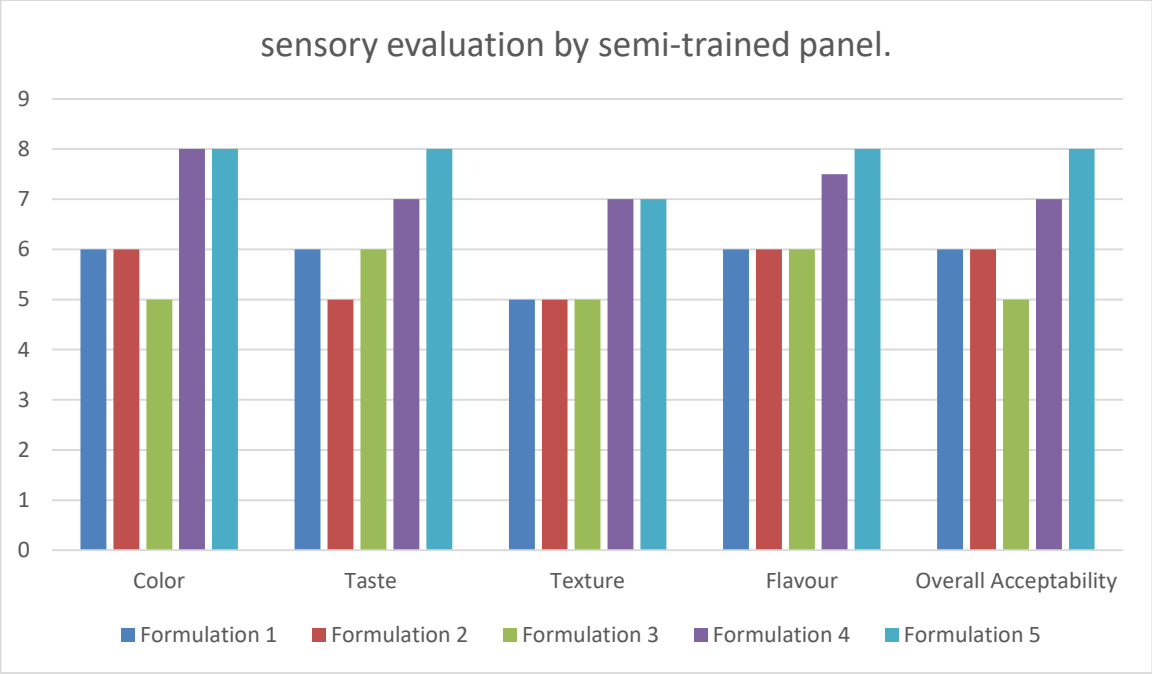
S4-It contain caramel in stuffing with dark chocolate

Problem- On freezing the caramel hardens which causes the product to have a brittle texture making it difficult to chew.

S5-It contain dark chocolate with stuffing

According to the sensory evaluation S5 was the most liked product in terms of colour, flavour, texture and overall acceptability.

Sensory evaluation



Nutritional Analysis

Test	Value (per 100 gm.)	Method
Calories	433.16 kcal.	By calculation
Carbohydrate	55g	By difference method
Fat a)Total saturated fatty acids b)Total mono unsaturated fatty acids c)Total poly unsaturated fatty acids d)Trans fatty acids	28.96g 26.0856g 1.9134g 0.9092g 0.0528g	FSSAI manual for oil and fat
Protein	3.4g	Micro-Kjeldahl
Ash	08.20 gm.	By muffle furnace
Moisture	4.2%	Hot air oven
Calcium	80mg	Titration
Iron	98.96mg	Colorimetric
Cholesterol	0.01g	AOAC 994.10

Result and Discussion

From the above given formulation and nutritional analysis table it is interesting to see that dark chocolate along with dates and nuts provides a good bitter sweet taste and mouth feel while the nuts and rice balls and choco flakes add a little crunch factor to the product.

The products shelf life is up to 3 months when stored properly in cool and dry place.

