

**INTERNSHIP REPORT ON  
MEAT PRODUCT OF INDIA LTD**

**(A Govt. of Kerala Undertaking)**

Edayar, P.O. Koothattukulam, Ernakulam (Dist.)  
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**DEPARTMENT OF BVOC FOOD PROCESSING TECHNOLOGY 2021-2024**

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## **DECLARATION**

I hereby declare that the work presented in this report entitled is a record of the original work done by me during the period from 4<sup>th</sup> December 2023 to 4<sup>th</sup> March 2024 at Meat Product Of India LTD, under the guidance of *to Mr. Ceeshan Joy, Assistant Production Manager*. This report has not been submitted to any other institution or university for the award of any degree or diploma.

I have faithfully acknowledged and given credit to all sources used in the preparation of this report. I understand that any false claim or plagiarism in the report will result in disciplinary action in accordance with university policies.

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## **ACKNOWLEDGEMENT**

*At the very beginning, I would like to express our deepest gratitude to almighty for giving us the strength and blessings throughout my entire industrial training. I would like to pay gratitude and want to give special thanks to Meat Products of India Ltd for giving me this wonderful opportunity to undergo internship training in their company.*

*I would like to convey my sincere gratitude to my Head of the Department **Mr. ASWIN SANJEEV** and to my internal guide **Mrs. Lulu Varghese**, under her guidance I successfully completed my project*

*I would like to express a deep sense of gratitude to **Mr. E.K. SIVAN**, Chairman and **Dr. SALIL KUTTY**, Managing Director of Meat Product of India who has kindly permitted us to do the internship training in this esteemed organization. I am also thankful to **Mr. CEESHAN JOY**, Assistant Production Manager for navigating me throughout the project.*

*I express my deep sense of gratitude to **Mrs. RADHA SHANKAR** and **Mr. ASHOK T.R**, Supervisor of production, **Mr. ABIN SUNNY**, **Mrs. NAMITHA**, **Ms. ANITTA** and all the employees of MPI for their support and guidance for the course of training.*

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**DETECTION OF ADULTERATION IN MILK AND MILK BASED  
PRODUCTS AND VACCP ASSESSMENT**

**SUBMITTED BY**

**ADWAITH VINOD**

**ASPIRE TRAINING RESEARCH CONSULTING**

21/03/2024- 21/05/2024



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With R&D Section under Aspire Training Research Consulting

**Held from 21<sup>st</sup> March to 21<sup>st</sup> May 2024**

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Place

Signature of the candidate

Date

ADWAITH VINOD

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# **ANALYZING FOOD LABELS: A CROSS EXAMINATION OF NATIONAL AND INTERNATIONAL STANDARDS, AND EVALUATING NUTRITIONAL DIFFERENCES BETWEEN REGULAR AND DIET FOOD**

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With R&D Section under Aspire Training Research Consulting

Held from 21<sup>st</sup> March to 21<sup>st</sup> May 2024

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I hereby declare that the project titled " ANALYZING FOOD LABELS: A CROSS EXAMINATION OF NATIONAL AND INTERNATIONAL STANDARDS, AND EVALUATING NUTRITIONAL DIFFERENCES BETWEEN REGULAR AND DIET FOOD" submitted to CHRIST COLLEGE (AUTONOMOUS) IRINJALAKUDA is an original work completed by me.

All the information and data presented in this project are true to the best of my knowledge and have been collected and analysed following ethical research practices. Proper citations and references have been provided where external sources have been used, in accordance with academic standards.

This project has not been submitted previously, in whole or in part, for any degree or diploma at any other institution.

I understand the implications of plagiarism and confirm that this work is free from any form of academic dishonesty.

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# ACKNOWLEDGEMENT

*I would like to express my deepest gratitude to **Almighty God** for providing me with the strength, wisdom, and perseverance to complete this project. Without His divine blessings, this accomplishment would not have been possible.*

*I would like to extend my sincere gratitude to **ASPIRE TRAINING RESEARCH CONSULTING** for providing me with the opportunity and resources to undertake this project. The supportive environment and excellent facilities have been instrumental in the successful completion of this work.*

*I am deeply grateful to my supervisor, **Dr. Nashila Rahmaniya** (Director, Aspire Training, Research Consulting), **Ms. Greena Gireesan** (Tutor, Food Safety Specialist), **Ms. Anjali Johny** (Tutor, Food Safety & Quality Assurance Professional) for their invaluable guidance, support, and encouragement throughout the course of this project. Their insightful feedback and expertise have been instrumental in shaping this work.*

*I would also like to extend my sincere thanks to **CHRIST COLLEGE (AUTONOMOUS) IRINJALAKUDA** for providing the necessary resources and a conducive environment for conducting this research. The support from the faculty and staff has been greatly appreciated.*

*A special thanks to my Principal **Rev. Fr. Dr. Jolly Andrews CMI** Christ College*

*(Autonomous) Irinjalakuda. **Mr. Aswin Sanjeev** (H.O.D) of B.Voc Food Processing Technology. I express my sincere gratitude to my internal guide **Mrs. Lulu Varghese**, under her guidance I successfully completed my project.*

*To **my parents and family**, your love, understanding, and belief in my capabilities have been instrumental in helping me navigate the challenges*



*and celebrate the successes along the way. Your sacrifices and unwavering encouragement have always inspired me to strive for excellence.*

# ABSTRACT

The global food industry relies heavily on robust labelling regulations to ensure consumer safety, facilitate informed choices, and maintain market fairness. This project aims to provide a comparative analysis of the food labelling regulations enforced by national and international authorities, specifically focusing on the Food Safety and Standards Authority of India (FSSAI), the European Union (EU), and the United States Food and Drug Administration (FDA). The study will delve into various aspects of labelling requirements, including nutritional information, ingredient listing, allergen declarations, health claims, and packaging standards. By examining these regulatory frameworks, the project will identify similarities and differences in their approaches, compliance mechanisms, and enforcement strategies. The analysis will highlight how cultural, economic, and legislative contexts influence the formulation and implementation of labelling standards.

This project investigates the comparative labelling practices of diet foods and their regular counterparts, specifically focusing on products such as cornflakes versus muesli, normal milk versus double toned milk, regular cola versus diet cola, and white bread versus whole wheat bread. The primary aim is to analyse the differences in labelling regarding nutritional content, ingredient lists, health claims, and serving sizes, and to understand how these differences impact consumer perception and choice. Furthermore, the project will address the broader issue of obesity, examining how effective labelling can influence consumer behaviour and contribute to healthier eating habits. The study will discuss the role of transparent and informative labelling in combating obesity, emphasizing the need for clear, accurate, and accessible nutritional information to guide healthier choices.

In conclusion, this research aims to enhance understanding of food labelling practices and their impact on consumer behaviour, providing actionable recommendations for regulators and manufacturers to improve labelling standards. These improvements could support public health initiatives, particularly in addressing obesity by promoting better-informed dietary decisions.

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# **PRODUCTION OF FLOURLESS BANANA BROWNIES WITH FLAX SEED**

**SIGNATURE LABS & RESEARCH**

**MARCH 2024 - MAY 2024**

Submitted by

Akshaya K P (CCAUTOB007)

In Partial fulfillment of the requirements for the degree

**B.VOC FOOD PROCESSING TECHNOLOGY**



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TRAINING AND RESEARCH CENTER

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This is to certify that the dissertation entitled "**PRODUCTION OF FLOURLESS BANANA BROWNIES WITH FLAX SEED**" is piece of authentic record of work carried out by **Ms. Akshaya.KP**(CCAVBOB007) B.VOC Food Processing Technology, **Christ College Irinjalakuda(Autonomous), University of Calicut** under my guidance and supervision.

