FOOD TECH

01

MAGAZINE

Exploring the Future of Food Science & Technology

Issue: July 2025 |

Division of Food Technology, College of Technology, Kandy.

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Preface

It is with great pride and pleasure that I present this edition for Food Technology Association Magazine, a vibrant reflection of the knowledge, creativity, and passion thriving within our College of Technology. This publication is a testament to the dynamic spirit of our students, bringing together research insights, innovative product ideas, thoughtful creative writing, and articles that delve into the evolving world of food science and technology.

I extend my heartfelt congratulations to all students and academics who contributed their work to this issue. Your dedication and enthusiasm exemplify the values we uphold at our institution—excellence, innovation, and collaboration.

Warm regards,
M.H.S. Begum
Additional Director
College of Technology

Declaration

It is a matter of great pride for the College of Technology - Kandy, to bring out the annual publication of the Food Technology Association under the theme " Where Food Meets Innovation " for the very first time in year 2025. This publication will serve as a benchmark of research activities, creative writing and innovativeness of the students.

I'm quite sure that this publication will serve its purpose of enhancing knowledge, creativity, sharing knowledge and above all it will help to fill the gap between educational institutes and the industry.

I'm confident that the publication will be filled with interesting research articles, product innovations, food facts & science tips and lots of creative writings. This will pave way to students to publish their writings in a recognized magazine with a wide audience and also to inspire others in food industry.

I congratulate the editorial board of the publication for their wonderful role in selection and editing.

Finally, I would like to express my sincere gratitude and heartfelt congratulations to all the academic staff and students for their fruitful effort with best wishes.....!!!

K. D. S. K. Kahatapitigama
Director
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EDITORIAL

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Cheese in vegan profile

The Future of Cheese is Plant-Based

Hansana Pamudith
Division of Food Technology
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- **Does it possible?**

Yes, it is possible! As part of my research study in my Higher National Diploma (HND), I have successfully created a cheese in a vegan profile. This involved exploring plant-based ingredients and techniques to achieve the taste, texture, and functionality of traditional cheese.

- **What is the requirement of vegan cheese?**

The demand for vegan cheese in Sri Lanka is gradually increasing due to factors such as rising health consciousness, lactose intolerance, ethical concerns, and the growth of plant-based diets. With a significant vegetarian and vegan population. Sri Lanka has the potential to develop a sustainable vegan cheese market. The key requirements include affordable plant-based ingredients, improved production techniques, consumer awareness, and accessibility in supermarkets and restaurants.

- **How it makes?**

Vegan cheese is produced using a combination of plant-based ingredients to replicate the texture and flavor of traditional cheese. Key ingredients include palm milk (oil palm), soy protein isolate, tapioca starch, and coconut oil. Palm milk provides a creamy base, soy protein isolate enhances the structure, tapioca starch adds stretchiness, and coconut oil contributes to richness. These ingredients are blended, heated, and processed to achieve the desired consistency.

- **Nutritional profile**

This vegan cheese offers a balanced nutritional profile with a combination of essential macronutrients and healthy fats. Palm milk and coconut oil provide a rich source of plant-based fats, contributing to a creamy texture. Soy protein isolate enhances the protein content, making it a suitable alternative for those seeking dairy-free protein sources. Tapioca starch adds carbohydrates, which help with texture and consistency.

- **Quality Characters**

The developed vegan cheese demonstrated key properties comparable to dairy cheese, making it a promising plant-based alternative. It exhibited average melting characteristics, allowing it to soften and stretch when heated, making it suitable for dishes like pizza and pasta. The creamy texture, achieved through the combination of palm milk and coconut oil, provided a smooth and rich mouthfeel. Additionally, the cheese had a mild, milky flavor, enhanced by carefully selected ingredients and processing techniques to mimic the taste of traditional dairy cheese. While it may differ slightly in elasticity due to the absence of casein, the overall sensory experience was satisfactory for a plant-based alternative.

BIODEGRADABLE CUPS

FROM WOOD APPLE SHELL POWDER

The widespread use of synthetic plastics has led to significant environmental and health concerns due to their non-biodegradability and accumulation as waste.

EX: Plastic pollution from single-use plastics, especially cups, is a major environmental issue due to their long decomposition time.

To address this, biodegradable alternatives are being developed using natural materials. As a sustainable alternative, a biodegradable cup was developed using high-quality wood apple shell powder as the main raw material. Existing biodegradable cups were studied to understand their characteristics and requirements, and multiple processing methods were explored to enhance product quality. The final composition involved mixing wood apple shell powder with water, followed by drying at an optimal temperature and duration. To enhance water resistance and prevent reactions with liquid foods (cold liquid only), a wax coating was applied. The product underwent various quality assessments, including physical tests, leakage testing, moisture resistance testing, pH testing, and evaluation of dimensional accuracy. The results confirmed its durability and functionality, making it a viable eco-friendly alternative for sustainable production.

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Taro Root Incorporated Set Yoghurt

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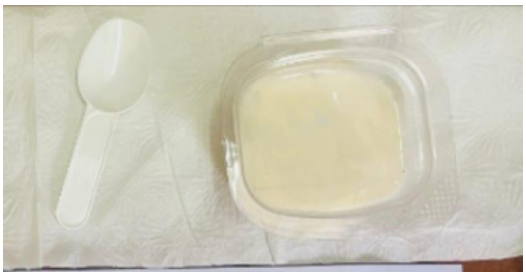
This Research Were Conducted to Development of taro root incorporated Set Yoghurt. That Will Be Provide Beneficial Ready- To - Eat Product for The Customer. Taro Root and Cow Milk Are the Main Ingredients Used For This Study. Raw material of particular importance is Taro root (*Colocasia esculenta*) serves as the main raw material in the development of taro-incorporated set yoghurt.

Taro is a rich source of dietary Fiber, resistant starch, and essential nutrients such as potassium, calcium, and vitamins A and C. Incorporating it into yoghurt enhances its nutritional profile, promoting gut health and improving digestion. Taro has been a staple food in many cultures, especially in Asia, Africa, and the Pacific Islands, where it has been traditionally used for its energy-providing and medicinal benefits.

The research focuses on developing a taro root-incorporated set yoghurt, a novel dairy product that blends the probiotic benefits of yoghurt with the nutritional advantages of taro. We Usually Consume Taro Root Like a Curry and If We Think That Busy People Don't Have Time to Prepare Curry, We Can Get the Benefits of Taro Root by Eating This Yogurt. Combining Taro Root with Dairy to Create a Set Yogurt Introduce a Unique Functional Food That Enhance Both Nutritional and Sensory Properties. Addresses food security by diversifying the use of locally available crops.

This Set Yogurt Was Produced Using Several Processing Method to Ensure the Quality and Safety of The Product. Fresh Raw Materials Were Collected from The Taro Root Plantation. Then Taro Roots Were Cleaned and Grinding and Getting the Taro Root Juice. There Was a Specific Time and Temperature for The Pasteurization of Cow's Milk and Taro Root Juice. Later, The Process of Making Yogurt Continued with The Addition of Other Ingredients. Then After the Mixture Is Cooled to The Specified Temperature and Incubated for The Specified Time and Temperature. The Final Product Is Kept in The Refrigerator. After The Processing of The Product Sensory Evaluation Was Conducted to Identify the Most Suitable Sample. Analyse the effects of taro on fermentation and shelf stability of the final product.



Benefits to Consumers and the Industry

For Consumers:

A healthier alternative to traditional yoghurt with added Fiber and nutrients. A unique flavour and texture variation that expands consumer choices.

For the Dairy Industry:

Innovation in yoghurt production that attracts health-conscious consumers. Potential cost reduction by substituting part of the milk content with taro. Encouragement of sustainable agriculture by incorporating locally grown crops.

This Research Highlights the Potential of Using Taro as A Functional Ingredient in Dairy Products, Offering A Healthier Alternative to Conventional Yogurt. This Product Is Very Usefully for Ready- To- Eat Usage in Busy World That Reduce the Time Wastage for The Cooking or Any Other Process.

TAMARIND FROZEN YOGHURT

The tamarind (*tamarind indica L*) fruits have high nutritional value. Both ripe and dry tamarind contains mainly tartaric acid, reducing sugars, pectin and carbohydrates. The most valuable and commonly used part of the tamarind tree is the fruit. The pulp constitutes 30%-50% of the ripe fruit. The dried tamarind pulp of commerce contains 8%-18% tartaric acid and 25%-45% reducing sugars of which 70% is glucose and 30%fructose.

Frozen yoghurt is a popular frozen dessert that has gained attention for being a healthier alternative to traditional ice cream. Offering a balance between taste and nutrition. The inclusion of natural ingredients, such as tamarind, provides a unique fusion of flavors. Frozen yoghurt is becoming increasingly popular around the world. It is a fermented dairy dessert that is a combination of yoghurt and ice cream. The physical quality of frozen yoghurt is like ice cream. Incorporation of fruits in yoghurt makes yoghurt more delicious.

This frozen yoghurt is produced using several processing methods to ensure quality and safety of the product. At first the yoghurt was prepared. After that tamarind pulp was prepared and pulp was pasteurized. Next yoghurt, tamarind and sugar were mixed using stirring machine. After that, I prepared frozen yoghurt using an ice cream machine. Then final products were added in to cups and kept in freezer. After the processing of the product sensory evaluation was conducted to identify the most suitable sample.

Therefore, consumption of this frozen yoghurt will get these benefits such as containing various antioxidants such as polyphenols that help neutralize harmful free radicals in the body, potentially reducing the risk of chronic diseases. The dietary fiber and pectin in tamarind promote healthy digestion, alleviate constipation and support gastrointestinal health. Compounds in tamarind, including tannins, have been studied for their anti-inflammatory properties, which may aid in managing inflammatory conditions. Tamarind may help regulate blood sugar levels due to its low glycemic index and ability to inhibit enzymes involved in carbohydrate digestion. Potassium in tamarind supports heart health by regulating blood pressure and reducing the risk of cardiovascular diseases.

T. Y. G. Charuni Piyumika Samaraweera

0710663752

Food safety, Accessibility and the Future of Sri Lanka

Sri Lanka is a country located in the tropical zone, characterized by a humid tropical climate and remarkable biodiversity. As a result, a wide variety of plant species grow naturally, and many other plant varieties that can also be cultivated with ease an exceptional advantage.