Conclusion

It is evident from the ongoing discussion that ' Stuffed Dark Chocolates' can be prepared by using dark chocolate, dates, nuts (i.e. almonds, cashews, peanuts), choco flakes and rice flakes with a shelf life of 3 months when stored in cool and dry place.

The ingridents used such as dark chocolate and dates, acts as an excellent source to prevent cardio vascular diseases and contains many other health beneficial properties.

The product consists of a primary and secondary packaging material of aluminium foil wrappers and plastic/card board boxes respectively which helps to keep the product chemically and microbiologically safe and stable during the entire storage.

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Value chain analysis of Bakery Product (Bread) in Narayangaon at Pune District of Maharashtra State

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Introduction:

An agro-industry is an enterprise that processes bio-mass, i.e. agricultural raw materials, which include ground and tree crops as well as livestock and fisheries, crate edible or usable forms, improve storage and shelf life, create easily transportable forms, enhance nutritive value, and extract chemicals for others uses. As the products of agro-industries are both edible and non edible, the agro-industries can be classified as agro-food industries and agro-non food industries. Bakery is a traditional and occupies an important place in food processing industry. Despite the advent of fully automatic and semi-automatic bread as well as biscuit making plants, a sizeable number of people still prefer fresh bread and the products from bakery. Marketing system is fragmented and is uncoordinated, with inadequate infrastructure and supply chains involving high wastage and losses. A result, the producer gets about 30-40 percent of final price, as compared to around 60 percent in advanced countries. Even an additional margin of 3 percent in final price translates into 10 percent increase in net income of the farmers and that itself is a powerful incentive to invest in agriculture. Bread is a staple food prepared from dough of flour and water, usually by baking. Throughout recorded history it has been popular around the world and is one of the oldest artificial foods, having been of importance since the dawn of agriculture. Every 100 gm of bread gives calories of 265 gm through 3.29 gm fat, 49 gm carbohydrates and 9 gm of proteins. It is rich source of calcium and iron. Present study was undertaken to analyze marketing cost, price spread and producer's share in consumer's rupees of bread at narayangaon in Pune district.

Methodology:

Pune have emerged as the most fast developing city in India. For present study from Pune district Narayangaon was purposively selected. Total five bakeries were selected randomly as a sample size. Data collected for study pertaining to the period 2015-16. Data collected by interviewing selected bakery entrepreneurs by survey method with special design schedule. Collected data then tabulated according to need and purpose of study. Simple tabular analysis was made. To collect data regarding marketing aspects first existing channels of marketing of bread were identified, then for collection of data five wholesaler, 5distributer, 5retailers, were select which were concerned with about breads of different time, different marketing charges, transportation cost etc. interviewing with special design schedule.

Result and Discussion:

1. **Per unit cost of processing of Bread**

Table No.1 **(Units/Kg)**

Sr. No.	Particulars	Amount (Rs.)	Rs./kg.
I)	**Fixed Cost**		
a)	Depreciation on building @ 2 per cent on Rs. 600000	12000	0.28
b)	Depreciation on machinery and electric motors @ 10 per cent on Rs. 2800000	280000	6.67
c)	Interest on fixed capital @ 12 per cent per annum for one month on Rs. 292000	35040	0.83
	Total fixed cost for 420 quintal Bread	327040	
	Fixed cost per quintal	778	
	Fixed cost per kg.	**7.78**	**7.78**
II)	**Variable cost / Working capital**		
a	Wages, Pay and allowances	132000	3.14
b	Electric charges	39600	0.94
c	Repairing of machinery and equipments	1000	0.023
D	Purchase of raw material	1164240	27.72
e	Loss in processing	50400	1.2
f	Interest on working capital @ 12 per cent per annum for one month on Rs. 1387420	166468	3.96
	Total Variable cost	1553708	
	Variable cost per quintal	3699	
	Variable cost per kg.	**36.99**	**36.99**

2. **Channel wise marketing cost, marketing margin & producer's share in consumer's rupee price spread in case of bread**