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## **DECLARATION**

We, hereby declare that the project work entitled “ **FLOURLESS BANANA BROWNIES WITH FLAX SEED** ” is a record of an original work done by us under the guidance of ‘**SAJESH THIPPILIKKAD**’ **Signature Solution - Training and Research Center Perinthalmanna**. The results embodied in this thesis has not been submitted to any other University or Institute for the award of any Degree or Diploma.

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**AKSHAYA K P**

## **ACKNOWLEDGMENT**

First, we express our thanks to God almighty for guiding and showering his blessings to us for making the project a great success.

We would like to express our gratitude to **'SAJESH THIPPILKKAD'** and those who have supported us throughout this project. Your guidance and encouragement have been invaluable in helping us to understand and complete this project namely, **'FLOURLESS BANANA BROWINES WITH FLAX SEED'**.

We hereby express our sincere gratitude to **Mr. Baiju Uttupurath, Ms. Sandra P,** Signature Solutions - Training and Research centre, Perinthalmanna for their valuable support, guidance and co-operation throughout our project work.

We also express our gratitude to **"ASWIN SANJEEV" (HOD)** Department of B voc. Food processing Technology Christ College Irinjalakuda and to all our teachers of B.voc Food processing Technology for their sincere support which helped us to complete this project.

We want to thanks our advisers and everyone at the company for their patience and assistance during our on - site training. Thanks to their guidance, we were able to develop our skills and learn about the laboratory test analysis.

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## **LIST OF ABBREVIATION**

%	Percentage
mg	Milligram
mm	Milliliter
CFU	Colony forming unit
gm.	Gram
V	Volume
W	Weight
M	Molar
N	Normality
°C	Degree Celsius

## **ABSTRACT**

A Chocolate brownie or simply a brownie, is a chocolate baked confection. Brownies come in a variety of forms and may be density. Brownies often, but not always, have a glossy skin on their crust. They may also include nuts, frosting, chocolate chips, or other ingredients. A variation made with Brown sugar and vanilla rather than chocolate in the batter. This project aims to develop flourless brownie by using flax seed as a functional ingredients. Brownie enrich with protein supporting both growth and maintenance of muscle. Flax seed are a good source of dietary fiber and omega -3 fatty acids, thus, the addition of this ingredient could increase the dietary fiber of the brownie. The flourless brownie with flax seed contained (25.95%) fat,( 25.66 %) moisture,( 71.66%) protein, (48.65%) ash, carbohydrate (10.72%) , Iron (0.3 mg/l), calcium (3.20 mg/l),and mold count (Nil), bacterial count (Nil), Sensory qualities (color, surface, aroma, texture,) The overall acceptability was found to be 8 to 9 on 9 point Hedonic scale. In conclusion, the development of these flax seed brownies can offer these health benefits, and are also considered as nutritional products for a healthy balanced diet.

## **INTRODUCTION**

Brownies are chocolaty baked products made in square or rectangle shapes. They are commonly consumed around the world and are made with flour, fat (oil or butter), sugar, eggs and chocolate (molten or cocoa powder). Nuts such as walnuts, almonds, pecans and macadamia nuts can be added to provide a characteristic texture to brownies. Commonly variations of brownies include fudgy, cakey brownie, chewy brownie.

The difference between these variations is based on ingredients proportions, the presence of a chemical leavening (e.g. baking powder), the type of fat or chocolate, etc.

### **Origin**

Brownies originated in United States of America. The first written mention of brownies was in an 1896 book by the Fannie Farmer Cookbook out of Boston. Brownies come in a variety of shapes and forms, everyone who bakes brownies has their own special twist on creating the perfect one in their eyes. An interesting fact about brownies is that they continue cooking even when they come out of the oven! You'll still need to work out the perfect time to take them out of the oven to make sure they aren't under or over baked, especially if you want a really fudgy brownie experience.

Brownies are not classified as cakes – this is a very interesting point about the brownie. The reason for this is that although the texture is similar to cakes, it is classed as finger food

### **FLAX SEED**

Flax seed or linseed (*Linum usitatissimum*) is an ancient crop that has been used for food and fiber. In North America, flax seed is the preferred term for flax used



in human consumption whereas Europeans use the term linseed for edible flax (Vaisey-Genser and Morris, 2003).

Flax seed is grown in approximately 50 countries most of which are in the Northern Hemisphere. In 2002, Canada was the largest producer of flax seed accounting for approximately 33%, of the 2 million metric tons produced, followed by China (20%), the United States (16%), and India (11%) (Berglund, 2002).

Flax seed is an oilseed that contains roughly 38–45% oil. ALA, a polyunsaturated lipid, accounts for 52% of the fatty acids in the oil. Flax seed is also a rich source of plant lignans (up to 13 mg/g) The interest in ALA and lignans as food ingredients has opened opportunities for the utilization of flax seed in foods. In contrast, the same level of interest has not been observed for other flax seed components, such as protein and dietary fiber, which account for 20% and 28% of the flax seed, respectively (Carter, 1993). This chapter will provide a general overview of flax seed research completed over the past 50 years with the major focus being on data from 1990 to 2006. It will highlight the basic composition, health benefits, and finally the processing and application of flax seed.

## **HEALTH BENEFITS OF FLAX SEED**

- ❖ Aids Digestion
- ❖ Reduce Inflammation
- ❖ Decrease risk of cancer
- ❖ Boosts Immunity
- ❖ Promotes weight loss
- ❖ Reduce blood pressure
- ❖ Stabilizes blood sugar
- ❖ Supports healthy hair and skin

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**ANALYZING FOOD LABELS: A CROSS EXAMINATION OF  
NATIONAL AND INTERNATIONAL STANDARDS, AND  
EVALUATING NUTRITIONAL DIFFERENCES BETWEEN  
REGULAR AND DIET FOOD**

With R&D Section under Aspire Training Research Consulting

Held from 21<sup>st</sup> March to 21<sup>st</sup> May 2024

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**MAY 2024**

# **DECLARATION**

I hereby declare that the project titled " ANALYZING FOOD LABELS: A CROSS EXAMINATION OF NATIONAL AND INTERNATIONAL STANDARDS, AND EVALUATING NUTRITIONAL DIFFERENCES BETWEEN REGULAR AND DIET FOOD" submitted to CHRIST COLLEGE (AUTONOMOUS) IRINJALAKUDA is an original work completed by me.

All the information and data presented in this project are true to the best of my knowledge and have been collected and analysed following ethical research practices. Proper citations and references have been provided where external sources have been used, in accordance with academic standards.

This project has not been submitted previously, in whole or in part, for any degree or diploma at any other institution.

I understand the implications of plagiarism and confirm that this work is free from any form of academic dishonesty.