Sri Lanka has historically and traditionally been an agriculture – based nation. Since the period of British colonization, three major plantation crops have served as the primary sources of agricultural export revenue. In addition to these, many other crops are cultivated to meet domestic demand. This sector has primarily functioned as subsistence agriculture, with a smaller contribution to export – oriented agriculture.

Based on this historical background, the multi – ethnic and multi – religious Sri Lankan population has, for generations, adhered to a traditional dietary pattern. This food culture has remained closed aligned with their way of life over time, relying predominantly on locally sourced agricultural products.

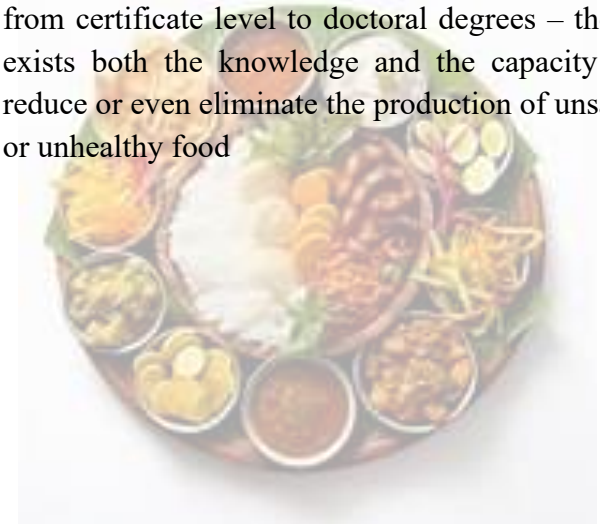
Furthermore, in this land that fostered a highly distinctive traditional medical system, daily dietary needs were met with the greater aim of promoting long, disease – free lives. For ancient Sri Lankans, food was not merely a means to satisfy hunger but also served a medicinal and therapeutic purpose. Interestingly, concepts that modern Western societies now embrace – such as the use of nutraceuticals over pharmaceuticals – were already understand and practiced by ancient Sri Lankans centuries ago. Historical sources indicate that this was supported by a well – established body of traditional knowledge within the community.

Various types of herbal porridges, grain – based porridges, mallum (leafy green preparations), grains, and root vegetables were all extensions of the indigenous medical system. In addition, a wide variety of locally grown fruits were also regularly consumed as part of the daily diet, complementary this holistic nutritional approach.

Traditional medicine in Sri Lanka discusses three root causes of illness that can affect both physical and mental well – being. This body of knowledge also recognizes the intricate relationship between these causes and various types of food. As a result, the ancients were highly mindful in designing their daily diets to avoid aggravating such conditions. Moreover, historical evidence suggests that they possessed a clear understanding of food – related allergic reactions and food poisoning, further demonstrating the depth of their nutritional awareness.

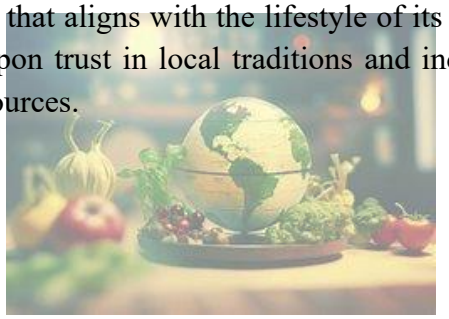
Given this context, Sri Lanka was by no means a nation of unsafe or food – insecure conditions. In fact, historical records such as the Mahawansa refer to the island as the “Granary of the East” highlighting its abundance and food self – sufficiency.

Is Sri Lanka truly a country that should suffer from unsafe food or food shortages? Absolutely not. With a highly literate population and a wide array of educational institutions offering qualifications in food science and technology – from certificate level to doctoral degrees – there exists both the knowledge and the capacity to reduce or even eliminate the production of unsafe or unhealthy food



Furthermore, even today, Sri Lanka is home to a rich diversity of indigenous seeds, plant varieties and crops. Combined with a culture rooted in generosity and sharing, this positions the country with the potential to overcome food insecurity and achieve sustainable food sovereignly.

What is required for this information is the active and informed participation of all stakeholders in the food production process, driven by a series of national responsibility. It calls for collective action rooted in positive, community – oriented attitudes, with both the government and private sector working in unison. Furthermore, modern Sri Lanka must aim to develop a food culture and dietary pattern that aligns with the lifestyle of its people – built upon trust in local traditions and indigenous food sources.



This means reimagining our abundant yet underutilized agricultural outputs – into alongside our natural plant and animal resources – into diverse, value – added food products using advanced technological methods. We already possess the resources needed, what is required now is genuine leadership and committed involvement. Until that happens, we remain a nation vulnerable to unsafe food and food insecurity. The choice is in your hands.

Viraj Jonikkuhewa
Lecturer (Food Technology)

Lotus Root String Hoppers Flour

U. Sanduni Ishara

0762820484

This research was conducted to the develop string hoppers using lotus root flour. That will be provide delicious food for the consumer. Lotus root (*Nelumbo nucifera*) is main ingredient used for this study.

Lotus root (*Nelumbo nucifera Gerth*, Family *Nymphaeaceae*) a perennial aquatic crop. It is rich in nutrients such as good carbohydrates, Fiber, vitamins and minerals, making it a great addition to a healthy diet.

This product was produced using several processing methods to the ensure the quality and safety of the product. Fresh raw materials were collected from the supermarket and lake. Clean the raw materials and dried in dryer. After that these dried raw materials are powdered by grinder. Lotus root flour is mixed with warm water and steamed. After that final product can be get.

Lotus roots (*Nelumbo nucifera*) are readily available raw material in Sri Lanka. However, their consumption is minimal. Therefore, lotus roots are wasted a lot. Due to these reasons this product is being introduced to the market as a new product.

After the processing of the product sensory evaluation was conducted to identify the most suitable sample and test analysing was done. This product very delicious and easy to cook to consumer.

CINNAMON FLAVOURED EDIBLE STRAW

R. R. M. G. R. S. Weerasinghe

HND in Food Technology

A study has been conducted to produce a cinnamon-flavoured straw using cinnamon powder. The purpose is to produce straw to drink hot drinks with a unique experience for customers. Cinnamon powder, corn flour, and sugar, are the main ingredients used for this study.

Cinnamon is one of the oldest spices known to humankind and is used in culinary and traditional medicine practices. Cinnamon has been used for centuries, as flavour modifiers to make food more palatable.

The ingredients were cleaned to ensure product quality and safety. Then mixing, sheeting, and forming. After that drying of products using laboratory dryer, followed by packaging.

The sensory evaluation was made to identify the best sample. Also, this product can be used as a solution to plastic pollution. it provides a sustainable and biodegradable substitute for plastic utensils, so immediately addressing the environmental threat posed by them. The thesis seeks to reduce plastic pollution in line with global sustainability goals by substituting edible straw made from locally produced cinnamon for plastic ones Making edible straw could boost rural economy and encourage sustainable farming practices by expanding the applications of cinnamon and producing a high-quality product. The research aims to provide a biodegradable and environmentally responsible solution that is in line with global sustainability goals by designing and making an edible straw out of cinnamon. The objective also includes exploring the potential socio-economic benefits of this innovation, such as providing additional value to the agricultural sector, creating new opportunities for local farmers, and promoting sustainable practices within the food industry.

Jackfruit Flour Biscuits with Spicy Flavour

Thanushi Nimnamatheesha
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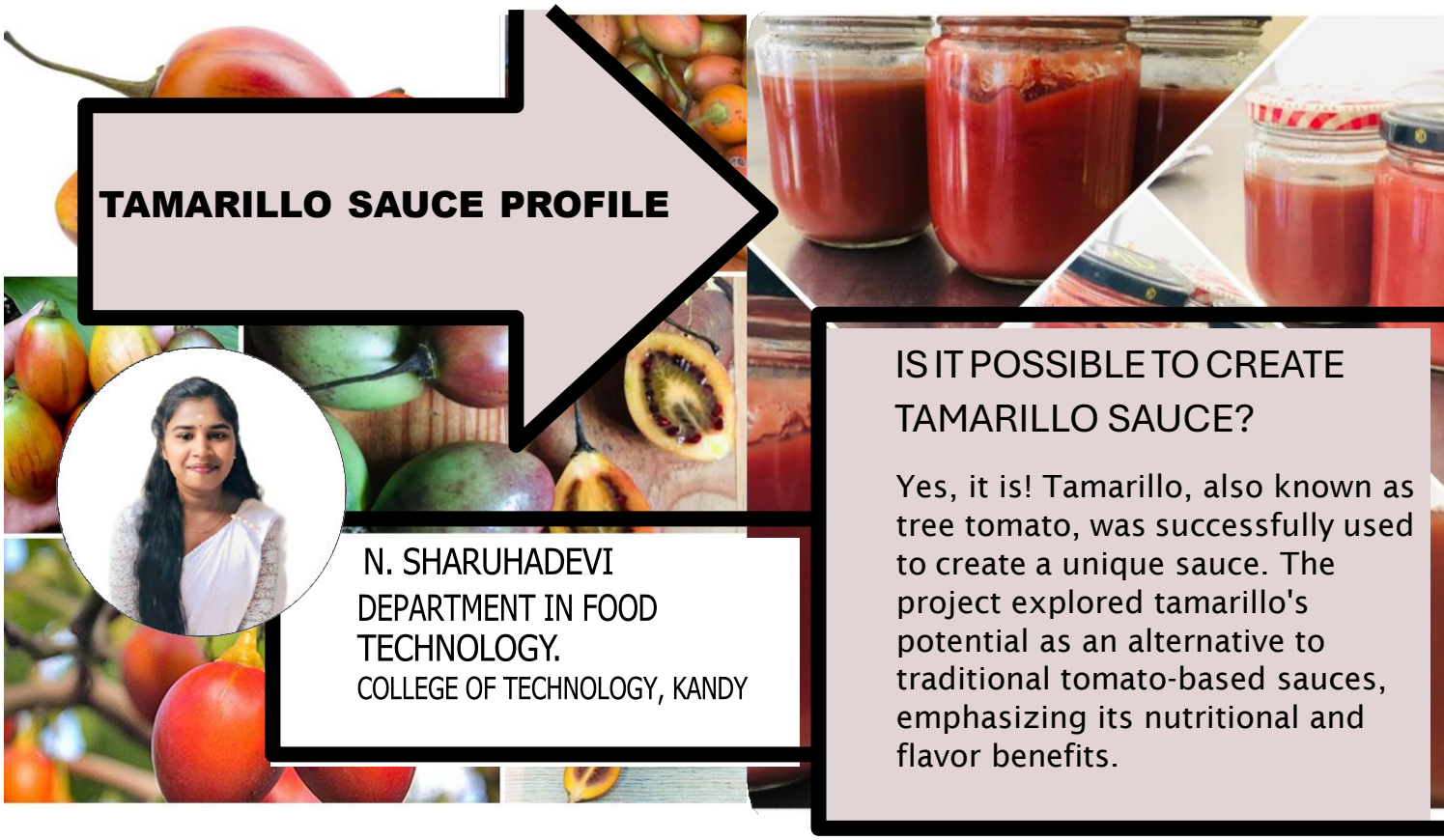
College of Technology Kandy

I have successfully created a spicy biscuit using jackfruit bulb (flesh) flour. This product will provide high nutritive value for the consumer. Jackfruit bulb flour is the main ingredient used for this study. Additionally, chili powder was added to the get the spicy flavour.