A) Marketing Channel I

Processor – Distributor – Retailer – Consumer

Marketing cost at Factory level for Channel I

Table No. 2

Sr. No.	Particulars	Rate/Kg	Total (Rs.)
a) Cost incurred by the Producer			
1	**Production cost**	**44.00**	**1293600**
2	Marketing cost		
i.	Transportation cost	0.20	5880
ii.	Labour Charges	0.10	2940
iii.	Cost of Packaging	2.11	58800
iv.	Advertisement	0.24	5880
v.	Weighing charges	0.20	5880
vi.	Miscellaneous charges	0.43	11760
	Total	**3.58**	**91140**
3.	Margin	5.9	173460
4.	**Producer sale price**	**53.48**	**1,558,200**
b) Cost incurred by the Distributor			
1	**Distributor Purchase price**	**53.48**	**1,558,200**
i.	Marketing cost		
ii.	Transportation cost	1	29400
iii.	Labour Charges	0.12	2940
iv.	Store rent	0.16	2940
v.	Miscellaneous charges	0.10	2940
	Total	**1.38**	**41160**
3.	Margin	1.7	49980
4.	**Distributor sale price**	**56.56**	**1646400**
c) Cost incurred by the Retailer			
1	**a) Retailer Purchase price**	**56.56**	**1,558,200**
2	Marketing cost		
I	Electricity charges	0.91	26460
Ii	Labour Charges	0.30	8820
Iii	Store rent	0.62	17640
Iv	Miscellaneous charges	0.10	2940
	Total	1.93	**55860**
3.	Margin	2.1	61470
4.	**Retailer sale price**	**60.03**	
d) Price Spread			
1	**Producer**		
	Producer margin		
	Production cost/kg	44	9.83

	Marketing cost incurred by the producer	3.1	
	Producers total price	47.1	
	Producers sale price	**53.48**	
2	**Distributor**		
	Distributor margin		2.83
	Distributors purchase price	53.48	
	Cost incurred by the Distributor	1.6	**2.16**
	Distributor total price	55	
	Distributor sale price	**56.56**	
3	**Retailer**		
	Retailer margin		**3.5**
	Retailers purchase price	56	
	Cost incurred by the retailer	1.9	**3.16**
	Retailer total price	57	
	Retailer Sale price	**60.03**	**99.98**

Marketing Channel II

Processor – Retailer – Consumer

Marketing cost at Factory level for Channel I I

Table No. 3

Sr. No.	**Particulars**	**Rate/Kg**	**Total (Rs.)**
	a) Cost incurred by the Producer		
1	**Production cost**	**44.00**	**554400**
i.	Marketing cost		
ii.	Transportation cost	0.82	10080
iii.	Labour Charges	0.14	1260
iv.	Cost of Packaging	1.60	20160
v.	Advertisement	0.11	1260
vi.	Weighing charges	0.36	3780
vii.	Miscellaneous charges	0.20	2520
	Total	**3.23**	**39060**
3.	Margin	7.2	90720
4.	**Producer sale price**	**55.00**	**693000**
	b) Cost incurred by the Retailer		
1.	**Retailer Purchase price**	**55.00**	**693000**
i.	Marketing cost		
ii.	Electricity charges	0.63	7560

iii.	Labour Charges	0.20	2520
iv.	Store rent	0.15	1890
v.	Miscellaneous charges	0.11	1260
	Total	**1.09**	**13230**
3.	Margin	3.95	49770
4.	**Retailer sale price**	**60.04**	
b) Price Spread			
1	**Producer**		
	Producer margin		12
	Production cost/kg	44.00	
	Marketing cost incurred by the producer	3.8	
	Producers total price	47.8	79.6
	Producers sale price	**55.00**	
2	**Retailer**		**6.58**
	Retailer margin	55.00	
	Retailers purchase price	1.05	**1.75**
	Cost incurred by the retailer	56.05	
	Retailer total price	**60.04**	**100**

Table no. 2and 3 represents the channel wise marketing cost, market margin and price spread in bread.