Alan Thomas

Date:

BVoc Food Processing Technology

Christ College (Autonomous) Irinjalakuda

# ACKNOWLEDGEMENT

*I would like to express my deepest gratitude to **Almighty God** for providing me with the strength, wisdom, and perseverance to complete this project. Without His divine blessings, this accomplishment would not have been possible.*

*I would like to extend my sincere gratitude to **ASPIRE TRAINING RESEARCH CONSULTING** for providing me with the opportunity and resources to undertake this project. The supportive environment and excellent facilities have been instrumental in the successful completion of this work.*

*I am deeply grateful to my supervisor, **Dr. Nashila Rahmaniya** (Director, Aspire Training, Research Consulting), **Ms. Greena Gireesan** (Tutor, Food Safety Specialist), **Ms. Anjali Johny** (Tutor, Food Safety & Quality Assurance Professional) for their invaluable guidance, support, and encouragement throughout the course of this project. Their insightful feedback and expertise have been instrumental in shaping this work.*

*I would also like to extend my sincere thanks to **CHRIST COLLEGE (AUTONOMOUS) IRINJALAKUDA** for providing the necessary resources and a conducive environment for conducting this research. The support from the faculty and staff has been greatly appreciated.*

*A special thanks to my Principal **Rev. Fr. Dr. Jolly Andrews CMI** Christ College (Autonomous) Irinjalakuda. **Mr. Aswin Sanjeev** (H.O.D) of B.Voc Food Processing Technology. I express my sincere gratitude to my internal guide **Mrs. Lulu Varghese**, under her guidance I successfully completed my project.*

*To **my parents and family**, your love, understanding, and belief in my capabilities have been instrumental in helping me navigate the challenges and celebrate the successes along the way. Your sacrifices and unwavering encouragement have always inspired me to strive for excellence.*

# ABSTRACT

The global food industry relies heavily on robust labelling regulations to ensure consumer safety, facilitate informed choices, and maintain market fairness. This project aims to provide a comparative analysis of the food labelling regulations enforced by national and international authorities, specifically focusing on the Food Safety and Standards Authority of India (FSSAI), the European Union (EU), and the United States Food and Drug Administration (FDA). The study will delve into various aspects of labelling requirements, including nutritional information, ingredient listing, allergen declarations, health claims, and packaging standards. By examining these regulatory frameworks, the project will identify similarities and differences in their approaches, compliance mechanisms, and enforcement strategies. The analysis will highlight how cultural, economic, and legislative contexts influence the formulation and implementation of labelling standards.

This project investigates the comparative labelling practices of diet foods and their regular counterparts, specifically focusing on products such as cornflakes versus muesli, normal milk versus double toned milk, regular cola versus diet cola, and white bread versus whole wheat bread. The primary aim is to analyse the differences in labelling regarding nutritional content, ingredient lists, health claims, and serving sizes, and to understand how these differences impact consumer perception and choice. Furthermore, the project will address the broader issue of obesity, examining how effective labelling can influence consumer behaviour and contribute to healthier eating habits. The study will discuss the role of transparent and informative labelling in combating obesity, emphasizing the need for clear, accurate, and accessible nutritional information to guide healthier choices.

In conclusion, this research aims to enhance understanding of food labelling practices and their impact on consumer behaviour, providing actionable recommendations for regulators and manufacturers to improve labelling standards. These improvements could support public health initiatives, particularly in addressing obesity by promoting better-informed dietary decisions.

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# INTRODUCTION

## **INTRODUCTION**

In today's fast-paced world, where health-conscious consumers are increasingly prioritizing nutrition and wellness, the importance of accurate and informative diet food labelling cannot be overstated. Diet food labelling serves as a vital tool for consumers to make informed decisions about their dietary choices, aiding in the pursuit of healthier lifestyles and better management of various health conditions.

This project aims to delve into the intricacies of diet food labelling, examining its current landscape, identifying potential shortcomings, and proposing strategies for improvement. By understanding the existing challenges and opportunities in diet food labelling, we can pave the way for enhanced transparency, consumer empowerment, and public health promotion.

## **SIGNIFICANCE**

- Empowering consumers with accurate and accessible information enables them to make informed choices aligned with their dietary preferences, health goals, and nutritional needs.
- Improved diet food labelling has the potential to positively impact public health outcomes by promoting healthier dietary patterns, reducing the risk of chronic diseases, and addressing nutritional deficiencies.
- By fostering innovation and standardization in diet food labelling practices, this project can drive positive change within the food industry, encouraging transparency, accountability, and responsible marketing practices.
- Many individuals have specific dietary needs due to allergies, intolerances, cultural preferences, or ethical beliefs. Comprehensive diet food labelling requirements enable these individuals to identify suitable products more easily, reducing the risk of adverse reactions or dietary restrictions.
- Beyond nutritional considerations, consumers increasingly seek information about the environmental and ethical aspects of food production. Diet food labelling requirements can include indicators related to sustainability, animal welfare, fair trade practices, and organic certification.

**EXPLORING ALTERNATIVE PRODUCTS FOR ALLERGENIC  
INGREDIENTS**

**ASPIRE RESEARCH AND CONSULTING**

SUBMITTED BY,

AMINA SHAHRIN (CCA VBOBO008)

**In partial fulfilment of the requirements for the award of the degree of**

**BACHELOR OF VOCATIONAL IN FOOD PROCESSING  
TECHNOLOGY**



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2021 - 2024**



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Head of the Department

External examiner

Industrial Representative





## **DECLARATION**

I AMINA SHAHRIN (CCAVBOB008) student of sixth semester B.Voc Food Processing Technology, at CHRIST COLLEGE (AUTONOMOUS), hereby declare that the project report has been carried out by me and submitted to CHRIST COLLEGE IRINJALAKUDA, in partial fulfilment for the award of Bachelor of Vocational in Food Processing Technology , during the academic year 2021-2024. Further, the matter embodied in the dissertation has not been submitted previously by anybody for the award of any degree or diploma to any University, to the best of my knowledge and faith.

Date:

Place:

## **ACKNOWLEDGEMENT**

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## **ABBREVIATIONS**

EU - EUROPEAN UNION

EFSA - EUROPEAN FOOD SAFETY AUTHORITY

FALCPA - FOOD ALLERGEN LABELING AND CONSUMER PROTECTION  
ACT

FASTER - FOOD ALLERGY SAFETY, TREATMENT, EDUCATION AND RESEARCH

FDA - FOOD AND DRUG ADMINISTRATION

IgE - IMMUNOGLOBULIN E

USFDA - UNITED STATES FOOD AND DRUG ADMINISTRATION

GHP - GOOD HYGIENE PRACTICES

GMP - GOOD MANUFACTURING PRACTICES

HACCP - HAZARD ANALYSIS AND CRITICAL CONTROL POINT

GI - GASTROINTESTINAL

ELISA - ENZYME LINKED IMMUNOSORBENT ASSAY

## **ABSTRACT**

This study dives into the world of food allergies, examining why certain foods can cause reactions and how they affect people's health. We look closely at common allergens like peanuts, milk, and eggs. We also explore how food allergies are detected and managed, stressing the importance of accurate food labels and preventing accidental exposure. We highlight the challenges some people face in accessing allergy-friendly foods and healthcare. In searching for solutions, we assess alternative ingredients and new ways to process food that can remove allergens without sacrificing taste or nutrition. This study aims to make the complicated world of food allergies easier to understand and offers ideas for making life safer and easier for those affected.



## **INTRODUCTION**

Food allergy is defined as an adverse immune-mediated response which occurs reproducibly on exposure to a given food and is absent during its avoidance. While that food is generally not harmful to the population, it can affect personal eating habits of patients suffering from allergy (Pacholek et al.,2018).

Food allergies have emerged as a major public and personal health burden which is growing in nature (Laly S.J 2023). The history of adverse reactions to food experienced by man dates back to Lucretius' statement that one man's food may be another man's poison (B.N.Harish, 2012).