The Jackfruits are species of "Artocarpus Heterophyllus". Jackfruit has a considerable nutritive value including Carbohydrate, Protein, Fat, Minerals, Calcium, Vitamins, and Carotene. Also, it is a rich source of phenolic compounds including flavonoids. Because of these important nutritional values in jackfruit, can introduce this is a very nutritious food for consumers.

These biscuits were produced using several processing methods to ensure the quality and safety of the product. Firstly, Fresh quality jackfruits were selected and were cleaned thoroughly. Then cut into small pieces, blanching, drying, grinding was done and made the jackfruit flour. This jackfruit flour was added in to the other ingredients and mixed, dough prepared and cut into desired shape then was baked in the oven according to a specified temperature and biscuits were made. Later, the biscuits were packed well.

After the sensory evaluation was conducted to select the most suitable sample after the process of making product. This product based on jackfruit flour can be consumed anywhere, anytime as a convenience food regardless of age group, so this product is more useful for consumers and thus has the potential to increase the use of jackfruit. Also, as a ready to eat product, it is a very useful product in the busy world. The reason is that it can reduce the time wastage in the cooking process or any other process.



TAMARILLO SAUCE PROFILE

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IS IT POSSIBLE TO CREATE TAMARILLO SAUCE?

Yes, it is! Tamarillo, also known as tree tomato, was successfully used to create a unique sauce. The project explored tamarillo's potential as an alternative to traditional tomato-based sauces, emphasizing its nutritional and flavor benefits.

WHAT IS THE REQUIREMENT FOR TAMARILLO SAUCE?

Tamarillo Sauce demand is rising due to its tangy taste, high antioxidant content, and its appeal to health-conscious consumers. Sri Lanka has the potential to develop a unique tamarillo-based sauce for both domestic and international markets.
Key requirements include quality tamarillo fruit, proper formulation techniques, ensuring flavor consistency, and maintaining nutritional value during production.

HOW IS TAMARILLO SAUCE MADE?

Ingredients Used:

- Tamarillo pulp, sugar, salt, vinegar, corn starch, and various spices.
- The process includes mixing the tamarillo pulp with sugar, salt, vinegar, and corn starch to achieve the right consistency and flavour.
- The sauce is carefully monitored for its Brix level, pH, and acidity to ensure it is within safe and desirable ranges

NUTRITIONAL PROFILE

- Tamarillo sauce is rich in antioxidants, vitamins (A, C), and Fiber, which makes it a healthy alternative to traditional sauces.
- It provides essential vitamin C, which supports immune function, and dietary Fiber to aid digestion.
- Tamarillo contains polyphenolic compounds, contributing to its antioxidant properties and offering potential anti-inflammatory benefits.

NUTRITIONAL PROFILE

-The tamarillo sauce demonstrated an ideal tangy taste, with a smooth texture and consistent viscosity.

- The nutritional value was retained throughout the production process, offering a healthier option compared to conventional tomato sauces.
- The sauce had a balanced acidity, making it stable and safe for storage and use.

Cereal Based Cocoa Flavoured Beverage

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Cereals are the main raw material for produce varies types of food products such as beverages, flours, etc. cereals are grain like food developed from grass family called Gramineae. They are highly rich in carbohydrates, protein, dietary Fiber. And also they have small amount of fat as well.

Why we need beverage?

We need beverage especially water to maintain hydration for nutrition transport and body temperature control.

Considering about the beverage that combination of water and the cereals much more effective than the other kind of a beverage.

INGREDIENTS

Corn
Oats
Rice
Sorbitol
CMC
Water
Cocoa powder

How was it made?

beverage was produced using several processing methods to ensure the quality and safety of the product. Fresh raw materials were collected from the market and inspect the quality of the product. Then cereals were cleaned and blanching, drying, roasting and grinding were done in order. Powdered cereal and other ingredients were added separately to the pan in water bath at the pasteurization temperature. Then allowed to cool for blending. Final products were added into bottles and keep in refrigerate.

Key Benefits

This product is very useful for instant usage in busy world. That reduce the time wastage for the cooking or any other processes to consume the cereals.it also may give more carbohydrates and proteins. Therefore, that causes to produce the energy of the body.

Soursop Flour Biscuit

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New Snack Idea

With the growing demand for nutrients rich and natural food products, the need for innovative baking solution higher than ever.one such revolutionary products soursop flour biscuits, a perfect blend of health benefits and delightful taste. This product aims to introduce a gluten free, antioxidants rich and flavourful alternative for the traditional biscuits.

Ingredients

Soursop flour

Wheat flour

Eggs

Curry leaves

Water

Butter

Salt

Baking powder

About Soursop Flour Biscuit

Soursop flour biscuit provides a light crispy texture with mild tropical flavour, making them ideal choice for both health-conscious consumers and snack lovers.

Advantages of use of soursop flour biscuit

Gluten free and Rich in dietary Fiber

Alternative for the refined flour-based snacks.

Importance of soursop flour in food production

Soursop has been used in traditional medicine and culinary practices for centuries due to its exceptional health benefits when process into flour its open new doors for the food industry. offering unique nutritional and commercial advantages

Process Of Making Soursop Flour Biscuit

Selecting high quality soursop fruits .

Cutting the slices and drying it carefully.

Grind to obtain flour.

Mixing the flour with other ingredients to make biscuit dough.

Sheeting and cut into suitable shape.

Baking and packaging.

HISTORY, PRESENT STATUS AND FUTURE PROSPECTS OF FOOD PROCESSING INDUSTRY IN SRI LANKA

S. Ekanayake

Former Head - Food Research Unit, Deputy Director (Research) - Horticultural Crops Research and Development Institute- Department of Agriculture, Member - Board of Study Food Science and Technology - Post Graduate Institute of Agriculture- University of Peradeniya, Visiting Lecturer - Food Technology in the College of Technology, Aruppola, Kandy.

Food science and technology a field that include the application of modern science and engineering in the production, processing, preservation and utilization of food. Food Scientists are responsible in seeing that the crop harvested, fish caught, animal slaughter, eggs laid, and milk produced reach the consumer in most acceptable, nutritious, safe and in wholesome.

Development of food science and technology accelerated during the twentieth century, around the world and most of the advanced technologies were initiated by the developed world. These technologies were transferred to developing countries in later part of the twentieth century. In Sri Lanka, factory scale fruit processing was established in 1956 at Narahenpita by the marketing department. An important development of the fruit processing industry in Sri Lanka was the growth of the passion fruit juice processing industry which began in the early seventies, at Attanagalla. In 1980's few processing factories were setup around the country. There is an agro food technological division of the Industrial Technological Institute (ITI) formerly CISIR which has several qualified and experience food technologists are available to undertake product development and improvement, product testing, training, consultancy and troubleshooting for the food processing industry. It has a strong post-harvest technology group in this division which concentrate on postharvest aspects of fruit and vegetable.

The Export Development Board is available for assistance in exporting fresh and agro based food products. Sri Lanka standards and equipped with food quality testing laboratory. In 1960's food technology division was established in Central Agricultural Research Institute (CARI), Gannoruwa for product development research for agricultural food commodities and quality testing.

In 1976 Soyabean Food Research Centre was established by USAID project. This unit consists of pilot plant, analytical laboratory, training facilities for soya bean processing. This centre catered the introducing many soya bean food products at cottage level and at industrial scale. It also carried out island wide demonstration programmes. In the year 1995 this centre was amalgamated with food technology division CARI and renamed as Food Research Unit (FRU) due to the lack of soyabean crop in Sri Lanka. Presently this unit carries out quality testing of agro based products, agro food product development research, postharvest technology research, food processing training programmes for extension officers and food processors apart from this unit there are four institute conducting food processing training at Fruit Research and Development Institute (FRDI) Horana, Field Crop Research and Development Institute (FCRDI) Mahailluppallama, In-service Training Institute (ISTI) Gannoruwa, and In service Training Institute (ISIT) Angunakolapalassa. Rice Research and Development Institute (RRSI) Bathalagoda looks after rice processing and quality evaluation programmes.

There is an institute located in Anuradhapura named Institute of Post-Harvest Technology (IPHI) under the Ministry of Agriculture, which provides post-harvest research and training on cereals, Fruit and Vegetable.

A "CATHYRICH" memorial food processing training centre was established in 1992 at Embilipitiya, undertaking food processing training programmes controlled by an independent board.

Food Science Education

Food science education programme has played a key role in the development of food industry in Sri Lanka. Initially, in the sixties, there were no facilities for training food scientists and technologists in the country and personal from the government and private factories were sent for training abroad specially to the United Kingdom, Australia and India on various schemes. The first food science course in Sri Lanka stored in 1967 at Vidyodaya University (now University of Sri Jayawardhanapura) where a post graduate diploma in food science was established in the department of zoology. It continues in the department of chemistry. The Institute of Chemistry Ceylon started Laboratory Technicians Certificate Course (LTCC) in 1973 with food chemistry as one specialization. In Peradeniya University the Post Graduate Institute of Agriculture (PGIA) began a food science and Technology elective as part of M.Sc. (Agriculture Chemistry) degree in 1977.

In the eighties, Food science education programmes grew in numbers and popularity. The Post Graduate Diploma in Food Science of the University of Sri Jayawardhanapura was upgrade to a Master's degree in food science and technology in 1988. The Post Graduate Institute of Agriculture (PGIA) now awards master's degree in food science and technology and doctoral degree too. In addition, the University of Kelaniya, University of Peradeniya, University of Sabaragamuwa, University of Uva Wellassa, University of Jaffna, Eastern University and University of Ruhuna conduct B.Sc. degree courses on food science and technology. Post Graduate Institute of Science (PGIS) was also conducted post-harvest technology degree programmes.