Table no.2 it was observed that, per kilogram cost incurred by the producer, distributor and retailer was Rs. 53.48, Rs. 56.56 and Rs. 60.03 Respectively. In channel-I cost of packaging is Rs. 2.11 accounting highest cost of channel followed by electricity charges Rs.0.91, store rent Rs. 0.62 and transportation charges Rs. 0.20.

Table no.3 it was observed that, per kilogram cost incurred by the producer and retailer was Rs. 55.00 and Rs. 60.04 Respectively. In channel-I cost of packaging is Rs. 1.60 accounting highest cost of channel followed by electricity charges Rs.0.91, store rent Rs. 0.63 and transportation charges Rs. 0.82.

Summary and conclusion:

It was observed that bakery unit is profitable agro based enterprise and there is scope to expand existing bakery industries at Naryangaon in Pune Districts. Among the two channels are observed a channel II is more profitable than channel I.

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Modification and Fortification of Indian traditional Confectionary.

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Abstract: - The project aims to develop a therapeutic diet having pleasurable functional qualities and characteristics which have acceptable consumer parameters. The team of expert realized the true extent of global malnutrition, osteoporosis and age related issues like high blood pressure and diabetes mellitus. A large amount of Indian population suffers from the issue of diabetes mellitus. The product is an initiative taken in order to overcome these deficiencies. The product developed consists of zero Trans fat and bad cholesterol. This is free from refined wheat flour thus it is gluten free. It consists of potent antibiotic, antibacterial, antifungal and germicidal properties along with antioxidants which occur due to presence of cinnamon in the product. The product is enriched with high fiber content and anti diabetic components like jamun seeds powder and fenugreek seed powder. Also it will help to decrease the body cholesterol level due to dry date flour as well as protein fortification done with the help of plant leaf protein that is drumstick leaves .The product have an anti carcinogenic effect on human body. The product is fulfilled with high nutritional content, long shelf life along with cost effective

Keywords: - Anti diabetic, cholesterol lowering properties, Antioxidants.

Introduction: - Pearl millet malt-

Pearl millet (Pennisetum Gyaucum) known as mexoeira and hanzelo in Mozambique, is a draught tolerant cereal crop grown primarily as afood grain in southern Africa. The main constrains in utilization of pearl millet in the industry include: the small size of the grain and the large germ. The utiliozation of millets is also limited due to presence of various anti nutrients, poor digestibility of proteins and carbohydrates and low palatability, However various process technologies are able to affect positively the physicochemical composition of grains in order to improve their nutritional value. Such primary technologies include malting and fermentation.

Malt:- Malt is germinated cereal grains that have been dried in a process known as malting. The grain are made to germinate by soaking in water, and are then hulled from germinating further by drying with hot air. Malting grains develops the enzyme required for modifying the grain starches into various types of sugar, including monosaccharide glucose , the disaccharide maltose, the tri saccharide maltotriose, and the higher sugar called maltodextrins. It also develops other enzymes such as proteases, which break down the proteins in the grain into forms that can be used by yeast. Depending on when the malting process is stopped one gets a preferred starch enzyme ratio and partly converted starch into fermentable sugars. Malt also contains small amount of other sugars, such as sucrose and fructose, which are not product of starch modification but were already in the grain. Further conversion to fermentable sugars is achieved during the mashing process. Malted grain is used to make beer, whiskey, malted milkshake, malt vinegar, confections such as Maltesers and Whoppers, flavored drinks such as Horlicks,ovaltine and milo and some baked goods such as malt loaf, bagels and rich tea biscuits. A high protein form of malted barley is often a label-listed ingredient in blended flours typically used in manufacturing of yeast breads and other baked goods.

Indian confectionary:- Confectionary is the art of making confections, which are good item that are rich in sugar and carbohydrates. Confectionary is divided into two broad and somewhat overlapping categories bakers confections and sugar confections. Bakers confections also called flour confection includes principally sweet pastries, cakes, and similar baked goods. Sugar confectionary includes candies, candid nuts, chocolate, chewing gum, bubble gum, pastillage and other confections that are made primarily of sugar. In some cases, chocolate confections are treated as separate category, as are sugar free versions of sugar confections.