Food safety is an important part of the system for the protection of human health. The main objectives of the European Union's food safety policy include providing consumers with safe, high-quality food and with reliable, accurate and transparent information about food products. Every food company must ensure that food safety is not compromised and has to provide accurate information on their offering so that the consumer can make a choice being well-informed. Substances and products causing food allergies or intolerance are common and are safe for most people. However, in case of food-sensitive consumers, such products may result in various dangerous and unpredictable symptoms. Therefore, it is extremely important for this vulnerable group to find and choose responsibly produced and accurately labeled food products. This has become a major challenge and obligation for food manufacturers because food allergens pose a real threat to human health and life(Pacholek et al.,2018).

---

## **EU List of food allergens (EU Regulation 1169/2011)**

EFSA has updated its scientific advice on food allergens. The Authority's Scientific Opinion looks in detail at all the allergenic products and substances whose presence in food must be indicated on labeling, according to EU law. These includes:

- 1. Cereals containing gluten**
- 2. Milk**
- 3. Eggs**
- 4. Nuts**
- 5. Peanuts**
- 6. Soybeans**
- 7. Fish**
- 8. Crustaceans**
- 9. Molluscs**
- 10. Celery**
- 11. Lupin**
- 12. Sesame**
- 13. Mustard**
- 14. Sulphites**

(European food safety authority, 2014).

Eight major food allergens according to Food Allergen Labeling and Consumer Protection Act of 2004 (FALCPA):

- Milk
- Egg
- Fish
- Crustacean
- Shellfish
- Tree nuts
- Peanuts
- Wheat
- Soybeans

On April 23, 2021, the Food Allergy Safety, Treatment, Education, and Research (FASTER) Act was signed into law, declaring **sesame** as the 9th major food allergen recognized by the United States. The change was effective on January 1, 2023(Nutrition, 2023).

# **FOOD PACKAGING: ENHANCING COMMERCIAL SUCCESS THROUGH NITROGEN PACKING**

**SYNTHITE TASTE PARK (PANCODE)**

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**In partial fulfilment of the requirements for the award of the degree of  
BACHELOR OF VOCATIONAL IN FOOD PROCESSING TECHNOLOGY**



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## **DECLARATION**

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Date:

Place:

## **ACKNOWLEDGEMENT**

*I bow my head before **God Almighty** whose grace and blessings enabled me to complete this venture successfully. An opportunity to pay tributes to those who have contributed to the preparation of this thesis is indeed joyful.*

*I would like to express my sincere gratitude to all those who have contributed to the successful completion of my project and the preparation of this report. As a part of my curriculum, I had the privilege to undertake project work at, **KITCHEN TREASURES (INTERGROW BRANDS PVT.LTD)**, Kerala.*

*First and prominently, I am immensely thankful to the team of Kitchen Treasures pvt. ltd, where I completed my project. Their cordial salutation, guidance, and support were instrumental in making my project a valuable learning experience. I acknowledge the arduous they committed to mentor me throughout my project, sharing their knowledge, and providing me with the opportunity to contribute to the actuality of the projects.*

*I would also like to take this opportunity to express my sincere gratitude and to **Mr. Jacob Thomas (V P, KITCHEN TREASURES)**, **Mr. Krishna Prasad (Deputy Manager)** and **Mr. Rajeesh Sasidharan (HR)** for their unwavering support and mentorship.*

*A special thanks to my Principal **Rev. Fr. Dr. Jolly Andrews CMI Christ College (Autonomous) Irinjalakuda. Mr. Aswin Sanjeev (H.O.D)** of B.Voc food processing technology. I express my sincere gratitude to my internal guide **Mrs: Lulu Varghese**, under her guidance I successfully completed my project.*

*I express my deep sense of grateful and heartfelt thanks to **my parents and my family** for their co-operation, encouragement as well as moral support throughout the study.*

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## **ABSTRACT**

### **Introduction:**

Potato chips are beloved snacks globally, but maintaining their freshness poses a challenge due to oxygen exposure. Nitrogen packaging offers a solution by creating an oxygen-free environment, potentially extending shelf life. This study aims to assess the efficiency of nitrogen packing in preserving potato chip quality over a four-month period.

### **Aim and Objectives:**

This study aims to evaluate nitrogen packing's effectiveness in preserving potato chip freshness and crispiness. Specific objectives include sensory analysis, moisture content measurement, accelerated shelf-life testing, and nitrogen level analysis.

### **Materials and Methods:**

Freshly prepared potato chips were sampled monthly for four months. Before and after nitrogen packing, sensory analysis, moisture content measurement, accelerated shelf-life testing, and nitrogen level analysis were conducted following standardized methods.

### **Discussion and Results:**

Sensory analysis indicated that nitrogen-packed chips retained crispiness and flavour. Lower moisture content and superior shelf stability were observed in nitrogen-packed chips even after four months. Analysis of nitrogen levels correlated with chip quality, affirming nitrogen packaging's efficacy in maintaining potato chip freshness and crispiness over time.

## **INTRODUCTION**

Synthite Industries Pvt.ltd. Is an Indian oleoresin extraction firm. It is the world's largest producer of spice extracts, spice powders and essential oils. Synthite has footprints in India, China, Brazil, USA, Vietnam and Sri Lanka. The company headquarters is in Kochi, Kerala. The company is owned by late C.V Jacob (founder and chairman) and currently run by his son Viju Jacob (Managing director). The company has an annual turnover of over 500 crores.

At Synthite, they understand natural products better than most people. They apply this knowledge to create a broad range of specialised, reliable ingredients and solutions that give our clients a razor-sharp competitive edge.

They use path-breaking technologies and have acquired and customized them to meet varied challenges. Today, they have the best in-class technological processes like Supercritical Fluid Extraction, Thin Film Distillation and Spinning Cone Column. These processes translate into impeccable quality and cost effectiveness for the benefit of our clients.

Only the best minds work with Synthite. Their pool of experts has diverse skill sets that collaborate to achieve the desired results for their clients, every single time. From flavour and fragrance specialists to business leaders with astute business acumen, their innovative human resource pool with a shared value is what gives them ahead of the curve.

**Synthite's vision** is to consistently deliver the ingredients of success for the most exciting food, health and fragrance solutions and being the partner of choice to their clients worldwide.

**Synthite's mission** is to develop sustainable growth and operational excellence powered by innovation. The company also aims to enhance value for all stakeholders, cultivate customers and winning people through collaboration.

# **PRODUCTION OF BREAD USING WHEAT AND CASSAVA BLEND FLAVOURED WITH GINGER**

**A Project report**

**Submitted by**

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**B.VOC FOOD PROCESSING TECHNOLOGY**

Under the guidance of

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**March 2024**

## **DECLARATION**

We hereby declare that the work presented in this entitled “**PRODUCTION OF BREAD USING WHEAT AND CASSAVA BLEND FLAVOURED WITH GINGER**” has been carried out by us under the supervision of MR.SAJESH THIPPILIKKAD, Course Director, Signature Labs and Research Center Perinthalmanna. We further declare that this dissertation has not formed the basis for the aware or any degree or diploma, fellowship or association or similar title of any university or institution.

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**Date:**

**Place:**

## **ACKNOWLEDGMENT**

I would like to express my special gratitude to Mr. Sajesh Thippilikkad for taking an interest in this project, namely, “**PRODUCTION OF BREAD USING WHEAT AND CASSAVA BLEND FLAVOURED WITH GINGER**” and guiding us all along, till the completion of the project work by providing all the necessary information for developing a good system.