Higher National Diploma (HND) in Food Technology, fruit and vegetable processor, baker courses started in few technical collages giving educational and training for many numbers of students. Teaching panels in these collages are having well educational background and years of experience in the field of food science and technology. It is also noted that the present trend of food processing industrialists, realizing the importance and value of employing trained food technologists.

Future Prospects

It is observed that Sri Lanka manufactures quite good quantities of processed food products such as canned fruit and vegetables, dehydrated vegetables, Jams, source, coconut food products and spices for both local and export markets. Though it is so the quality standards of dehydrated vegetables are not adequate to cater the foreign market, due to lack of sophisticated dryers. Freeze drying is a novel technology used to produce high quality dehydrated fruit and vegetables. It is time to adopt this technology in this country to produce superior quality product, so that it can be exported easily and earn foreign exchange.

Unfortunately, though we are having lots of tropical fruits such as mango, pineapple, passion fruit, papaya, wood apple, Annona etc. We do not manufacture fruit juice concentrate which is what is required to satisfy the international market. A falling film evaporator with a finisher and vacuum coolers could be used to manufacture fruit juice concentrates. It is interesting to note that though Sri Lanka produce mango, pineapple, passion fruit, wood apple food products, we are not utilized underutilized fruit and vegetable in this country. Underutilized fruit and vegetables contained lots of antioxidants. By consuming underutilized fruit and vegetables improve the health conditions of consumers. It is well known that these products have good export market because of most of these crops naturally organic grown in forest and home gardens. It is noted that product development research programmes are necessary to manufacture food products out of there food commodities.

A major constraint faced by the food processing industry is the lack of packaging materials and equipment. Proper packaging is essential to keep the product safe and for attraction. In Sri Lanka these materials are so expensive; hence cottage and medium level entrepreneurs cannot bear the packaging cost. Many are recent to manufacture food products although they are having the technology. To overcome this important situation government should support by giving subsidiary assistance for food processors.

Unlike developed counties and some Asian counties Sri Lanka do not manufacture animal-based food products to cater the demand of the consumers. We have limited numbers of animal or poultry farms in our country. Animal based food products are very expensive many cannot afford the product prices. To overcome this problem large scale or medium scale animal farms should be established.

Food festivals are not new in the developer's world. These festivals are performed yearly in countries where fruit and vegetables are produced in plenty. Some of the examples are Tomato, Grapes, Orange, Broccoli, melon, pineapple, apple. Sri Lanka do not perform food festivals due to lack of such a culture. Our neighbouring India conducts jack fruit festivals in recent years though they are for behind the jack food-based products compared to our country in the last decade. By conducting fruit and vegetable festivals we can promote our food products locally and to the foreign market there by encouraging consumers to utilized new food products.

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HIGHER NATIONAL DIPLOMA IN FOOD TECHNOLOGY
COLLEGE OF TECHNOLOGY KANDY

Spicy Rice Milk Mayonnaise

Mayonnaise is a creamy, versatile condiment commonly used as a spread, dip, or dressing traditionally made from egg yolks, oil, vinegar, spices. This research was conducted to develop alternative egg-based mayonnaise using rice milk.

Rice milk is a main ingredient of the product and additionally vegetable oil, mustered cream, pepper, salt, vinegar, sugar, soya flour was added.

As the demand for vegan and sustainable food products rises, this unique mayo variation is making waves in a culinary world.

Methodology

In a blender, combine rice milk, mustered and vinegar. slowly drizzle in the oil while blundering on low speed. additionally added sugar salt and pepper and soya flour

Special Benefits

This mayonnaise was made out as a vegan profile food product. And it can be easily made using ingredients that are commonly found in Sri Lanka.

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Higher national diploma in food technology
College of technology Kandy

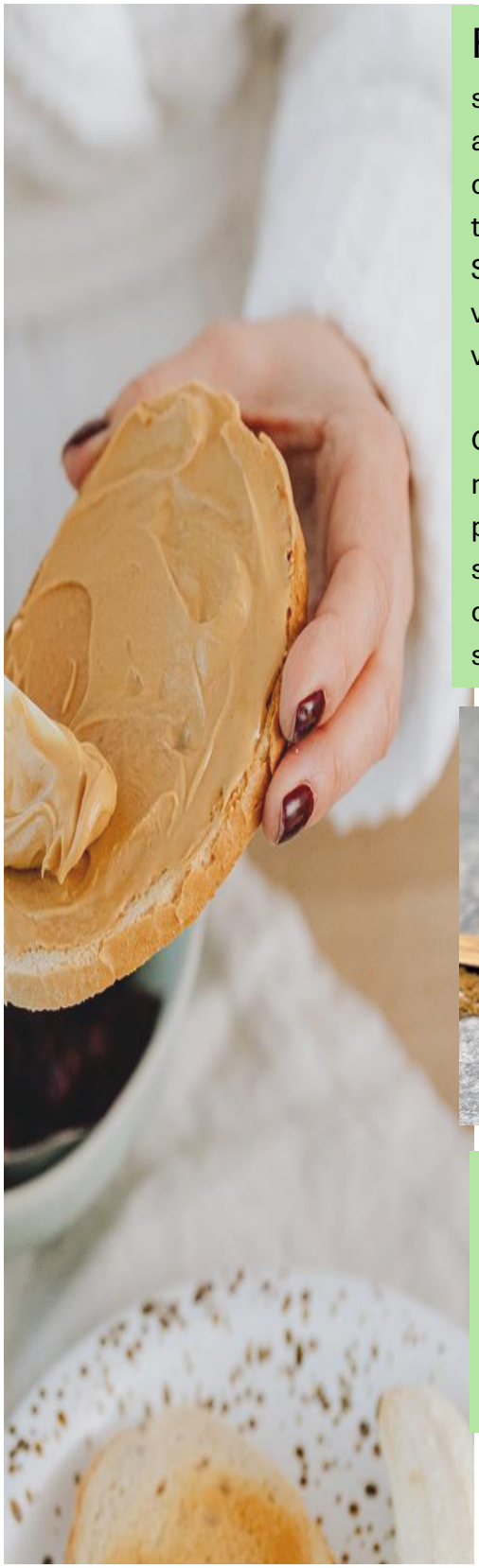
Spicy Barley Biscuits

Consumers today are more conscious about their food choices, prioritizing health benefits and sensory appeal. Baked products like biscuits and cakes, typically made from refined wheat flour, have low protein content and can cause gluten allergies in some individuals. Additionally, refining wheat flour results in the loss of essential nutrients.

Barley (*Hordeum vulgare*) is a nutrient-rich cereal containing minerals like calcium, zinc, iron, potassium, phosphorus, and magnesium, which contribute to bone health and muscle function. Despite being widely cultivated, barley is not commonly consumed in its whole form. Various barley-based food products exist globally, including tea, drinks, soups, porridge, pudding, sausages, and bread. In Sri Lanka, barley is primarily consumed as porridge or drinks, which require lengthy preparation.

Biscuits, being a ready-to-eat product, offer a convenient solution. Many Sri Lankans enjoy spicy flavours, and spices not only enhance taste but also have antimicrobial properties, preventing the growth of pathogens. Incorporating barley into spiced biscuits could provide consumers with a nutritious and flavourful option while making barley consumption easier and more appealing.

A Spicy Spread Using Corn Cob



Food Spreads are soft, creamy or semi-solid foods that can be applied to crackers, breads and or other foods to enhance flavour and texture. They can be sweet or Savory. Spreads are made from various ingredients, including fruits, vegetables, dairy, nuts or oils.

Corn cob spread is a food product made by processing the soft inner part of the corn cob into a paste or spreadable form. It is often combined with ingredients like spices and oils to enhance flavour.

Corn Cob spread is rich in nutrients like Carbohydrates, Vitamin B, Vitamin C, proteins and fats. Specially added spices provide the safety of consumer by antioxidants activation

Methodology

The soft inner part of the corn cob is separated and cleaned. The parts are blended and heated while adding spices like chillies, pepper, cinnamon, garlic, c loves and cardamom to enhance the taste and colour. The specific amount of corn flour is added as the thickening agent and stirred until the smooth texture is obtained. The heating process accomplishes the preservation of spread until the filling and cooling process. The most suitable storage condition is chilling conditions until consuming the spread.

Created By
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Biodegradable Yoghurt Spoon using Banana Peel and Paddy Husk

The Need for Change plastic waste has become an alarming environmental crisis, with single use plastics such as spoons significantly contributing to pollution. Every year, millions of plastic utensils end up in landfills and oceans. Taking centuries to decompose. In response to this pressing issue, an innovative and eco-conscious solution has emerged the biodegradable spoon, crafted from natural, sustainable materials

Introducing A Greener Alternative this groundbreaking Biodegradable spoon is made from dried banana peels and rice husk, two widely available and underutilized natural resources. Designed as a sustainable alternative to plastic cutlery, it is 100% eco-friendly, non-toxic and decomposes naturally, leaving zero harmful residues behind.

JOIN THE GREEN REVOLUTION!

Switching to biodegradable spoons is a small but impactful step toward a cleaner planet. Whether for personal use or as part of a business initiative, adopting this eco-friendly alternative supports sustainability efforts and reduces plastic dependency.

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Switching to biodegradable spoons is a small but impactful step toward a cleaner planet. Whether for personal use or as part of a business initiative, adopting this eco-friendly alternative supports sustainability efforts and reduces plastic dependency.

How it's made!

Drying banana peels to remove moisture. These are then finely ground and blended with rice husk powder to create a durable material. The mixture is moulded into spoon shapes and heated to ensure strength and stability. After thorough quality inspection, the spoons are packaged and ready for use.

DATE SPREAD WITH TASTE OF SPICES

by, Chandana Jinanjalee Herath
Department of Food Technology - College of Technology, Kandy

DOES THE SPICES ARE MATCH WITH DARE TASTE?

Yes, the taste of spices is clearly match with the taste of the date.

In the part of my research study in my Higher National Diploma, I have successfully created a '' Spiced Date Spread ''This involved smoothly grinded date paste as natural sweetener, Orange fleshed sweet potato for incensement for the spared ability and variety of many spices like cinnamon and ginger and citric acid for enhance the acidic flavour as lime.

