Ambrosia

DEPARTMENT OF FOOD TECHNOLOGY

EXCEL ENGINEERING COLLEGE (AUTONOMOUS)

MAGAZINE 2023 -2024

Ambrosia

Approved by AICTE, New Delhi & Affiliated to Anna University, ChennaiAccredited by NBA (AERO, MECH, CSE & ECE), NAAC (A+Grade- 3.26) and Recognized by UGC (2f&12B)

VISION AND MISSION OF THE DEPARTMENT

VISION

To develop technically sound food technocrats, to cater the needs of food processing industries, Research & Development organizations and society.

MISSION

- To produce competent Food Technologist with sound knowledge of hygienic food processing, preservation, food standards & regulation, packaging and storage in order to reduce the food losses.
- To Nurture research acumen and entrepreneurship skills among the students.
- To promote and practice high standards of professional ethics and social values for national importance.
- To provide solutions for the problems and leadership in the areas of food processing organization.
- To provide solutions for the problems and leadership in the areas of food processing organization Programme Educational Objectives

PROGRAM EDUCATIONAL OBJECTIVES

PEO 1: Graduates with sound knowledge in the field of food engineering and technology by integrating engineering & basic sciences.
PEO 2: Competent graduates who shall pursue careers in the field of food processing, quality control, product development and techno-marketing.
PEO 3: Graduates through innovative ideas and project management skills in order to make them as an entrepreneur.
PEO 4: Graduates who will apply the technical knowledge and interpret the problems related to food processing and preservation techniques for the benefit of society.

TABLE OF FLAVOURS

- Special Lectures
- AY Toppers
- Special events
- Students achievement
- Staffs achievement
- Industrial visit
- Article corner
- Extra Curricular Activities

CHAIRMAN'S MESSAGE

"We cannot always build the future for our youth, but, we can build our youth for the future challenge"

It is our fervent hope that the time that you spend in food technology department enables you to equip with leadership and Managerial skill. I am extremely happy to learn that your department is releasing this magazine and I wish to extend my congratulations for the same. The knowledge that you gain from this magazine are fine qualities that you will imbibe. We want you to taste the fruit of success once, and for the rest of your life, you will never rest.

Prof. Dr. A. K. Natesan
Chairman
Excel Group of Institution

VICE-CHAIRMAN'S MESSAGE

Success begins with the first step—greatness follows through persistence. I would like to extend my heartfelt congratulations to the Department of Food Technology at Excel Engineering College for the release of the magazine "**Ambrosia".** The articles featured in this publication will serve as a valuable resource, offering insights into the latest advancements in science and technology. This magazine truly reflects the knowledge, creativity dedication of the students in the Food Techn department."

Dr. N. Mathan Karthick
Vice Chairman
Excel Group of Institution

PRINCIPAL'S MESSAGE

Our college gives adequate knowledge that the students can gain and apply his knowledge to standardise in Academics, Research and professional skills. Students to be in greater position with all their skills is what the institution seeks to provide every student of the Excel Engineering College. It is heartening to note that the Department of food technology is publishing a magazine and I would like encourage every single student to develop the technical skills and expose the knowledge they have in the best way possible. A heartily congratulations to the staff and students of food technology Department.

Prof. Dr. K. Bommannaraja
Principal
Excel Engineering College

"I WON'T BE IMPRESSED WITH TECHNOLOGY UNTIL I CAN DOWNLOAD FOOD"

HOD'S MESSAGE

In the world of food technology, technology changes at high velocity. I am glad to know that the Department of food technology Engineering has taken the initiative to publish the magazine, "**Ambrosia**". It gives me immense pleasure to congratulate all my students and faculties for the fruit they have gain hard work and interest that they have shown through various articles. I encourage every youth to involve in the developed that they would aid in its further development.

Dr. M. Karuppaiya
Head of the Department
Department of food technology

Excel ENGINEERING COLLEGE (AUTONOMOUS)

NH-544,Salem Main Road, Pallakapalayam, Komarapalayam, Tamil Nadu, 637303

TOPPERS of 2023-24

IV YEAR

DHARANI P

SAKTHIVEL M

III YEAR

SARANYA I

SARANYA B

II YEAR

NAGESHWARI P

REEBA M

"The future belongs to those who believe in the beauty of their study goals."