Fortified functional food :- Enrichment plays a vital role in this product, The addition of micronutrients such as trace elements, vitamins, etc, aimed for public health policy or to reduce dietary deficiency in people. Balushai also improved by bioactive compounds. Bioactive products:- These are fortification of bioactive compound or incorporation of essential biomolecules that are typically included in fractional amount and exhibit the capacity to modulate one or more metabolic processes, it is basically done to promote better health.

Materials and Method:- A. Ingredients-

1. Malted prearl mileet flour.
2. Cinnamon.
3. Jamun seed flour.
4. Fenugreek seed flour.
5. Dry dates powder.
6. Drum stick leaves extract.
7. High fructose corn syrup.

B. Procedure-

1.Trial one: Direct use of whole millet flour that affects the digestibility.
2.Trial two: we use malted millet flour.
3.Trial three: Digestibility is managed due to use of malted millet flour, but a product displayed a low shelf life hence use of cinnamon oil and cinnamon powder was made into use for attaining a higher shelf life of a product.

Selection of raw materials

Sorting and grading

Malting(24-48 hrs.)

Drying(sundried 3-4 days)

Milling of malted flour

Drum stick extract

Milling of fenugreek, jamun seeds and cinnamon power

Weighing ingredients

Mixing of flours(malted millet flour with all other powers)

Preparation of dough

Hand pounding

Frying in soybean oil

Preparation of HFCS (high fructose corn syrup) by addition of water

Dipping fried balls into HFCS solution

Package and storage

Conclusion and Discussion:-

Normally the confectionary products are high caloric and increase the high sugar level and does not provide any other functional quality part from taste. But the products intends to nourish the consumer with nutritional aspects along with taste.

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Impact of Different Levels of Guar Gum on Quality and Texture Profile (TAXT-2 Texture Analyser) of Noodles Fortified with Pearl Millet Flour

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Abstract:

Noodles are made from unleavened dough that has been shaped into thin flat strips or round cylinders and cooked in a boiling liquid. In the present investigation noodles were prepared by using the wheat flour, pearl millet flour and impact of varying levels of guar gum as stabilizer and thickener on quality attributes of noodles were studied. The physical attributes such as colour, cooking yield, cooking loss and pH were determined. Further, the chemical parameters moisture, carbohydrate, protein, fat, ash and minerals content were analysed. Texture profile analysis of noodles incorporated with different levels of guar gum was also studied using TAXT2 plus the result revealed that the hardness was found to be decreased from 110.02 g to 105.98g and cohesiveness and gumminess were increased, slight difference was noted for the tensile strength where as the elasticity was found to be decreased with increasing the level of guar gum. Finally, it would be concluded that highly acceptable noodles can be prepared by using 87% wheat flour, 10% pearl millet, 2% salt, 1% baking powder and 2% level of guar gum (G_2).

Key Words: Noodles, Cooking loss, Cooking yield, Pearl millet, Texture Profile analysis.

INTRODUCTION

Asian noodles differ from the Italian pasta in raw materials and processing methods. Asian noodles are popular foods around the world, where in Asia nearly 50% of all wheat is consumed in noodle form various types of noodles are characterized by their distinct flavor, texture and quality. With the increasing awareness of the benefits of eating whole grains, the concept of noodles and whole grains has gained the attention in the food industry. Noodles are an important diet in many countries of eastern and south eastern Asia (Huo *et al.*, 1998).

Noodles in various contents, formulations, and shapes have been the staple foods for many Asian countries since ancient time. They can be made from wheat, rice, buckwheat, and starches derived from potato, sweet potato, and pulses. Noodles based on wheat are prepared mainly from three basic ingredients; flour, water, and salt. (Bin, 2007).