WHAT IS REQUIREMENT FOR SPICED DATE SPREAD?

The demand for spiced date spread in Sri Lanka is gradually increasing due to factors such as rising health consciousness and growth of plant-based diets which is significant vegetarian and vegan population. Dates are not easily available in Sri Lanka and the price is very high, so eating dates is not motivated but these are easy to eat through this product.

Sweet potato is traditional crop in Sri Lanka and grown mainly in the wet and intermediate zones therefore, Orange Fleshed Sweet Potato can be easily procured. And, according to Sri Lankan whether, the growth of spices is very good and their availability is very high at different time of the year, so it is very easy to get spices for the product.

HOW IT MAKES?

Spiced date spread is made from combination of different type plant-based ingredients.

Key ingredients are Dates, Orange fleshed sweet potato, ginger, cinnamon and citric acid.

Firstly, raw materials are collected from the market and inspect the quality of the product. The dates and OFSP are cleaned and blanch firstly. And grinding mixing were in order Mixed Spread paste added to the water bath or use double boil method for pasteurization and the allowed to cool for adding citric acid. Final product added to the glass bottles and keep in refrigerator.

NUTRITIONAL PROFILE

The major components of the dates are Carbohydrates and natural sugars.

Dates are also good source of Fiber, vitamins and minerals (Mg, Cu, K) and it has antioxidant and antimutagenic properties. they are cholesterol free.

In Orange Fleshed sweet potato has lots of Carbohydrates it has dietary Fiber value with high moisture and low level of lipids. there protein level is 0.5 -2.2 % and it has high vitamin level (K Ca, Mg, Na, P, iron)

The spices act as Antimicrobial and antioxidant properties.

This product help to reduce the risk of heart disease, supported to the brain function, increase the bone health, help to digestion in human body

THROUGH THIS PRODUCT, YOU CAN COMBINE THE TASTE OF SPICES WITH DATES AND IN ADDITION TO THE DELICIOUS TASTE, YOU CAN ADD QUALITY TO THE MEAL THROUGH THE NUTRIENTS IT CONTAINS.

Best wishes from the Author

SENARATH EKANAYAKE

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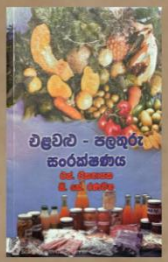

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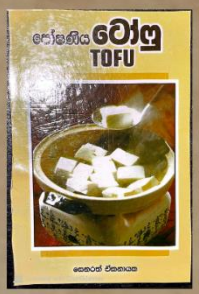

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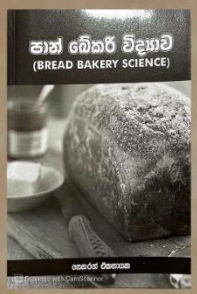

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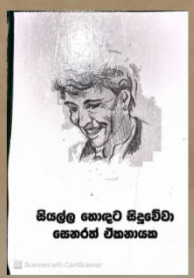

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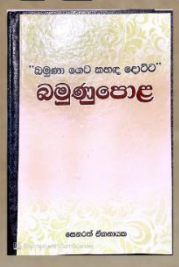

A Frozen Dessert Using Palmyra Pulp

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Borassus flabellifer was recognized as an Asian variety of palm. It was underutilized. Palmyra was classified under the family Aceraceae. The focus was to develop a nutritionally enriched and flavor rich palmyra pulp frozen dessert by incorporating selected ingredients. Efforts were directed towards processing palmyra pulp into value-added products to broaden the utilization of palmyra fruit pulp. Various techniques were employed to optimize the nutritional profile and enhance the flavor characteristics of the product. While ensuring the sustainability of palmyra pulp. Sensory evaluation tests were carried out with 25 panelists. The most preferred sample was revealed in the initial sensory evaluation on test results. A product with a high level of sugar incorporation was identified as the best output option for the selected frozen dessert. Research has been conducted to explore innovative ways to process and preserve the pulp, thereby brooding its utilization and providing an alternative to conventional dessert. Frozen dessert was developed without adding chemical preservatives. Keywords: Borassus flabellifer, Aceraceae, Frozen dessert.

Durian Seed Flour Biscuit

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Biscuit is a popular food product where it is producer using flour, sugar and fat as its main ingredients. The durian is a most famous fruits in the word due to it unique aroma and test. They are rich source of durian seed flour carbohydrate, protein, fat vitamin C, calcium, iron and higher starch and Fiber as well.

Ingredients

- Durian seed flour
- Wheat Flour
- Corn starch
- Sugar
- Butter
- Salt
- Baking Powder
- Water

How It's Was Made

Firstly, quality of the durian seed selected. Then cleaned and soaking, blanching, peeling, cutting, drying and grinding ware done the flour. Mix durian seed flour and other ingredient and make a dough and cut biscuits using a biscuit cutter. Biscuit is backed, one cooled, put, the biscuit in the package and seal

Key Benefits

Biscuit is ready to eat product; through this product the amount of the wasted durian seeds is reduced while a nutritionally rich and health beneficial product is also created.

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Collage of Technology Kandy

Developing a cookies By Incorperating Kithul Flour

This research was conducted to developing a cookie by incorporating kithul flour.

That will be provide Beneficial ready-to-eat product for the customer. Kithul flour is the main ingredients used for this study.

Nutritional Profile

Kithul flour is rich source of carbohydrates and minerals. Kithul flour has a body cooling properties, lowering blood sugar level, reducing appetite and improving digestion. According to Sri Lanka Ayurveda, It reduces headache and high blood pressure.

What is requirement of kithul flour cookies?

Although Kithul flour has many medicinal values, kithul flour is still not used for industrial applications in Sri Lanka. It is not consumed yet. The reason for lack use is some time-consuming processing must be done to eat it. For these reasons even people need to use kithul flour, do not used it. Therefore, if kithul flour is incorporated into cookies, it can be easily eaten by people. As consequently medicinal properties and unique taste can be easily accessed. This will increase the use of kithul flour and increase the income and economic level of kithul flour producers.

How it makes?

Firstly, good quality Kithul flour and other raw materials were selected and measured. After the mixed it well. Then that dough stored at refrigerator. After cooling, cookies are baked. Once cooled, put the cookies in the packages and seal

Benefits for the consumer and the industry

Making the taste easily accessible to any consumer who is busy or who likes the taste of kithul, Introducing and marketing nutritious, delicious products as an industry using local quality ingredients can increase the value of the company and achieve good economic benefits for the industry, and can introduce the local taste to the foreign market and gain high recognition.

Turn Your Idea into a Right:
How to Patent in Food Technology

Innovation in food technology is blooming, especially among students and young professionals. From creative ways to preserve food to exciting new packaging formats, many bright minds are developing ideas that could truly transform the food industry. But there's a crucial step that often goes overlooked-**protecting those ideas**. Without proper legal protection, even the most brilliant innovation can be used by someone else. That's why understanding how to patent your invention is so important. This article is a friendly and practical guide for students and early-career food technologists on how to secure their intellectual property in Sri Lanka.

What Is Patentable in Food Technology?

Not every good idea can be patented, but many inventions in food technology can. To qualify for a patent, your idea must be:

- **Novel** – It must be new and not publicly known anywhere in the world.
- **Not obvious** – It should not be a simple or expected improvement of something already known in the field.
- **Industrially applicable** – It should be something that can be made or used in industry.

In food tech, this might include a new type of food product (like a plant-based meat alternative), an innovative preservation method (such as vacuum-infused dehydration), smart packaging solutions, or even new equipment designed to streamline processing.

What Cannot Be Patented

Some things are off-limits for patents. Natural substances as they are found in nature, basic ideas or abstract concepts, and inventions that have already been made public (even in a classroom presentation or report) generally cannot be patented. Also, if your recipe is just a mix of common ingredients in the usual way, it may not qualify unless it involves a truly novel method or result.

Understanding Intellectual Property (IP)

Patents are just one type of intellectual property. You might also consider:

- **Trademarks** – To protect brand names, logos, or slogans.
- **Copyrights** – For written reports, packaging artwork, or digital content.

As a food innovator, you're most likely to benefit from **utility patents** (for methods, formulations, or processes) and **design patents** (for equipment or packaging designs).

Steps Toward Getting a Patent in Sri Lanka

The journey to getting a patent starts with **keeping good records**. Keep a notebook or digital file with all your development work-dates, drawings, trial results, and so on. This is your proof that you created the invention.
Next, do a **prior art search**. Use websites like Google Patents or the WIPO database to check if similar ideas already exist.
Then, prepare your patent application. The National Intellectual Property Office of Sri Lanka (NIPO) provides forms and instructions at www.nipo.gov.lk. You can file either a **provisional patent** (to hold your place while still developing the idea) or a **complete application**. The application includes a title, abstract, full description, claims (what exactly you're protecting), and drawings.

Once prepared, submit your application to **NIPO** at No. 3, Gregory's Road, Colombo 07. You can also contact them at +94 11 2685 844. If your application passes review, it will be published in the IP Gazette. There's a short period during which objections can be made. If none are raised-or none succeed-your patent will be granted. Patents in Sri Lanka are valid for **20 years**, with an annual renewal fee.

Local Support for Student Innovators

Besides NIPO, some universities in Sri Lanka have Technology Transfer Offices (TTOs) or Innovation Cells that support students in filing patents. For example, the Coordinating Secretariat for Science, Technology and Innovation (COSTI) and the **Sri Lanka Inventors Commission (SLIC)** have been involved in helping inventors understand and register their innovations. You can also reach out to professional patent agents, or get support from your college lecturers, who may guide or connect you with legal professionals.

Helpful Tips for Students

- Keep your invention secret until it's filed. That includes avoiding public presentations, social media posts, or publishing details in reports.
- Speak to a lecturer or trusted advisor if you're unsure about the patenting process.
- If you're still improving your idea, consider starting with a **provisional patent**.
- Patent agents or IP professionals can help you write strong "claims" that properly protect your invention.

A Word of Encouragement

As someone working in food technology, you are part of a future-facing, solution-driven field. Whether you're making a new healthy drink, developing sustainable packaging, or creating a faster process for drying herbs, your work matters. Don't let your effort be copied or go unrecognized. Think like an innovator, act like a professional, and protect your idea with a patent.