SPECIAL TECHNICAL EVENTS

Our department conducted two days conference titled "Millet challenges in design and development of innovative solution to enhance the shelf life of product" on 20.07.2023 - 21.07.2023.In this the guest speakers was Dr. S. Shanmugasundaram Registrar (i/c), Food Process Engineering, National Institute of Food Technology, Entrepreneurship and Management- (NIFTEM-T), India., Dr. P. Thirumoorthy Managing director,Sakthi Fruit Products Pvt Ltd, Erode, Tamil Nadu. and Dr. P. Sathyamoorthi General Manager, Moon Food Pvt Ltd. Salem, Tamil Nadu.

"Success is the sum of small efforts, repeated day in and day out."

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SPECIAL TECHNICAL EVENTS

Our department conducted FoSTac Training program for students and staffs members on 12th Feb 2024 by Dr. T. POONGODI VIJAYAKUMAR, Head in department of food and nutrition at PERIYAR UNIVERSITY,salem-11.

“sucess is not final: failure is not fatal: it is the courage to continue that counts “

STUDENT'S ACHIEVEMENTS

Total 23 students from II B. Tech Food Technology have undergone internship program in "**AAVIN, Erode**" during the period of 29.05.2023 to 12.06.2023

Total 17 students from II B. Tech Food Technology have undergone internship program in "**Sunraja Oil Industry, Erode**" during the period of **01.06.2023-30.06.2023.**

STUDENT'S ACHIEVEMENTS

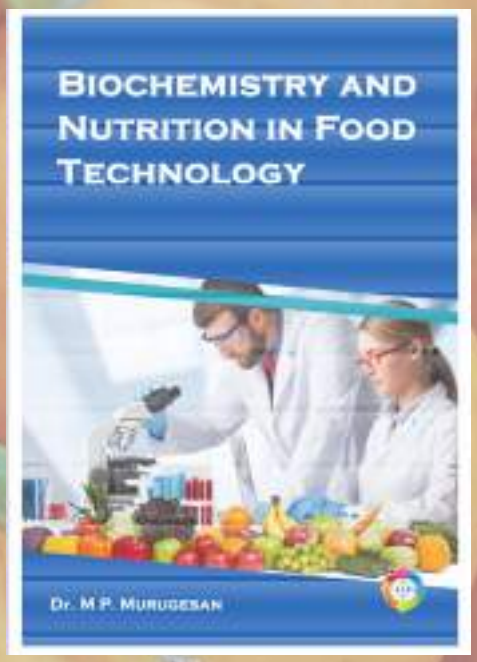
Total 2 students from II B. Tech Food Technology have undergone internship program in **"Darmona Tea Industry**" during the period of **04.06.2023-22.06.2023.**

Total 17 students from II B. Tech Food Technology have undergone internship program in "**Gomuki cooperative sugar mills,Kachirapala**" during the period of **01.06.2023-30.06.2023.**

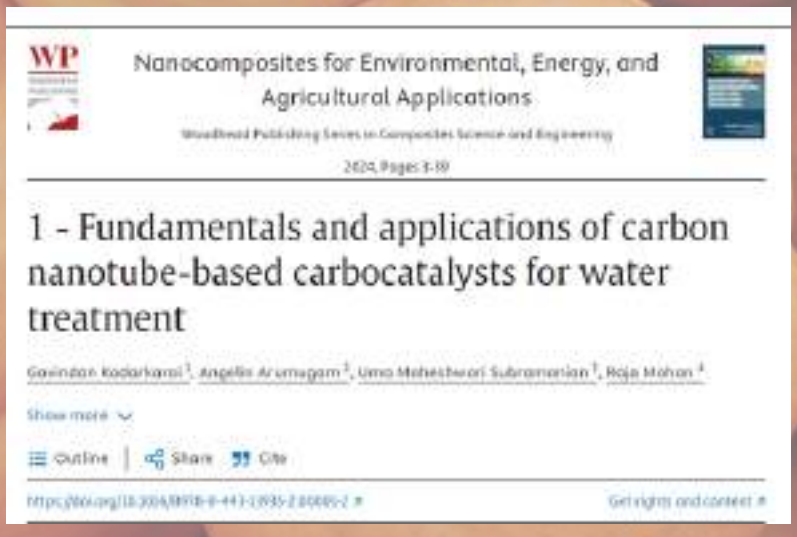
STUDENT'S ACHIEVEMENTS

Saranya B and Kokila K from II B. Tech Food Technology have undergone industrial training in "IIT, Guwahati" during the period of 01st June 2023 to 30th June 2023.