Noodles qualities are defined by visual attributes of the uncooked and cooked noodles. The noodles should remain firm and not sticky after cooking. Excellent starch noodles are expected to have transparent threads with high tensile strength and less cooking loss even with prolonged cooking (Collado *et al.*, 2001).

Pearl Millet is indigenous minor millet used in the preparation of geriatric, infant food and health foods both in natural and malted forms. It is usually used for preparation of flour, pudding, porridge and roti (Chaturvedi and Srivastava, 2008).

Guar (*Cyanopsis tetragonolobus*) seed is a major source of gums, a galactomannan, which has several industrial applications. The fraction remaining after the extraction of guar gum is a rich source of proteins (38-55%) and is used is animal and poultry rations. Gums are plant exudates and are often misunderstood with resins, rubbers and latex. So more specifically the gums are those substances which can be dissolved or dispersed in water to form more or less viscous colloidal solutions or dispersions. The guar gum is able to form a high viscous solution even at low concentration. Upon dispersion in water the galactose side chains attached to mannose back bone interact with water molecule leading to an inter-molecular chain entanglement of guar gum molecule in the aqueous phase, which leads to development of viscosity in the solution causing gelling or thickening (Doyle *et al.*, 2006).

With the changes in scenario of utilization of processed products and awareness of the consumers about the health benefits, Pearl millet has gained importance because of its chemical composition and the nutritional content. Wheat flour is extensively used in preparation of breakfast foods, noodles, roti because of its tensile strength and elasticity. In the view of the above importance of the wheat flour, pearl millet and guar gum the present investigation is carried out.

MATERIALS AND METHODS

Raw materials

Raw materials such as wheat, pearl millet flour, guar gum and packaging materials were collected from the local market.

Chemicals and equipment

Chemicals used in the present investigation were of analytical grade. All the chemicals were obtained from department of Food Chemistry and Nutrition, College of Food Technology, VNMKV, Parbhani.

Equipments and glass wares

The equipments were used like texture analyser (TA.XT2), oven, weighing balance and glass wares etc. were available in Department of Food Chemistry and Nutrition, College of Food Technology, VNMKV, Parbhani.

Standardization of formulation of noodles with varying concentration of guar gum

Noodles were prepared in laboratory by adding wheat flour, pearl millet flour, salt and baking powder and varying concentration of guar gum. Formulations for the preparation of noodles are given in the following table1.

Table 1: Standardization of formulation of noodles

Sr. No	Ingredients	Quantity(g)			
		C	G_1	G_2	G_3
1	Wheat flour	87	87	87	87
2	Pearl millet flour	10	10	10	10
4	Salt	2	2	2	2
5	Baking Powder	1	1	1	1
6	Guar gum	0	1	2	3

Where, C =Control, G_1 = C+1% of guar gum, G_2= C+ 2% of guar gum and G_3= C+ 3% of guar gum.

Proximate composition

Chemical constituents like moisture, fat, protein, carbohydrate, ash and dietary fiber content and total energy were determined by using method given by AOAC (2005).

Cooking yield

Cooking yield was obtained based on the approved AACC method (AACC, 2003). The dry noodles strands (5.0g) were boiled in 75g of water for 10 min with agitation. The noodles strand were then rinsed and drained for 5 min average readings of three measures were taken for each type of noodle.

Cooking loss

Cooking loss was determined by using the method given by the AACC (2003).

Texture profile analysis of guar gum Noodles

TPA of cooked noodles was carried out using TAXT2plus texture analyser.

Test Measurements

Test mode	Measure force in compression
Test mode	compression
Pre-test speed	1.0 mm/sec
Test speed	2.0 mm/sec
Post-test speed	10.0 mm/sec
Target mode	Distance
Distance	10 mm
Trigger force	5g

Organoleptic evaluation

The organoleptic evaluation of guar gum incorporated noodles was carried out as per the method given by the Sung and Stone (2004).

Statistical analysis

The data obtained from various parameters were recorded and statistically analysed as per method of Panse and Sukhatme (1987).