By: G. R. P. K. Perera, Lecturer, CoT, Kandy

Fueling Your Day with Instant Porridge

A Healthy Mix of Orange Sweet Potato and Grains

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College Of Technology Kandy

Instant Porridge Powder – a nutritious and convenient blend of orange sweet potatoes and grains like rice, soya, cowpea, chickpea, and corn. Perfect for all ages, it offers a quick, affordable, and health-packed meal, whether as a breakfast or snack. Healthy living made easy!

Healthy and balanced meal packed with vitamins, minerals, fiber, and plant-based protein.

This Instant Porridge Powder provides a nutritious, quick-to-prepare meal option. It's rich in vitamins, minerals, proteins, and dietary fiber, contributing to a balanced and healthy diet. It supports digestive health, boosts the immune system, and provides sustained energy throughout the day.

Benefits of consumer and manufacturing industry

The product presents a significant opportunity for food manufacturers to tap into the growing demand for convenient, health-oriented food products. By utilizing locally sourced ingredients, it also supports local agriculture, promoting sustainability and boosting the regional economy.

It looks like..

The physical profile of Instant Porridge Powder features a fine, smooth texture with a light golden or beige color, reflecting its blend of orange sweet potatoes, rice, and other grains. The powder is uniform, soft, and easy to dissolve in water or milk, ensuring a smooth consistency when prepared. It is finely milled to prevent clumping and provide quick, even preparation. The product is packaged in airtight, moisture-proof containers to preserve freshness and maintain consistency throughout its shelf life.

Soup Mix

Using Dehydrated Vegetables

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Introduction

Dehydrated vegetables have been widely used in food processing due to their ability to maintain nutritional value over extended periods without refrigeration. These vegetables retain their essential vitamins, minerals, and Fiber, which can otherwise be lost in fresh vegetables during the long shelf life. Dehydrated vegetable soup mixes provide a quick and convenient solution for consumers, offering both time savings and health benefits. This study aimed to formulate a dehydrated vegetable soup mix and analyses its performance based on several key parameters.

Methodology

The dehydrated vegetables were cut into small granules, and the necessary seasonings were separately packaged and then the mixture was packaged in moisture proof airtight packaging

Consumer benefits

The results indicate that dehydrated vegetables are an effective means of preserving nutrients while maintaining high-quality sensory properties. The mix's ease of preparation, combined with its nutritional benefits, makes it an ideal product for busy consumers who seek healthy, time-saving meal options. However, variations in texture and flavour may occur depending on the dehydration method used. Freeze-dried vegetables, for example, retained more flavour and texture compared to air-dried ones. Moreover, further improvements in seasoning proportions could enhance flavour profiles to suit a broader range of consumer preferences.

The development of dehydrated vegetable soup mixes using dehydrated vegetables proves to be a viable solution for creating convenient, nutritious, and shelf-stable food products. The nutritional analysis and sensory evaluation indicate that these mixes can effectively meet consumer demands for healthy and easy-to-prepare meals. Future research may focus on optimizing the formulation and packaging to further improve taste and extend shelf life.

This research supports the growing demand for convenient and nutritious food solutions, highlighting the significant potential of dehydrated vegetable soup mixes.

PALMYRA TUBER FLOUR BASED EDIBLE STRAW

S. Shankavi

Plastic is the third highest source of waste in the world. After food and paper wastes which constitute a global environmental problem. That can impact human health since it is difficult to recycle. Edible straws are intended to be a sustainable replacement for single use plastic straws. In this study palmyra tuber flour is used as a main ingredient for making edible straw

What is Palmyra tuber flour?

Palmyra tuber flour is a flour made from the tubers of the Palmyra palm tree (Borassus flabellifer).Which is commonly found in tropical regions of Asia and Africa. This tubers of this palm are starchy and can be processed into flour, which has a variety of uses in cooking and baking. Palmyra tuber flour contains unpleasant bitterness. Since the bitter principle is water soluble, it can be easily removed from the tuber flour unlike in the fruit pulp.

Why use palmyra tuber flour in edible straw ?

Nutritional Value: Palmyra tuber flour is rich in carbohydrates and dietary fiber. It may also contain vitamins and minerals, making it a nutritious option for various recipes.

Unique Flavor: The natural flavor of palmyra tuber flour can enhance the taste of beverages, offering a unique and enjoyable drinking experience.

Durability: When properly made, palmyra tuber flour straws can be durable enough to hold up in liquids without becoming soggy too quickly.

Gluten-Free: This flour is naturally gluten-free, making it suitable for people with gluten sensitivities or celiac disease.

How it makes?

Palmyra tuber flour, wheat flour, corn flour, sugar, salt, vanilla flavor, gelatin are the main ingredients used for this study. Raw materials and ingredients were selected and weighed properly. All ingredients were introduced to mixing, kneading, resting, dough rolling, dough flattening, molding and baking.

G.NISHANTHINI

PUMPKIN POWDER COOKIES

Icarried out this study to create a functional cookies with pumpkin powder in the form of cookies. This study was to determine the appropriate substitute level of pumpkin powder for wheat flour in the formulation of cookies product.the physicochemical and sensory properties and consumer acceptance of the products were investigated.

What is Pumpkin Powder?

Pumpkin powder is a versatile ingredient. made from 100% pure pumpkin that has been dried and ground into a fine powder. It Cretains many of the nutritional benefits of fresh pumpkin, including vitamins A, C, and E, as well as fiber. This ingredient can be used in various recipes, from smoothies to baked goods, providing a rich flavor and a boost of nutrition.

Why Use Pumpkin Powder in Cookies?

1..Convenience: Using pumpkin powder eliminates: the need for canned or fresh pumpkin powder, making it easier to store and use in recipes.

2.Flavor: Pumpkin powder delivers a concentrated: pumpkin flavor that enhances the taste of cookies, making them more indulgent and satisfying.

3.Texture: The powder adds moisture to the cookies without making them too wet, resulting in a chewy texture.

4. Nutritional Benefits: Incorporating pumpkin powder into your cookies adds fiber and essential: nutrients, making your treats a bit healthier.

How it make cookies

1.Preheat : Preheat your oven and line a baking sheet with parchment paper.

2. Mix Dry Ingredients : In a bowl, whisk together the wheat flour, pumpkin powder, baking powder, cinnamon, nutmeg, and salt.

3. Cream Butter and Sugars: In another bowl, cream together the softened butter, brown sugar, and granulated sugar until light and fluffy.

4. Add Egg and Vanilla: Beat in the egg and vanilla extract until well combined

5. Combine Mixtures: Gradually add the dry ingredients to the wet ingredients, mixing until just combined. If desired, fold in nuts at this stage.

i6. Scoop Cookies: Using a cookie scoop or tablespoon, drop rounded. balls of dough onto the prepared baking sheet, leaving space between each cook.

7. Bake: Bake in the preheated oven. until the edges are lightly golden color.

8. Cool and Enjoy: Allow the cookies to cool on the baking sheet before transferring them to a wire rack to cool completely

Tips for Success

- Store your cookies in an airtight container at room temperature for up to a week or freeze for longer storage.
- Variations: Experiment with different spices like ginger or cloves for a more complex flavor.
- You can also add dried cranberries or raisins for a fruity twist.

Introducing the Eggshell Powder-Based Biodegradable Cup: Sustainable, Eco-Friendly, and Innovative

About the product-

The Eggshell Powder-Based Biodegradable Cup is a revolutionary product made from eggshell powder, wheat flour, water, and xanthan gum. This sustainable cup offers an eco-friendly alternative to traditional plastic cups, promoting a greener future.

Importance of it-

With increasing concerns over plastic waste, this biodegradable cup provides a solution by using natural ingredients that break down easily, contributing to environmental protection.

Method-

First, clean and grind dried eggshells into fine powder. Then the other ingredients were weighed. Then, mix the eggshell powder with a weighted ingredient. Then mixture was attached in to a Mold and placed on a laboratory oven dryer where it set to the temperature and time. Once dried, remove the cups from the Molds, smooth rough edges and test their durability.

Health, Social, and Economic Benefits-

- Made from natural, non-toxic materials, it offers a safe alternative to plastic cups.

- Promotes sustainable practices and supports the movement toward reducing plastic pollution.

- Reduces production costs and dependency on plastics, benefiting local economies and supporting green initiatives.

Advantages for Consumers and Businesses-

- For Consumers: A safe, eco-friendly, and biodegradable product that aligns with environmentally conscious values.

- For Businesses: Opportunity for market differentiation in the growing eco-conscious consumer base, with reduced environmental impact.

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Vegetable Energy Drink

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In today's fast-paced world, people are constantly on the hunt for the perfect energy boost. From coffee to energy drinks, we've tried it all. But what if the secret to lasting energy came from a more natural, nourishing source? Enter the world of vegetable-based energy drinks—a vibrant and healthy alternative to the usual sugary or caffeine-laden options.

Unlike traditional energy drinks that are loaded with sugar, artificial sweeteners, or excessive caffeine, vegetable energy drinks rely on whole, natural ingredients to provide a balanced and sustained energy boost. The combination of Fiber, antioxidants, and natural sugars from these vegetables helps regulate blood sugar levels, keeping energy levels steady throughout the day.

Ingredients-:

- Pumpkin powder
- Carrot powder
- Beetroot powder
- Ginger powder
- Citric acid

❖ How To Make the Booster-:

1. In a shaker bottle or blender, combine all the powders.
2. Add cold water and shake or blend until well
3. Taste and adjust sweetness if desired.
4. Pour into a glass and enjoy your natural energy boost!

❖ Health Benefits Beyond Just Energy

These vegetable energy drinks are more than just a quick pick-me-up; they are a powerhouse of nutrients that support your overall health.

- Immune Support
- Digestive Health
- Antioxidant Protection
- Natural Hydration

Powering Your Day the Natural Way?

Are you ready to power up the natural way?

Functional Foods: Current Usage and Future Trends in Food Market

Functional foods are those that provide health benefits beyond basic nutrition.

Functional food is a food where a new ingredient(s) (or more of an existing ingredient) has been added to a food, modified of removed as the new product has a new function (often one related to health-promotion or disease prevention)
Health Canada defines functional foods as being "similar in appearance to, or may be, a conventional food, is consumed as part of a usual diet, and is demonstrated to have physiological benefits and/or reduce the risk of chronic disease beyond basic nutritional functions.
European Commission Concerted Action on Functional Food Science in Europe considers foods to be functional if they have a beneficial effect on one or more functions of the body and are still in the form of food, not a dietary supplement.