FACULTY ACHIEVEMENTS



Dr. M. P. Murugesan (Associate Professor) Published Book titled " Biochemistry and Nutrition in Food Technology" on April 2024.



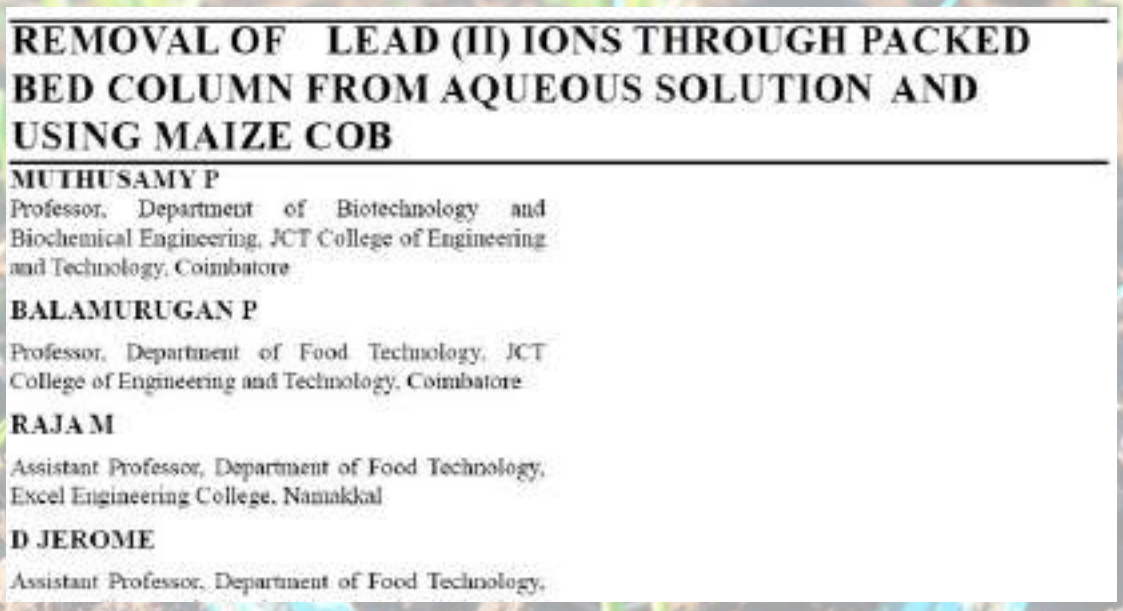
Mr. M. Raja (Assistant Professor) - book chapter is accepted fopublication entitled "Fundamentals and Applications of Caprbon Nanotube-based Carbocatalysts for Water Treatment" on January 2024.

FACULTY ACHIEVEMENTS

- **Mr. M. Raja and S P Rajesh (Assistant Professor) has recognized and Presented: The Role of Millets in Nutritional Paradigms for Food Security" at “ TANUVAS University, College of Food and Animal Science on 14.09.2023 - 15.09.2023.**

- **Dr. M. P. Murugesan (Associate Professor) and Mr. S. Tharani has published paper titled “Identification and formulation of key contribution high potential, medicinal molecules by citrus sinensis and citrus limetta" in SRM Institute of science and technology , Chennai on 20.03.2023 - 22.03.2023.**

FACULTY ACHIEVEMENTS



REMOVAL OF LEAD (II) IONS THROUGH PACKED BED COLUMN FROM AQUEOUS SOLUTION AND USING MAIZE COB

MUTHUSAMY P
Professor, Department of Biotechnology and Biochemical Engineering, JCT College of Engineering and Technology, Coimbatore

BALAMURUGAN P
Professor, Department of Food Technology, JCT College of Engineering and Technology, Coimbatore

RAJA M
Assistant Professor, Department of Food Technology, Excel Engineering College, Namakkal

D JEROME
Assistant Professor, Department of Food Technology,

- **Mr.M Raja (Assistant professor) published paper titled "Removal of lead (ii) ions through packed Bed column from aqueous solution and Using maize cob" under The Indian Journal of Technical Education.**