We hereby express my sincere gratitude to **Mr. Baiju Uttapurath, Ms. Sandra P** Signature solutions- Training and Research center, Perinthalmanna for their valuable support, guidance and co-operations throughout our project work.

We also express our gratitude to **Mr. Aswin Sanjeev (HOD)** Department of Food Processing Technology Christ College (Autonomous) Irinjalakuda and to all our teachers of Food Processing Technology for their sincere support which helped us to complete this project.

Our thanks to all those who have contributed their share as opinions and suggestions during the entire course of the project work.



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## **ABSTRACT**

Bread is a staple food prepared from dough of flour (usually Maida/wheat) and water, by baking. All bread including white bread contains nutrients that can enhance one's diet. Along with having high amount of iron, fiber and vitamin B. Bread also include high amount of calcium, protein, thiamine, manganese and zinc. In this study wheat bread is produced along with cassava flour flavored with ginger powder that are affordable and healthy. The overall acceptability was found to be 8-9 on 9 Hedonic scale. Here the flours are taken in a 1:2 ratio. It was found that the bread were a source of fiber (2%), fat (13.51), protein (31.31%), carbohydrate (16.848%), moisture (35.5%), ash(0.985%), calcium(3.206 mg/L) and iron (0.64mg/L), mold count (nil), bacterial count (nil). From the result it was concluded that the bread made with wheat and cassava flour with ginger flavor is rich and healthy.

## **1. INTRODUCTION**

Bread is a food full of flavors and nutrients and continues to be the basis of our daily diet. Bread or in Greek “artos” was considered in the past as the most important human good after health and water. It belongs to the traditional diet, especially that of the poor. It believed to be the most complete and cheap food and basic auxiliary food in times of extreme food poverty. It is the main food in Europe but also in the cultures of America, Middle East and North Africa.

Wheat flour is the main ingredient of bakery. Hard wheat has high protein content and the corresponding flour is used to make bread and other goods, such as croissants, donuts etc. Soft wheat has low protein content and the corresponding flour is used for pastry preparations such as cakes, biscuits, etc. Whole wheat flour also contains a significant percentage (up to 75%) of higher amounts of vitamins, minerals, antioxidants, fiber and other nutrients than that of commonly processed wheat flour, as these components are concentrated in the outer parts of the fruit.

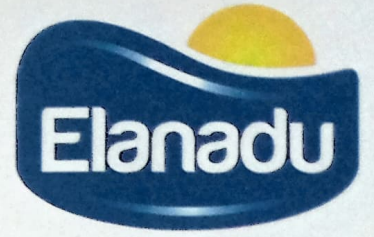
Cassava is one of the most important starch resources, because it can grow under harsh climatic conditions. Cassava can be cultivated in both tropical and subtropical regions and has become a staple food in those regions, because of its high starch content. Cassava roots have high nutritional value, and they are rich in carbohydrates, which the carbohydrate yield is 40% and 20% higher than in rice and corn, respectively.

Among the roots and tubers, cassava is suitable for partial or complete replacement of wheat flour, because of its high yield, low cost of production, and the unique functional properties of its flour and starch. Cassava flour is made from fresh cassava by cleaning, removing inner and outer epidermis, detoxifying (sweet cassava is not used), steaming, slicing, drying, and ultra-fine grinding. It is rich in a variety of nutrients, including fibers, vitamins, and minerals, and is widely used in the feed, food, and chemical industries. Cassava flour, however, does not contain gluten and causes no allergic effects when consumed by the patients with celiac disease.

Ginger (*Zingiber officinale* Roscoe) is a member of the Zingiberaceae family of plants. It has been a part of healing strategies in Asia, India, Europe, and the Middle East for

centuries for treatment of such disorders as arthritis, stomach upset, asthma, diabetes, and menstrual irregularities, to name a few. There is scientific support that ginger may alleviate the symptoms of nausea and vomiting following pregnancy, surgery, cancer therapy, or motion sickness and suggestive evidence that ginger reduces inflammation and pain. Cell culture studies show that ginger has antioxidant properties.





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Date: 18-05-2024

**Internship Completion Certificate**

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During the internship he had shown interest to learn things. We wish him good luck for his future endeavours.