Japan defines them as foods composed of functional ingredients that affect the structure and/or function of the body and are used to maintain or regulate specific health conditions, such as gastrointestinal health, blood pressure, and blood cholesterol levels.

The American Dietetic Association (ADA) defines functional foods as foods "that include whole foods, and fortified, enriched or enhanced foods have a potentially beneficial effect on health when consumed as part of a varied diet on a regular basis, at effective levels. These foods contain biologically active components that can improve health, reduce the risk of diseases, or promote the optimal physiological functions. “The ADA breaks down functional foods into four categories: conventional or natural functional foods (oats, fatty fish, fruits and vegetables), modified foods, medical foods, and foods for special dietary use.

Modified foods are the ones which have been enriched, fortified or enhanced with nutrients or other beneficial ingredients. Iodine -fortified salt, folic acid enriched breads and margarine enhanced with plant sterols are functional foods that have been modified.

The FDA defines medical food as "food which is formulated to be consumed entirely under the supervision of a physician, and they are intended for a specific dietary management of a disease which need special nutritional requirements. (Phenylketonuria formulas (PKU), free of phenylalanine) Foods for special dietary use are similar to medical foods, but they're available commercially and don't require the supervision of a health care provider. (Infant foods, weight loss foods, gluten free foods and lactose free foods).

Today, functional foods have become integral to the diets of health-conscious consumers. With increasing awareness of lifestyle diseases such as obesity, diabetes and cardiovascular ailments, there is a growing demand for foods that offer added health benefits. Supermarkets and health food stores now feature a wide range of functional products including omega -3 enriched eggs, antioxidant rich beverages and gluten free high fiber snacks. They are widely used across all age groups for their preventive and therapeutic qualities. In the global food market, functional foods are now positioned not only as a dietary preference but also as part of mainstream nutritional strategies.

Therefore, functional foods furnish several benefits. They contribute to improved health and wellness, disease prevention and enhanced quality of life. For example, consumption of folic acid fortified foods during the pregnancy reduces the risk of neural tube defects in infants. Probiotic foods enhance digestive health and immunity. However, there are disadvantages too. Overconsumption or misuse can lead to nutrient imbalance or intendent health effects. Similarly, some functional foods are expensive limiting their accessibility to certain populations. In addition, the health claims made by some manufacturers may lack scientific backing, leading to consumer misinformation.
The future of functional foods lies in personalized nutritional and innovative exercises. Advances in nutrigenomics and biotechnology are paving the way for tailored functional foods that cater to individual genetic profiles. Plant based functional foods are gaining momentum due to sustainable and vegan lifestyles. Additionally, clean-label and minimally processed functional foods are likely to dominate the market trends. The food processing industry expects to invest more in research and development to create multifunctional ingredients, enhanced bioavailability, and longer shelf-life products that align with health and wellness goals which might also flash to develop diverse collection of food products being functional as well.

Anyhow or other, functional foods have become a cornerstone in the modern food industry, balancing health, nutrition, and consumer demand. With ongoing innovation and rising health awareness, they are poised to play an even more significant role in future dietary habits and the global food economy.

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CHICKPEA MILK AND WOOD-APPLE PULP STIRRED YOGHURT

This research was conducted to develop stirred yoghurt using chickpea milk and wood-apple pulp. That will be provide beneficial yoghurt for consumers. Chickpea (*Cicer arietnum*) Dairy milk are the main ingredients used for this study. Additionally wood-apple (*Limona acidissima*) were added to the increase the palatability.

Chickpea (*Cicer arietnum*) is an important pulse crop grown and consumed all over the world, especially in the Afro-Asian countries. It is a good source of Carbohydrates & Protein, and protein quality is better than other pulses. Chickpea has significant amount of all the essential Amino acid except Sulphur containing amino acid, which can be complemented by adding cereals to the daily diet.

Wood-apple is known for its high fiber contents, making it beneficial for digestive health.

The consumption of wood-apple can also help alleviate digestive issues like indigestion and bloating. It is also which in antioxidants.

Such as vitamin C and flavonoids. Also, final product can get fruity flavour.

This stirred yoghurt was produced using several processing methods

wood-apple pulp pasteurized separately to ensure the quality and safety of the product. Fresh raw materials were collected from the market and inspect the quality of the product. Then chickpea was cleaned, soaking, blending and pasteurization of chickpea milk done in respectively. Also, dairy milk and together and added starter culture for fermentation. Finally added wood-apple pulp during stirring process. Final product was added in to cups and keep in refrigerator. After the pro-cessing of the product sensory evaluation. Then allowed to cool. Pasteurized dairy milk and chickpea milk mixed action was conducted to identify the most suitable sample. This product is very useful for instant usage in busy world. Also, can be use without age any age limit.

Presented by,

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Avocado Seed Biscuit.

❖ Importance of Avocado Seed

Avocado seeds are often discarded as waste, but they are rich in antioxidants, dietary fiber, and phytochemicals. Historically used in traditional medicine, they have anti-inflammatory and cholesterol-lowering properties. Utilizing them contributes to food sustainability, reduces waste, and adds economic value to underutilized resources.

❖ Introduction of the Product

This research introduces a unique biscuit made using avocado seed starch as a partial substitute for wheat flour. This not only adds functional health benefits but also introduces a novel taste and texture, appealing to the growing health-conscious market.

❖ Production Method

The product development involved cleaning, drying, grinding and sedimentation process into avocado seeds Strach, which was then blended with other biscuit ingredients. The formulation and baking process were refined through trials, though the exact method may vary.

❖ Consumer & Industry Benefits

Consumers benefit from added fiber and antioxidants. For the industry, it opens a path to functional food innovation, reduces waste, and offers marketing appeal for eco-friendly and health-focused products

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Nutrient-Rich Spread From Sprouted Mung Beans

Spreads are semi-solid food products that are typically applied to bread, crackers, or similar food items using a knife. They are commonly available in the form of pastes, syrups, or thick liquids and serve both as flavour enhancers and sources of nutrition.

Mung beans, when germinated, undergo significant biochemical changes. During the sprouting process, the seeds absorb water, which activates key enzymes such as amylase. This enzyme facilitates the breakdown of stored starches into simpler sugars, making the beans easier to digest and enhancing their nutritional profile. Notably, sprouting reduces the content of phytic acid—an anti-nutrient that inhibits the absorption of essential minerals like zinc, magnesium, and calcium—thereby improving bioavailability.

Nutritional analysis of sprouted mung beans

Per 100 grams reveals impressive values:

Calories – 4 kcal,
Protein – 4g,
Carbohydrates – 7g,
Fat – 0.2g,
Vitamin C – 13mg,
Iron – 1.2mg,
Magnesium – 24mg,
Calcium – 26mg,
Potassium – 266mg.

Sprouted mung beans are thus a rich source of essential nutrients and antioxidants while being low in calories.

Despite their health benefits, sprouted mung beans are not widely consumed, primarily due to their short shelf life and the inconvenience of preparation. Ready-to-eat processed products incorporating sprouted mung beans are scarcely available in the market. Developing a spread made from sprouted mung beans presents a practical solution to this problem. Such a product would provide consumers especially those with busy lifestyles a convenient way to enjoy the nutritional advantages of sprouted mung beans without the time and effort involved in preparing them fresh. In this context, a mung bean-based spread stands out as both a health conscious and user-friendly innovation in the functional food Category.

BY: W.G.A DEWMINI

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Revolutionizing Energy: The Rise of Bio-Gas Units

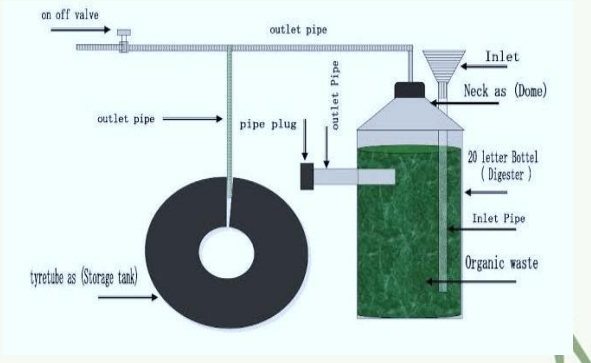
A Sustainable Solution for a Greener Future

As the world moves towards sustainable energy solutions, bio-gas units are emerging as a game-changer in renewable energy. Biogas, produced through the anaerobic digestion of organic waste, is not only an eco-friendly fuel alternative but also a cost-effective solution for households, industries, and farms.

- **How Bio-Gas Works**

A bio-gas unit functions by breaking down organic materials like food waste, agricultural residues, and animal manure in an oxygen-free environment. This process generates methane-rich gas that can be used for cooking, heating, or electricity generation. Additionally, the byproduct, bio-slurry serves as a high-quality organic fertilizer, promoting sustainable agriculture.

- **How to make biogas at home:**



Create a digester using a plastic drum or tank, adding inlet and outlet pipes. Collect organic waste like food scraps, vegetable peels, or animal manure. Mix feedstock with water and feed it into the digester. Microorganisms break down the waste, producing biogas. Collect the biogas, which can be used for cooking, lighting, or electricity generation.

- **Advantages of Bio-Gas Units**

Bio-gas units provide an **eco-friendly energy source**, reducing fossil fuel reliance and greenhouse gas emissions. They aid in **waste management** by converting organic waste into energy, cutting landfill dependency. With **cost savings**, they offer an affordable alternative to LPG. Nutrient-**rich slurry** enhances soil fertility and crop yield, benefiting agriculture. Additionally, they promote **energy independence** by enabling decentralized energy production. This sustainable solution supports households, farms, and the global shift toward renewable energy.

- **Real-World Applications**

Many rural communities and urban households worldwide have adopted bio-gas units to meet their energy needs. Countries like India, China, and Germany are leading in bio-gas technology, utilizing it in homes, farms, and even large-scale industrial setups. Innovative designs, including portable and community-based digesters, are making biogas more accessible than ever.

Nanotechnology in Food Technology

Introduction

Nanotechnology can improvement food technology that include food production. Nanotechnology uses gene or DNA transfer in plants for the development of food processing and storage, nano feed additives, feed and food ingredients, intelligent packaging and quick-detection systems and increased product shelf life.

Applications of Food Technology

1. Nano Foods
2. Nano laminates
3. Nano structures in Food
4. Nano Packaging
    - Nano Smart Packaging
    - Nano Active Packaging
    - Clay Nanoparticles to Improve Plastic Packaging for Food Products

Nano Foods

Nanotechnology is used as functional foods, and food colours, flavours, and textures that used and improved at the nanoscale level.