- **Dr. M. P. Murugesan (Associate Professor) published paper titled "Statistical Optimization of Bioleaching for Simultaneous Recovery of Cu, Sn, Pb, and Zn from Computer-Printed Circuit Boards" under Journal of Chemistry.**

- **Mr. S P Rajesh (Assistant professor) published paper titled "Formulation of millet-based ice cream Utilizing echinochloa esculenta" under The Indian Journal of Technical Education" under The Indian Journal of Technical Education.**

INDUSTRIAL VISIT

Industrial visit was arranged to **"Central Marine Fisheries Research Institute, Cochin"** on **06.10.2023**

One day field visit was arranged to **"Common Effluent Treatment Plant, Tirupur"** on **26.05.2023**

ARTICLES CORNER

TAPPING INTO THE POWER AND POTENTIAL OF BIOACTIVES

Bioactives, small molecular compounds found in various natural sources, are gaining attention for their potential health benefits and role as functional ingredients in food formulations. Unlike essential nutrients, the absence of bioactives doesn't necessarily lead to deficiency diseases. Despite this, research suggests many bioactives offer health advantages, with only about 1% of them currently identified.

Lutein and resveratrol are examples of bioactives linked to eye and cardiovascular health, respectively. Interest in bioactives has surged, especially amid concerns about health and immunity following the COVID-19 pandemic. However, making claims and recommendations for bioactives faces regulatory hurdles, requiring evidence of efficacy and safety.

Efforts are underway to establish intake recommendations for certain bioactives, such as flavan-3-ols. Yet, challenges persist in developing daily recommended intakes due to the complexity and cost of research. Nonetheless, the food industry is embracing bioactives as a means of product differentiation, adding them to various offerings like snacks, beverages, and cereals.

When incorporating bioactives into food products, sensory impact and processing methods are critical considerations. The food matrix can affect bioactive absorption, and concentration may alter safety levels. Consumer acceptance and broader market penetration will rely on further research and identification of promising bioactive ingredients.

GRAS 31 FLAVORING SUBSTANCES

The FEMA GRAS Program, operating for over 60 years, assesses the safety of flavor ingredients for human food use. It follows the 1958 Food Additives Amendment, defining food additives as substances not recognized as safe by qualified experts. The Expert Panel employs defined scientific procedures to evaluate flavor ingredient safety, ensuring transparency and guarding against conflicts of interest.

Recently, the Expert Panel reevaluated natural flavor complexes (NFCs), focusing on allylalkoxybenzene constituents found in plants like nutmeg, basil, and parsley. Despite potential genotoxic and carcinogenic properties of these constituents, safety evaluations concluded that estimated intakes from NFCs as flavor ingredients generally did not raise safety concerns.

EVERYTHING IN FOOD IS SCIENCE. THE ONLY SUBJECTIVE PART IS WHEN YOU EAT IT.

-ALTON BROWN

Microwave-assisted extraction, a technique increasingly utilized in flavor production, employs microwave energy to extract compounds from botanical materials. While it may alter extract composition compared to traditional methods, the Expert Panel doesn't express safety concerns, but advises companies to consider potential changes in extract composition and consult with the Panel if significant alterations occur.

ALTERNATIVES TO CONVENTIONAL PESTICIDES

Agricultural pesticides are regulated by multiple agencies, including the FDA, USDA, and EPA. The EPA establishes tolerances for pesticides based on peer-reviewed literature and human consumption patterns, which the FDA monitors and enforces. The USDA provides organic standards through the NOP. Consumer interest in agricultural practices and safety has increased, leading to concerns about pesticide use.

The National Pesticide Information Center (NPIC) offers science-based information on pesticides, including biopesticides, which are derived from living organisms and tend to be less toxic and environmentally friendly compared to conventional pesticides. The EPA facilitates the registration of biopesticides, which have over 1,400 active registrations.

Minimum risk pesticides, exempt from certain regulations, must meet specific criteria. Eligible substances include certain food-grade oils, spices, and chemicals. Organic pesticides, allowed for organic farming, are not always pesticide-free and can include both natural and synthetic substances. The Xerces Society provides information on common organic pesticides and their impact on beneficial insects.

Organic certification is required for making organic pesticide claims, and achieving traceability is challenging outside of this certification. Consumers may demand more transparency in pesticide use, driving improvements in supply chain traceability. Information on pesticide use and alternatives is available from sources like the NPIC, USDA NOP, and Organic Trade Association.