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**EXPLORING ALTERNATIVE PRODUCTS FOR ALLERGENIC**

**INGREDIENTS**

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**SUBMITTED BY,**

**DIYA BABU(CCAVB0012)**

**In partial fulfilment of the requirements for the award of the degree of**

**BACHELOR OF VOCATIONAL IN FOOD PROCESSING  
TECHNOLOGY**



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2021 - 2024**





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**DEPARTMENT OF BVOC FOOD PROCESSING TECHNOLOGY 2021-2024**

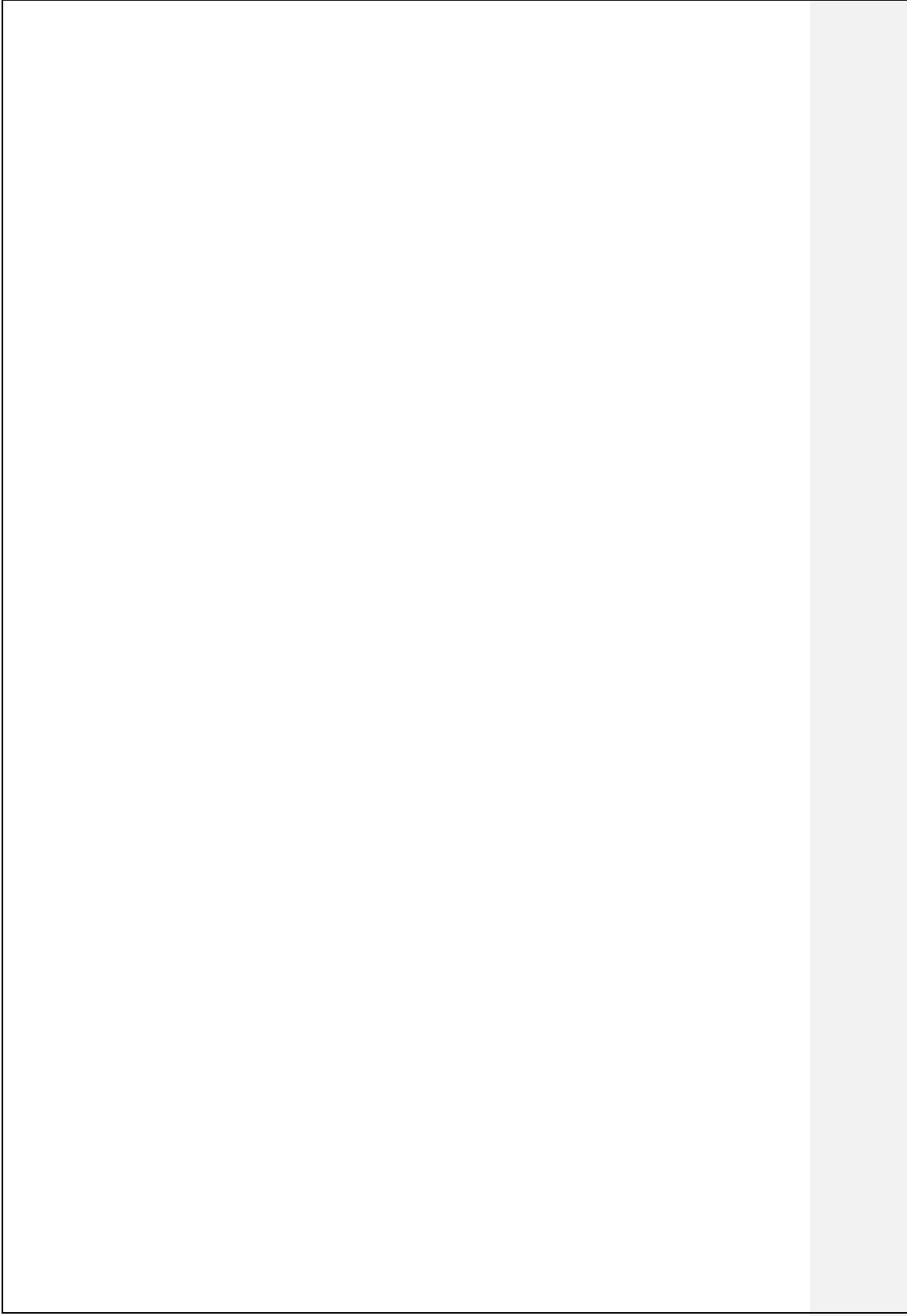
**CERTIFICATE**

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Industrial



## **DECLARATION**

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## **ACKNOWLEDGEMENT**

*I would like to express my deepest gratitude to **Almighty God** for providing me with the strength, wisdom, and perseverance to complete this project. Without His divine blessings, this accomplishment would not have been possible.*

*I would like to extend my sincere gratitude to **ASPIRE TRAINING RESEARCH CONSULTING** for providing me with the opportunity and resources to undertake this project. The supportive environment and excellent facilities have been instrumental in the successful completion of this work.*

*I am deeply grateful to my supervisor, **Dr. Nashila Rahmaniya (Director, Aspire Training, Research Consulting), Ms. Greena Gireesan (Tutor, Food Safety Specialist), Ms. Anjali Johny (Tutor, Food Safety & Quality Assurance Professional)** for their invaluable guidance, support, and encouragement throughout the course of this project. Their insightful feedback and expertise have been instrumental in shaping this work.*

*I would also like to extend my sincere thanks to **CHRIST COLLEGE (AUTONOMOUS) IRINJALAKUDA** for providing the necessary resources and a conducive environment for conducting this research. The support from the faculty and staff has been greatly appreciated.*

*A special thanks to my Principal **Rev. Fr. Dr. Jolly Andrews CMI Christ College (Autonomous) Irinjalakuda. Mr. Aswin Sanjeev (H.O.D) of B.Voc Food Processing Technology.** I express my sincere gratitude to my internal guide **Mrs. Lulu Varghese**, under her guidance I successfully completed my project.*

*To my parents and family, your love, understanding, and belief in my capabilities have been instrumental in helping me navigate the challenges and celebrate the successes along the way. Your sacrifices and unwavering encouragement have always inspired me to strive for excellence.*

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## **ABBREVIATIONS**

EU - EUROPEAN UNION

EFSA - EUROPEAN FOOD SAFETY AUTHORITY

FALCPA - FOOD ALLERGEN LABELING AND CONSUMER PROTECTION ACT

FASTER - FOOD ALLERGY SAFETY, TREATMENT, EDUCATION AND RESEARCH

FDA - FOOD AND DRUG ADMINISTRATION

IgE - IMMUNOGLOBULIN E

USFDA - UNITED STATES FOOD AND DRUG ADMINISTRATION

GHP - GOOD HYGIENE PRACTICES

GMP - GOOD MANUFACTURING PRACTICES

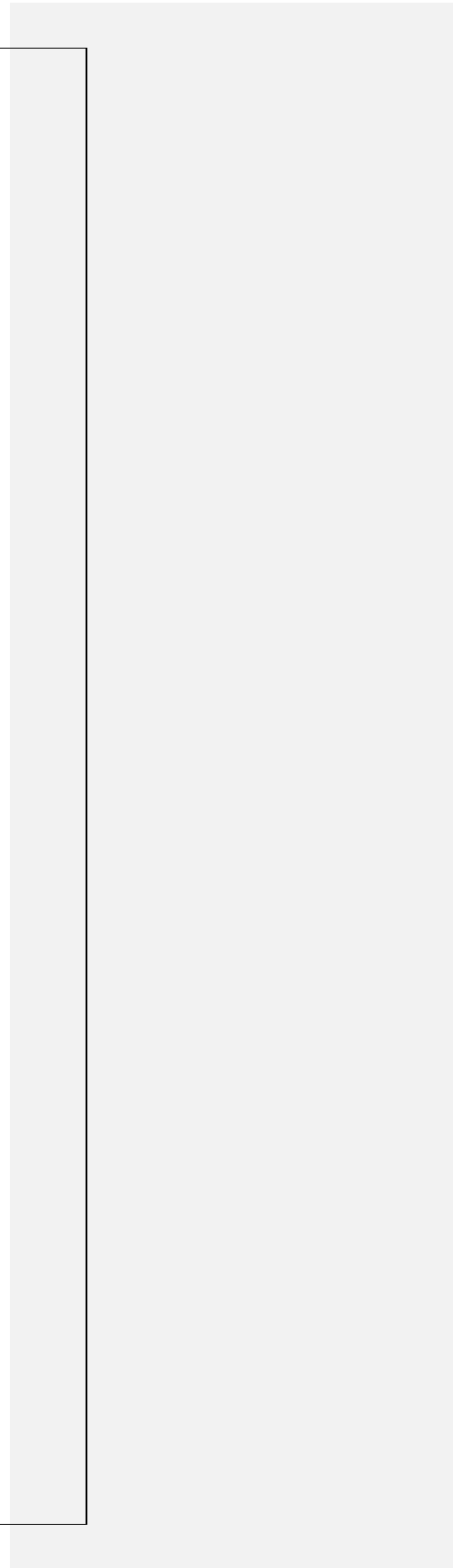
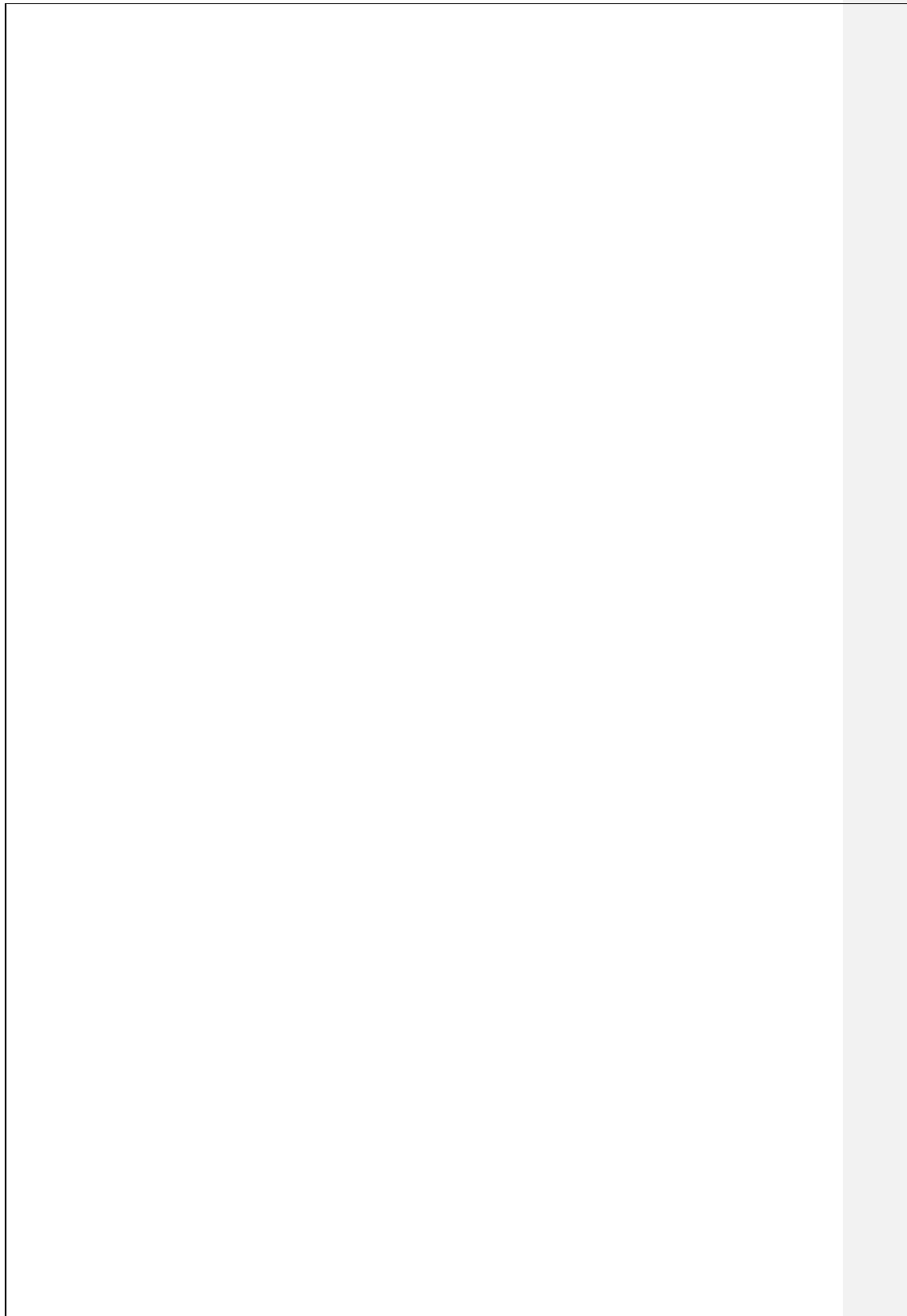
HACCP - HAZARD ANALYSIS AND CRITICAL CONTROL POINT