. Nano laminates

Nano laminate used as fruits, vegetables, meats, chocolate, candies, baked goods, and French fries.

Nano structures in Food

Nanostructure techniques used as foams. e.g., the head on a glass of beer or emulsions, sauces

Nano Smart Packaging

The smart packaging is the use of nanotechnology to develop antimicrobial packaging, smart packaging materials that will absorb oxygen, detect food pathogens, and alert consumers of spoiled food.

Nano Active Packaging

Nano technology to develop antimicrobial packaging for food products that 'active packaging,' which absorbs oxygen and keeping food fresh.

Clay Nanoparticles to Improve Plastic Packaging for Food Products

The nano particles are dispersed throughout the plastic and are able to block oxygen, carbon dioxide, and moisture from fresh meats or other foods.

Conclusion

Nanotechnology plays a major role in the food sector through the quality food production ends with advanced processing, packaging, and long-term storage, provided enormous growth in food industry through enhancement in food quality by improving its flavor and texture.

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Innovative Malted Drink from Legumes. A Nutritious and Sustainable Alternative

Introducing a groundbreaking malted drink developed using a blend of cowpea chickpea, soybean, and mung bean as a healthy alternative to traditional barley-based beverages. This innovative product is designed to provide consumers with a nutritious option that supports both health and energy.

This malted drink Protein-Rich Packed with plant-based protein, Rich in Fiber The ingredients help improve digestion, regulate blood sugar, and support heart health.

Vitamins & Minerals Legumes are rich in essential vitamins and minerals such as iron, magnesium, and folate, supporting overall well-being.

Legumes such as cowpea, chickpea, and mung bean are widely grown in Sri Lanka, promoting local agriculture and supporting small farmers.

Sustainability Using legumes instead of barley reduces the environmental impact, as legumes are less resource-intensive to grow. The innovation can open new markets for local farmers and producers, stimulating the economy while providing affordable nutrition.

Offers a nutrient-dense, low-fat beverage that is perfect for health-conscious individuals and those with dietary restrictions.

The product is pasteurized for safety and stored at -4°C, ensuring long shelf life without compromising flavour or nutrients.

The introduction of a novel, legume-based malted drink sets the brand apart in the growing functional beverage market.

This product attracts not only traditional consumers but also those interested in plant-based and sustainable options.

Pioneering in a new product category positions the business as a leader in innovation and sustainability within the food and beverage industry.

Ingredients

Malted Cowpea Flour, Malted Chickpea Flour, Malted Soy Flour, Malted Mung Flour, Caramelized Sugar, Milk, CMC Stabilizer

Process Method - Pasteurization followed by storage at -4°C to ensure product safety and long shelf life.

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The Future of Sustainability Cassava Starch Edible Cups

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A New Era of Sustainability

As the world moves toward more sustainable practices, one innovation is capturing the spotlight: the cassava-starch edible cup. Not only is this edible cup a revolutionary way to reduce waste, but it also brings a new, eco-friendly twist to how we drink our beverages.

Cassava, a versatile root crop native to South America, is the secret ingredient behind this groundbreaking edible cup. Traditionally used for food and starch, cassava's potential as a base for edible, biodegradable products have recently gained attention. These cups are 100% natural, biodegradable, and entirely edible – offering a delicious, guilt-free alternative to single-use plastics and Styrofoam.

Why Cassava?

Cassava starch is derived from the root of the cassava plant, known for its versatility and low environmental impact compared to traditional crops. It grows in regions with minimal water needs, making it an environmentally friendly alternative to the agricultural demands of other raw materials. Unlike plastic cups that can take hundreds of years to decompose, cassava starch cups are completely biodegradable and decompose within weeks. And for those who love to indulge in creative dining experiences, these cups can be eaten along with your beverage or meal, making them a true 2-in-1 treat.

Benefits of Cassava Starch Edible Cups

- Eco-Friendly
- Edible and Tasty
- Versatility
- Biodegradable and Compostable

How Cassava-Starch Cups Are Made…

- Cassava Starch
- Water
- Butter (Any Kind of Flavour)

Once shaped, the cups are baked to perfection – ensuring they maintain their structure while still being delicious and biodegradable. The final product is a cup that holds your beverage and can be eaten once your drink is gone, leaving behind no waste. A Delicious Step Toward a Greener Future…What do you think? Will you be sipping from an edible cassava cup soon?

INTRODUCING COCONUT-ADDED INSTANT CURRY CUBE: A HEALTHY AND CONVENIENT SOLUTION

Product Overview:

The Coconut-Added Instant Curry Cube is a revolutionary product designed to provide a quick, flavourful, and nutritious curry experience. It combines the richness of coconut with a carefully selected blend of spices including asafoetida, anise seed, nutmeg, cumin, garlic powder, onion powder, and more to create a convenient, ready-to-use curry base.

Importance of Development:

This product addresses the growing demand for healthy, quick meals without compromising on taste or nutritional value. It offers a simple, easy way to enjoy the goodness of natural, wholesome ingredients.

Method:

First, the grated coconut was dried well and then ground well until it became a paste. Then the other ingredients were weighed and ground. Then the coconut paste was mixed with the other weighed ingredients and ground together. The gel in the flax seeds was added to the mixture as a binding agent and after being ground well, it was shaped into cubes.

Health, Social, and Economic Benefits:

- Health Benefits: The blend of spices and coconut provides anti-inflammatory, digestive, and antioxidant properties*, supporting overall wellness and immune health.
- Social Benefits: By promoting the use of local, sustainable ingredients, the product supports local farmers and sustainable agricultural practices.
- Economic Benefits: The curry cube offers a convenient meal option for consumers, while opening up new market opportunities for businesses in the growing convenience food sector.

Advantages for Consumers and businesses:

- Quick preparation, healthy ingredients, and customizable flavour.
- Differentiation in the market, sustainability, and potential for increased profitability through high consumer demand for health-conscious convenience foods.

The Coconut-Added Instant Curry Cube is an innovative solution, combining health, convenience, and sustainability, making it a win for both consumers and businesses.

Contact for more information about this research. **0728085480**

H.S. Kirinda

Watermelon Rind Jam

A.J.M.N.N. Jayasundara

Higher National Diploma in Food Technology

Watermelon (*Citrullus lanatus*), a tropical fruit cherished worldwide, is more than just a thirst-quencher during the summer. While the fruit's flesh is widely consumed, its rind—accounting for 30% of its weight—is often discarded as waste. In this research has found a sustainable way to repurpose watermelon rind: turning it into jam. Watermelon rind is rich in vitamins A, B2, B6, C, and E, along with essential nutrients like chlorophyll, minerals, and enzymes. By utilizing watermelon rind in jam, not only is food waste reduced, but consumers also benefit from these hidden nutrients.

Watermelon rind jam was a unique and innovative product made using carefully selected ingredients. Fresh watermelon fruits were sourced from the local market, ensuring high quality and uniformity. The rinds were separated, blended into a smooth pulp, and combined with sugar, citric acid, and pectin. The mixture was heated before sugar was gradually added, then cooked until it thickened. Pectin and citric acid were used to aid gel formation, while SMS was added as a preservative. The jam was poured hot into sterilized jars, which were then sealed and cooled to create a vacuum seal. Finally, the jars were stored in a cool, dry place. After the processing of the product sensory evaluation was conducted to identify the most suitable sample.

Watermelon rind jam offers several health benefits due to its rich nutritional profile. The rind is high in fiber, which aids digestion and promotes gut health. It contains citrulline, an amino acid that may improve blood circulation and reduce muscle fatigue. The jam is also a good source of antioxidants like vitamin C, helping to boost the immune system and protect against oxidative stress. Additionally, it provides essential minerals such as potassium, which supports heart health and regulates blood pressure. With its natural sweetness and nutrient content, watermelon rind jam serves as a healthier alternative to conventional jams.

Breadfruit Flour Cookies

G.R.S.D. Karunathilaka

Cookies are a bakery product and a snack food that is devoured by many people worldwide, providing a good source of nutrients. Cookies are popular due to their low manufacturing cost, high stability, long shelf life, and ability to carry a high amount of nutrients.

The primary objective of the research was to develop highly nutritious and health-beneficial cookies by reducing the use of wheat flour and incorporating breadfruit (*Artocarpus altilis*) flour as a substitute.

The objective of this research was to, develop a new product from breadfruit powder, to get idea about new product develop process, to evaluate the sensory properties (Taste, texture, aroma, and appearance).

Main Ingredients

Wheat flour, breadfruit flour, butter, curry leaves, eggs, sugar, and leavening agents were used as the basic ingredients for making breadfruit flour cookies. Baking powder and fenugreek were also included.

When selecting the main ingredient, breadfruit, it is important that well-ripened ones are chosen. The breadfruit should be thoroughly cleaned, peeled, cut into slices, blanched, dried, and then ground into flour as the basic steps of the process.
The obtained flour should be mixed with other ingredients in appropriate proportions and kneaded well. The dough should be allowed to rest for a short period before being rolled out thinly. After that, it should be cut into suitable shapes and baked using an oven.
After processing the product, a sensory evaluation was conducted to identify the most suitable sample.
Breadfruit contains an average of 0.31% fat, 1.34% protein, 27.8% carbohydrate, 1.5% fiber, and 1.23% ash, while breadfruit flour has been found to contain about 76.7% carbohydrate, 17.1% protein, 11.1% fat, 3.0% ash, and 0.1% crude fiber. Breadfruit consists of several minerals such as copper, magnesium, phosphorus, potassium, calcium, cobalt, iron, and manganese. This makes it an excellent choice for improving digestion, sustaining energy levels, and boosting metabolism.

This makes it an excellent choice for improving digestion, sustaining energy levels, and supporting metabolic health.

Additionally, the health benefits of curry leaves are naturally incorporated into these cookies. They are particularly rich in antioxidants, vitamins A, B, C, and E, as well as minerals like calcium and iron. These leaves help in improving digestion, regulating blood sugar levels, and enhancing heart health.

Furthermore, fenugreek is added to the cookies, enhancing their inherent flavour.

These cookies have been produced by incorporating natural flavouring agents instead of artificial ones.

Through this product, the amount of wasted breadfruit is reduced, while a nutritionally rich and health beneficial product is also created.

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