ADVANCES IN TECHNOLOGY

- **Artificial Intelligence (AI):** AI can analyze vast amounts of data to identify trends and optimize food production processes.
- **Internet of Things (IoT):** IoT devices enable detailed monitoring and management of food items throughout the supply chain.
- **Biotechnology:** This allows for the genetic enhancement of crops and the production of cultured meat, improving yield and nutritional value.

Reducing Food Loss

Food loss is a major problem, with about one-third of all food produced being wasted annually. Advanced food chain management technologies can help mitigate this issue:

- RFID Tags and IoT: These technologies provide detailed tracking of food products, allowing for flexible responses to prevent waste.
- Smart Food Chains: Information systems that integrate data from production to consumption to optimize the food supply chain and reduce waste.

MILLET BASED PANNER

Paneer is a soft cheese prepared by acid and heat coagulation of milk. It is popular throughout South Asia. It is rich source of high quality of protein, fat, minerals and vitamins. Sprouted millets milk is high in nutrition and dietary fiber. They serve as a good source of protein, micronutrients and phytochemicals. This study aims to develop paneer using different combination of cow milk and sprout millet milk (Finger millet and Pearl millet). Experiment runs were performed based on Design of Experiment. Textural properties color and water activity of the developed were evaluated and reported. Sensory analysis was also carried out for all the developed samples. Optimized composition was derived using design analysis and physicochemical analysis was carried out on the optimized paneer sample.

Srimaza R
Dharani V P

"THE BLENDING OF ARCHITECTURE, SOLAR, WIND, BIOLOGICAL AND ELECTRONIC TECHNOLOGIES WITH HOUSING, FOOD PRODUCTION, AND WASTE UTILIZATION WITHIN AN ECOLOGICAL AND CULTURAL CONTEXT WILL BE THE BASIS OF CREATING A NEW DESIGN SCIENCE FOR THE POST PETROLEUM ERA"

-JOHU TODD

NEW HEALTH MIX POWDER FOR IMPROVING NUTRITIONAL STATUS TO HUMAN USING PLANTAIN PEEL AND OVUM SHELL.

Calcium (Ca) plays predominant structural and physiological roles in our human body, therefore alternative and cheap source of Ca supplement in eggshell. The main focus of the study was to explore the possibility of using the eggshell as a source of calcium and banana peel. In India production of banana is around 13.5 million tons per annual. Banana forming generates more quantity of biomass which go as waste (banana peel). Use of eggshell powder (ESP), banana peel powder and jaggery powder combine together and innovate the health mix which was beneficials for humans' consumption.

Use of eggshell powder (ESP), banana peel powder and jaggery powder combine together and innovate the health mix which was beneficials for humans' consumption. More over studies shown that ESP has the potential to improve the bone mineral density and favor the remineralization of enamel surface lesion of teeth and bone were Ca have the potential to prevent the osteoporosis (low bone density which may fragile more easily) and banana peel have more potassium and magnesium furthermore it has ability to prevent colon cancer. half of the eggshell is enough for human daily consumption further more analysis was carried out such as calcium content 25.5 %, potassium content 4.05 %, magnesium content 1.20 % and sensory analysis was carried out based on 9-point hedonic scale and 5-point hedonic scale further shelf-life study was conducted.

ARUN C
ARUN KUMAR B
CHANDRU R
NAVEEN S

VEGAN GUMMY CANDY

Vegan gummy candy has gained popularity among consumer seeking plant based alternatives to traditional confectionery products. This study focuses on the formulation and development of vegan gummy candy utilizing tapioca starch as a key ingredient. The research explores various formulations incorporating tapioca starch, natural fruit flavours, plant based sweeteners and vegan friendly gelling agents. In this regard some non animal hydrocolloids and gelatin replacers such as pectin, agar agar and carrageenan also used in gummy candies. Tapioca starch has been used in food engineering for decade as a thickening or gelling agent. Design expert software is used to obtain the trials for developing the product. In this software we could use central composite method to obtain the trials. Sensory evaluation studies are conducted to assess the overall quality and consumer acceptance of the vegan gummy candy prototypes. Additionally, nutritional analysis highlights the health benefits of tapioca starch, including its gluten free nature and low calorie content. Furthermore, the environmental sustainability aspect of tapioca starch production is considered, emphasizing its minimal ecological footprint compared to traditional gelatin based candies. The findings of the study contribute to the growing market of vegan confectionery by offering a delicious, nutritious and environmentally conscious alternatives to traditional gummy candies.