GI - GASTROINTESTINAL

ELISA - ENZYME LINKED IMMUNOSORBENT ASSAY

## **ABSTRACT**

This study dives into the world of food allergies, examining why certain foods can cause reactions and how they affect people's health. We look closely at common allergens like peanuts, milk, and eggs. We also explore how food allergies are detected and managed, stressing the importance of accurate food labels and preventing accidental exposure. We highlight the challenges some people face in accessing allergy-friendly foods and healthcare. In searching for solutions, we assess alternative ingredients and new ways to process food that can remove allergens without sacrificing taste or nutrition. This study aims to make the complicated world of food allergies easier to understand and offers ideas for making life safer and easier for those affected.





# **FORMULATION OF A JAIN-FRIENDLY INSTANT MANCHURIAN RICE**

*Project report submitted to Calicut University in partial fulfillment of the under graduate course.*



**NAME: HUSNA HIBA U HABEEB**

**REG.NO: CCAVBOB014**

2021-2024

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Head of the Department

External examiner

Industrial Representative

## **ACKNOWLEDGEMENT**

I am extremely grateful to our chief executive officer, Mr.Rakesh Nediancheril, Bayfield food ingredients, kalamassery for giving the necessary guidance and materials for my project work titled **“FORMULATION OF A JAIN-FRIENDLY MANCHURIAN RICE”**

I also extent my sincere gratitude to Mr. Rakesh Nediancheril, Chief executive officer, Mr.Manash P.K, Head of the Research and Development Department

I am also grateful to all those who helped me to present the report on this project in the most satisfying manner and making my endeavor a success.

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Place:

3<sup>rd</sup> B.Voc Food processing technology

## **ABSTRACT**

This project aims to develop a Jain-friendly version of instant Manchurian rice, a popular Indo-Chinese dish, by adhering to the dietary guidelines of Jainism. Jain dietary restrictions prohibit the consumption of certain root vegetables and non-vegetarian ingredients, presenting a challenge in recreating the authentic flavors of Manchurian cuisine. The formulation process involves the careful selection of permissible ingredients and the development of a recipe that maintains the essence and taste profile of traditional Manchurian rice while ensuring Jain compliance.



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## 1. INTRODUCTION

The history of food technology dates back thousands of years, beginning with the advent of agriculture and the domestication of plants and animals around 10,000 BCE. Early humans developed techniques for preserving food, such as drying, salting, and fermenting. These methods were crucial for storing food for times of scarcity and for long journeys (Shephard.2006).

The 19th century marked significant advancements in food technology with the invention of canning by Nicolas Appert in 1809, which allowed for the long-term storage of food in airtight containers. Louis Pasteur's discovery of pasteurization in the mid-1800s further revolutionized the field by enabling the safe consumption of milk and other perishable liquids. The industrial revolution brought about mechanized food processing, enhancing efficiency and consistency in food production (Khadka et al., 2019).

The 20th century saw the rise of convenience foods, driven by innovations such as freeze-drying, vacuum packaging, and the development of artificial flavors and preservatives. The space race in the 1960s led to the creation of specialized foods for astronauts, pushing the boundaries of food preservation and nutrition (oluwagbemileke.2022).

Today, food technology encompasses a wide range of disciplines, including biotechnology, nanotechnology, and the development of functional foods designed to provide health benefits beyond basic nutrition. This field continues to evolve, addressing challenges related to food safety, sustainability, and feeding a growing global population.

From prehistory, humans have given meaning to everything connected with food: Who is allowed to fish for it, farm it, kill it, or mill it; what vessels and utensils are used in the preparations (Zwart., 2000).

Moral concern with food intake is as old as morality itself. In the course of history, however, several ways of critically examining practices of food production and food intake have been developed. Whereas ancient Greek food ethics concentrated on the problem of temperance, and ancient Jewish ethics on the distinction between legitimate and illicit food products, early Christian morality simply refused to attach any moral significance to food intake. Yet, during the middle ages food became one of the principle objects of monastic programs for moral exercise (*askesis*). During the seventeenth and eighteenth century, food ethics was transformed in terms of the increasing scientific interest in food intake, while in the nineteenth

century the social dimension of food ethics was discovered, with the result that more and more attention was given to the production and distribution of food products. Because of the increasing distance between the production and consumption of food products ever since, the outstanding feature of contemporary food ethics is its reliance and dependence on labeling practices (Civitello.2011).

Food flavour technology is of key importance for the food industry. Increasingly, food products must comply with legal requirements and conform to consumer demands for “natural” products, but the simple fact is that, if foods do not taste good, they will not be consumed and any nutritional benefit will be lost. There is therefore keen interest throughout the world in the production, utilisation and analysis of flavours. (van Ruth et al., 2010)

Jainism is a lesser-known cousin of Buddhism, known for its systematic practice of non-violence (ahimsa) and for its monk’s dedication to asceticism. Jains strive to avoid harming the smallest living things. Some ascetics go naked, while others wear face masks to avoid inhaling and killing insects. Jain laypersons follow the example of the ascetics to varying degrees and are encouraged to follow highly elaborated dietary rules and fasts. Strictly defined vegetarianism is integrated within the education of young Jains and the production of Jain identity. The Jains’ firm commitment to vegetarianism stands out even in India, which contrary to popular belief, is not a predominantly vegetarian country. A study completed in 2006 found that roughly thirty percent of Indians are vegetarian (Puskar-Pasewiz 2010:39). Some Hindus eat meat, including Brahmins, who occasionally consume fish or some meats (Balasubramanian 2004).