RESULT AND DISCUSSION

Physical properties of noodles incorporated with the different levels of guar gum

Physical properties of the cooked noodles such as color, pH, cooking time, cooking loss and cooking yield were determined and the results pertaining to the physical properties depicted in the table 2.

Table 2: Physical properties of noodles incorporated with the different levels of guar gum

Sr. No.	Levels of guar gum	Physical properties				
		Colour	pH	Cooking time(Min)	Cooking loss (%)	Cooking yield (%)
1	C	Light brown	6.68	6.85	7.42	290
2	G_1	Light brown	7.01	7.10	7.46	368
3	G_2	Light brown	7.02	7.40	7.98	397
4	G_3	Dull brown	7.02	7.85	8.18	426

*Each value represents an average of three determinations

Form the above table 2 it can be revealed that color of the prepared noodles was found to be light brown and as the guar gum concentration increases the color turns to dull brown. pH of the all the sample was found to near neutral with slight variation in the reading.

Cooking time for preparation of the noodles was found to increase as the concentration of guar gum increased and longer time required for the sample G_3 (7.85min). As there was increase in the concentration of guar gum the coking loss increased slightly. The cooking yield of noodle was found to be lowest for the control sample (290%) and increases with increase in guar gum level and highest for the sample G_3(426%) it is due the increase in the concentration of the hydrocolloids. Similar results were presented by the Sewata and Masubon (2012).

Sensory evaluation of prepared noodles with addition of guar gum

Sensory evaluation of prepared noodle with different levels of guar gum was carried out by panel of semi-trained judges consisting of 10 members by using 9 point hedonic scale and results are summarized in the following table 3.

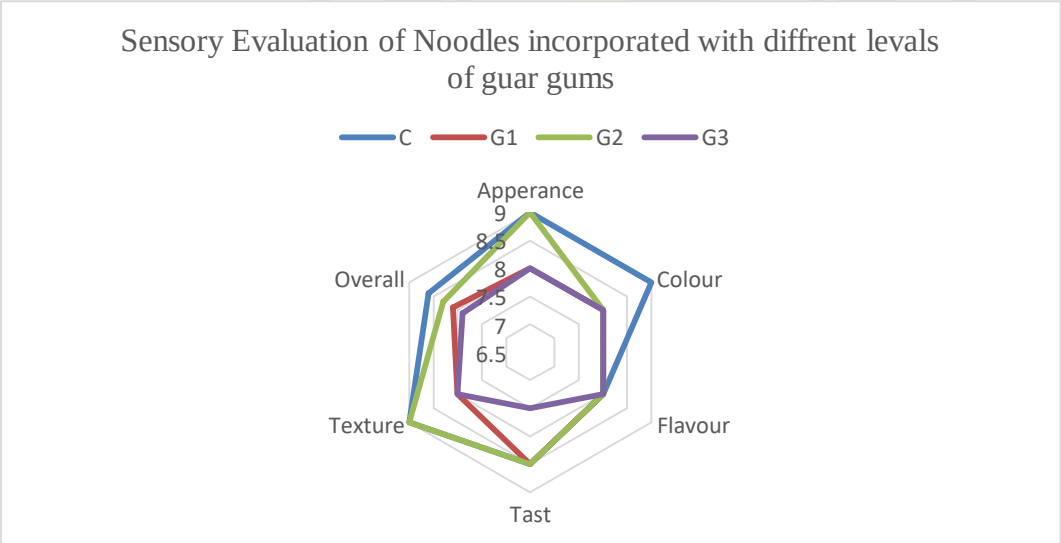
Table 3: Sensory evaluation of noodles incorporated with the different levels of guar gum

Sr. No.	Formulation	Sensory attributes					
		Appearance	Colour	Flavour	Taste	Texture	Overall acceptability
1	C	9	9	8	8.5	9	8.6
2	G_1	8	8	8	8.5	8	8.1
3	**G_2**	9	8	8	8.5	9	**8.3**
4	G_3	8	8	8	7.5	8	7.9
6	S.E±	0.045	0.064	0.036	0.028	0.032	0.120
7	CD at 5%	0.096	0.193	0.108	0.085	0.097	0.362