Sakthivel R
Dharani P
Deva S

INNOVATIVE BAKED PRODUCTS WITH CARICA PAPAYA LEAVES UICE TO IMPROVE THE PLATELET COUNT IN DENGUE FEVER PATIENTS

Creating a decadent dairy-free Forbidden Rice Ice Cream, offering a luxurious vegan alternative to traditional dairy-based desserts. Forbidden rice, also known as black rice, serves as the base ingredient, providing a unique nutty flavor and vibrant purple hue. The recipe incorporates coconut milk as a creamy substitute, enhancing the richness and texture of the ice cream while maintaining its lactose-free profile. Additional ingredients such as maple syrup, vanilla extract, and a pinch of salt complement the natural sweetness of the rice and coconut milk, resulting in a harmonious blend of flavors.

outlines the step-by-step process of preparing the ice cream, from cooking the rice to churning and freezing the mixture. Furthermore, it highlights the versatility of the recipe such as toasted coconut flakes, chopped nuts, or dairy-free chocolate chips. Overall, this dairy-free Forbidden Rice Ice Cream offers a deliciously indulgent treat suitable for vegans and lactose-intolerant individuals alike, showcasing the potential for creative and satisfying alternatives in plant-based dessert cuisine.

DINESH R
DIVYADHARSHINI M
GOWTHAM D
PRIYA DHARSHINI B

VEGAN GUMMY CANDY USING TAPIOCA STARCH

Papaya leaves which are known for its rich nutritional profile, offers a promising result for enhancing the flavour and nutritional value of baked goods. the papaya leaves extract solvent in bakery products which can be consumed by dengue patients in all age groups as papaya leaves has high potential of increasing the blood platelet counts in human beings. One of the outstanding effects of papaya leaf juice is to stimulate increased platelet count. Papaya leaf juice will make sure that your platelets increase. Presence of saponin in papaya leaves causes the bitterness in them. Four different concentrations of each liquid extract and solvent extract are added to both bun and cookies and final concentration which is sample 3 (2g of papaya solvent extract in 150 g of wheat flour) was selected by sensory evaluation. Nutritional analysis was done for the final products and identified that the product contains low moisture content and high mineral content. Shelf life study and microbial analysis was done where prior microbial count plate. Identification of quercertin flavonoid was done by HPLC and analysed the presence of quercertin at 510 nm for 22 g in cookies and 20 g in bun. This study explores the feasibility and effects of incorporating papaya extract into cookies and buns. The research aims to assess the sensory attributes, nutritional enhancement, and consumer acceptance of these baked goods fortified with papaya extract. In this experimental study, varying concentrations of papaya leaves extract are added to cookie and bun recipes. Children preference of consuming papaya leaf juice can be increased by combining this extract with any bakery products which includes bread, cookies etc. The potential therapeutic effect of Carica papaya leaf juice has attracted wide interest from the public and scientists in relieving dengue related manifestations.

AKSHAYA S PRASHAD
DENOLINI G
SHARMILI K
SREYANA J

ENHANCING AGRICULTURE PRODUCE WITH INNOVOTIVE EDIBLE COATING FOR SMALL SCALE VENDORS

Edible Coatings are an environmentally friendly technology that is applied on many products to control moisture transfer, oxidation process. Edible coatings can provide an additional protective coating. Quality criteria for fruits and vegetables coated with edible films (or) coating must be determined carefully and the quality parameters must be monitored throughout the storage period. The edible coating is prepared by using flax seed and tapioca starch.

Application of edible coating derived from broccoli, tapioca flour, and flaxseed to enhance the shelf life and quality of agricultural produce for small-scale vendors. The developed coating was white and slightly yellow in color with transparency. The cake coated product has to be done the shelf-life up to 9 days. There is a slightly off flavour present in coated product. To ensure the marketability of the covered product, the economic feasibility and acceptability of the covered product are investigated. The coating improves the quality and shelf life of agricultural products. The sensory evaluation is done by using 9 point hedonic scale and the overall acceptance.