The prescriptions of Jain food traditions and beliefs go beyond simple vegetarianism. The principle of ahimsa is applied to such a rigorous degree that Jains avoid zamikand (root vegetables like onions and potatoes), alcohol, and honey, fermented products like yogurt, eggs, and foods with too many seeds. During fasts they avoid any foods that are enjoyed for the flavor. Ingesting foods that are ab-bhakshya (not allowed) is believed to trigger the accumulation of particles of karma, which physically attach themselves to and cover the soul. As long as the soul is covered with karmic particles, one is bound to repeat the cycle of birth and rebirth (samsara), trapped in the “ocean of suffering” (Laidlaw 2003). Necessary for good health and survival, food is, nonetheless, “dangerous, poisonous stuff; it is the world of bondage in concentrated form” (Babb 1996).

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# **PRODUCTION OF FLOURLESS BANANA BROWNIES WITH FLAX SEED**

**SIGNATURE LABS & RESEARCH**

**MARCH 2024 - MAY 2024**

Submitted by

Najla jaleel E A (CCAVBOB003)

In Partial fulfillment of the requirements for the degree

**B.VOC FOOD PROCESSING TECHNOLOGY**



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**DEPARTMENT OF BVOC FOOD PROCESSING TECHNOLOGY 2021-2024**

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**HEAD OF THE DEPARTMENT**

**EXTERNAL EXAMINER**

**INDUSTRIAL REPRESENTATIVE**

## **DECLARATION**

I, hereby declare that the project work entitled “ **FLOURLESS BANANA BROWNIES WITH FLAX SEED** ” is a record of an original work done by us under the guidance of ‘**SAJESH THIPPILIKKAD**’ **Signature Solution -Training and Research Center Perinthalmanna**. The results embodied in this thesis has not been submitted to any other University or Institute for the award of any Degree or Diploma.

**Date:** 15-05-2024

**Place:** IRINJALAKUDA

NAJLA JALEEL E A



## ACKNOWLEDGMENT

First, I express my thanks to God almighty for guiding and showering his blessings to me for making the project a great success.

I would like to express our gratitude to '**SAJESH THIPPILKKAD**' and those who have supported me throughout this project. Your guidance and encouragement have been invaluable in helping me to understand and complete this project namely, '**FLOURLESS BANANA BROWINES WITH FLAX SEED**'.

I hereby express our sincere gratitude to **Mr. Baiju Uttupurath, Ms. Sandra P**, Signature Solutions - Training and Research centre, Perinthalmanna for their valuable support, guidance and co-operation throughout my project work.

I also express our gratitude to "**ASWIN SANJEEV**" (**HOD**) Department of B voc. Food processing Technology Christ College Irinjalakuda and to all we teachers of B.voc Food processing Technology for their sincere support which helped me to complete this project.

I want to thanks my advisers and everyone at the company for their patience and assistance during my on - site training. Thanks to their guidance, I were able to develop my skills and learn about the laboratory test analysis.

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### **LIST OF ABBREVIATION**

%	Percentage
mg	Milligram
mm	Milliliter
CFU	Colony forming unit
gm.	Gram
V	Volume
W	Weight
M	Molar
N	Normality
°C	Degree Celsius

## **ABSTRACT**

A Chocolate brownie or simply a brownie, is a chocolate baked confection. Brownies come in a variety of forms and may be density. Brownies often, but not always, have a glossy skin on their crust. They may also include nuts, frosting, chocolate chips, or other ingredients. A variation made with Brown sugar and vanilla rather than chocolate in the batter. This project aims to develop flourless brownie by using flax seed as a functional ingredients. Brownie enrich with protein supporting both growth and maintenance of muscle. Flax seed are a good source of dietary fiber and omega -3 fatty acids, thus, the addition of this ingredient could increase the dietary fiber of the brownie. The flourless brownie with flax seed contained (25.95%) fat,( 25.66 %) moisture,( 71.66%) protein, (48.65%) ash, carbohydrate (10.72%) , Iron (0.3 mg/l), calcium (3.20 mg/l),and mold count (Nil), bacterial count (Nil), Sensory qualities (color, surface, aroma, texture,) The overall acceptability was found to be 8 to 9 on 9 point Hedonic scale. In conclusion, the development of these flax seed brownies can offer these health benefits, and are also considered as nutritional products for a healthy balanced diet.

## **1. INTRODUCTION**

Brownies are chocolaty baked products made in square or rectangle shapes. They are commonly consumed around the world and are made with flour, fat (oil or butter), sugar, eggs and chocolate (molten or cocoa powder). Nuts such as walnuts, almonds, pecans and macadamia nuts can be added to provide a characteristic texture to brownies. Commonly variations of brownies include fudgy, cakey brownie, chewy brownie.

The difference between these variations is based on ingredients proportions, the presence of a chemical leavening (e.g. baking powder), the type of fat or chocolate, etc.

### **Origin**

Brownies originated in United States of America. The first written mention of brownies was in an 1896 book by the Fannie Farmer Cookbook out of Boston. Brownies come in a variety of shapes and forms, everyone who bakes brownies has their own special twist on creating the perfect one in their eyes. An interesting fact about brownies is that they continue cooking even when they come out of the oven! You'll still need to work out the perfect time to take them out of the oven to make sure they aren't under or over baked, especially if you want a really fudgy brownie experience.

Brownies are not classified as cakes – this is a very interesting point about the brownie. The reason for this is that although the texture is similar to cakes, it is classed as finger food

### **FLAX SEED**

Flax seed or linseed (*Linum usitatissimum*) is an ancient crop that has been used for food and fiber. In North America, flax seed is the preferred term for flax used in human consumption whereas Europeans use the term linseed for edible flax (Vaisey-Genser and Morris, 2003).

Flax seed is grown in approximately 50 countries most of which are in the Northern Hemisphere. In 2002, Canada was the largest producer of flax seed accounting for approximately 33%, of the 2 million metric tons produced, followed by China (20%), the United States (16%), and India (11%) (Berglund, 2002).

Flax seed is an oilseed that contains roughly 38–45% oil. ALA, a polyunsaturated lipid, accounts for 52% of the fatty acids in the oil. Flax seed is also a rich source of plant lignans (up to 13 mg/g). The interest in ALA and lignans as food ingredients has opened opportunities for the utilization of flax seed in foods. In contrast, the same level of interest has not been observed for other flax seed components, such as protein and dietary fiber, which account for 20% and 28% of the flax seed, respectively (Carter, 1993). This chapter will provide a general overview of flax seed research completed over the past 50 years with the major focus being on data from 1990 to 2006. It will highlight the basic composition, health benefits, and finally the processing and application of flax seed.

### **HEALTH BENEFITS OF FLAX SEED**

- ❖ Aids Digestion
- ❖ Reduce Inflammation
- ❖ Decrease risk of cancer
- ❖ Boosts Immunity
- ❖ Promotes weight loss
- ❖ Reduce blood pressure
- ❖ Stabilizes blood sugar
- ❖ Supports healthy hair and skin