*Each value represents an average of ten determinations

It can be revealed from the above table 3 that the sensory evaluation scores given by the trained panelist shows that the sample G_2 recorded the highest sensory score for the appearance, color, flavor, taste texture and overall acceptability such as 9, 8, 8, 8.5, 9 and 8.3 respectively, as compared to all other samples. As there was increase in the concentration of guar gum no large difference in the scores given by the trained panelist only slight variations in appearance, colour, flavour and taste was observed. Further major difference in texture was observed as there was increasing in the gaur gum concentration but acceptable level of guar gum was found up to the sample G_2 (2%) having overall acceptability score 8.3. Furthermore concentration of guar gum affects on textural properties of the noodles samples.

Graph 1: Sensory evaluation of noodles incorporated with the different levels of guar gum



Texture profile analysis of noodles incorporated with different levels of guar gum

Texture profile analysis (TPA) of cooked noodles having different levels of guar gum was determined with a TA-XT 2 plus texture analyser. Textural properties such as hardness, adhesiveness,

springiness, cohesiveness, chewiness, stickiness and tensile strength were determined. Results obtained are summarized in the following table 4.

Table 4: Texture profile analysis of noodles incorporated with different levels of guar gum

Texture profile analysis					
samples	**Hardness(g)**	**cohesiveness**	**Gumminess(g)**	**Tensile Strength (KPa)**	**Elasticity (KPa)**
C	110.02	0.77	84.71	28.38	11.92
G_1	108.11	0.80	86.48	27.08	10.85
G_2	106.42	0.82	87.26	27.25	9.64
G_3	105.98	0.85	90.08	27.46	8.18

*Each value represents an average of three determinations

Hardness

Hardness is the most commonly evaluated characteristic in determining the texture of noodles. The change in hardness due to addition of different concentration of guar gum is presented in Table-4. The hardness of control Sample C (110.02g) was found highest compared to other samples. This represents that addition of guar gum reduces the hardness of noodles. Highest hardness of sample G_1 (108.11 g) may be due to lower concentration of guar gum content (1%). Similar results were also reported by Chin *et al.*,(2012).

Cohesiveness

Cohesiveness is the ratio of area under the second bite curve before reversal compression to that under the first bite curve. In terms of cohesiveness, G_3 sample of noodle showed superior results with highest cohesiveness among all other noodles samples. As the concentration of the guar gum increased the cohesiveness increases. Similar results are in accordance with Nura *et al.*, (2011).

Gumminess

Gumminess is related to primary parameters of hardness and cohesiveness and is obtained by multiplication of these two parameters. Among all sample, Control sample C (84.71g) shown the lowest reading for the gumminess, while as the concentration of the guar gum increased the gumminess was also increased and found to be highest in case of sample G_3 (90.08g). Similar results were presented by Seung *et al.,(*2006).

Tensile strength

Tensile strength represents the consumption quality of noodles, and it also corresponds to elasticity and tenacity for the strain of noodles. Tensile strength of the prepared noodles goes on decreasing with increase in the concentration of the guar gum. The highest value of tensile strength was found for control sample (28.38Kpa) followed by the sample G_1 (27.08 Kpa). Similar results for the tensile strength were represented by Foo *et al.*,(2011).

Elasticity

Elasticity is defined as the ability of deformed noodles to return to its initial shape and size when the force creating the deformation is removed. Elasticity of the prepared noodles goes on decreasing with increase in the concentration of the guar gum. The highest value of elasticity was found for control sample (11.92Kpa) followed by the sample G_1 (10.85 Kpa). Further it was found

that the lowest value was reported for the sample G_3 (8.18 Kpa). Similar results in accordance with the results of Rachel *et al.*,(2014).

CONCLUSION

It is concluded from the result of the present finding that the highly acceptable noodles can be prepared by using 87% wheat flour, 10% pearl millet, 2% salt, 1 % baking powder and 2% level of guar gum (G_2).

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