DURGA DEVI T
MANOJ P
MOHANGANTH B
PRAKASH A

OPTIMIZATION OF QUALITY AND PROCESSING PARAMETERS IN READY- TO-EAT FROZEN FOOD

The production of ready-to-eat frozen foods presents a significant challenge in maintaining both quality and processing efficiency. This study aims to optimize the quality and processing parameters of ready-to-eat frozen foods through a systematic approach. Firstly, the quality attributes of frozen foods, including texture, flavour,colour, and nutritional content, are identified as critical factors influencing consumer acceptance. Secondly, the processing parameters such as freezing method, temperature, packaging materials, and storage conditions are considered for their impact on product quality and shelf life. To optimize these parameters, a combination of experimental design methodologies, including Design of Experiments (DOE) and Response Surface Methodology (RSM), is employed. Statistical analysis is utilized to identify significant factors and their interactions, leading to the development of predictive models for quality optimization. Furthermore, sensory evaluation techniques are applied to assess consumer preferences and acceptance of the optimized frozen food products. This integrated approach enables the identification of the ideal combination of processing parameters that maximize both product quality and processing efficiency. Valuable insights into enhancing the quality of ready-to-eat frozen foods while optimizing processing parameters, thereby meeting consumer expectations and ensuring market competitiveness in the frozen food industry.

MD MUNTAZIR ALAM
MOHAMMED TOUHID
SAHIL AHMED

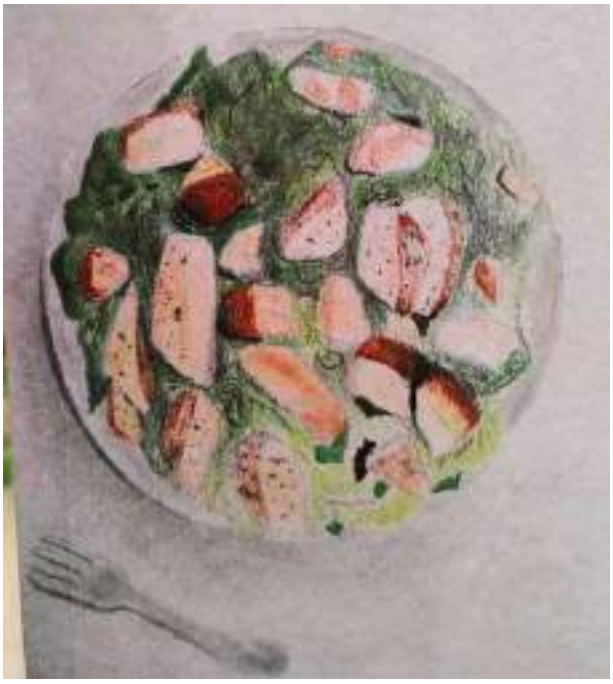
FORMULATION AND CHARACTARIZATION OF KETO FRIENDLY CHOCOBAR

keto-friendly chocobar, catering to the dietary needs of individuals following a ketogenic diet. The formulation process involved careful selection of ingredients to ensure low carbohydrate content while maintaining desirable sensory attributes. A combination of sugar alternatives such as erythritol and stevia was utilized to impart sweetness without affecting blood glucose levels.

The chocobar's formulation was optimized using a Design of Experiments (DOE) approach, considering variables such as cocoa content, fat source, and sweetener ratios. The resulting chocobar was evaluated for its sensory attributes including taste, texture, and appearance, using trained panelists and consumer feedback. Texture analysis techniques such as hardness, brittleness, and melting behavior were employed to characterize the chocobar's physical properties.

MITHUN M K

EXTRA - CURRICULAR



MUKESH K
II YEAR

Overall championship in INTRA SPORTS MEET 2024

Edited by

Denolini G

Sankaranarayanan D

Reeba M

Jayamurugan R

Magazine co-ordinator

Dr. K. Karuppaiya

Ms. G. Chithra

OUR DEPARTMENT'S SPECIAL OCCASION

A national level technical workshop is going to be conducted by "foodenza " Association on 15th of March 2024. On behalf of the food technology department, HOD welcomes the participants to innovate their future trended ideas and their thinking. Conducting such type of workshop every year for helping the young generation to publish their innovation and present paper and other events. Every year nearly 200 to 300 students from various colleges of India gaining of such activities. You are welcome to participate and to prove your professionalism.

OUR COLLEGE WEBSITE:

http://www.excelinstitutions.com/excel_engg/index.aspx

FOR MORE DETAILS, PLEASE CONTACT:
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