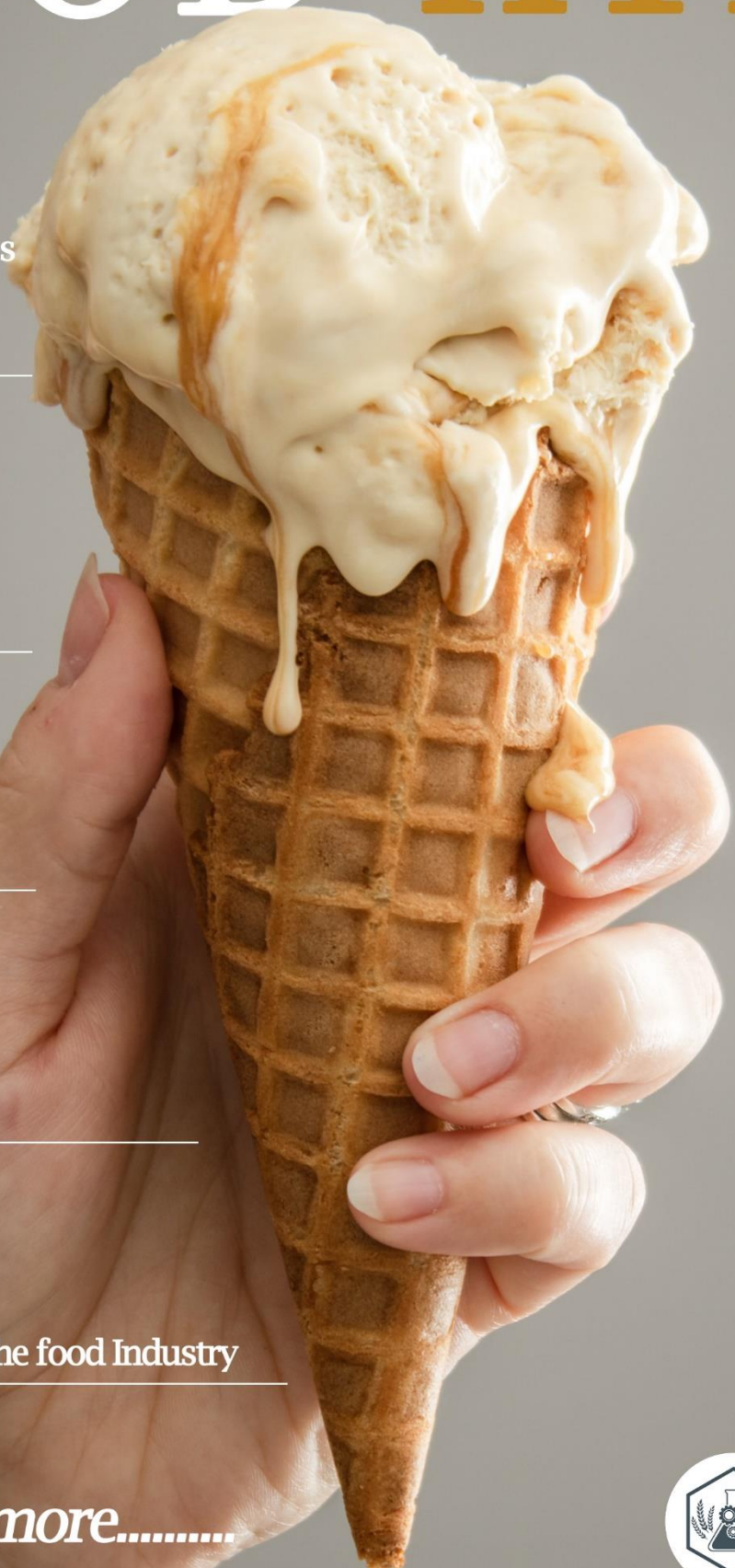
Wayamba Food Science and Technology Newsletter

FOOD'XTRA

Issue 1 | 2022



Are sugar subsitutes **healthy?**

Milk from **Plants**

Lets eat Fish being **Careful**

Is freezer burned Food **safe?**

IoT and the **future** of the food Industry

And much more.....

Society of Food Science & Technology
Wayamba University of Sri Lanka

Message from Head of the Department

Dr. Mrs. P.M.H.D. Pathiraje
Senior Lecturer
Head of the Department
Department of Food Science & Technology
Faculty of Livestock, Fisheries & Nutrition
Wayamba University of Sri Lanka

It gives me immense pleasure to bring out the Newsletter "FOOD'XTRA" released from the Society of Food Science and Technology (SFST) of the Department of Food Science and Technology. The SFST was established in 2004 and is working towards educating the community on the science of food and its application and developing the professional skills of its members in the food sector. The launch of this newsletter marks another milestone of the successful journey of the SFST. I see this as a platform for updating and promoting the activities pertaining to our Department and SFST and the dissemination of knowledge in the field of Food Science and Technology and further improving the writing skills of students.

This newsletter gives me a sense of pride that our students process creative potential and innovative thoughts in ample measures. All of the articles are interesting and absorbing, and all of the departments' and students' activities from the previous year have been depicted well. I am confident that this newsletter will have a positive impact on readers who are interested in the food science and technology fields. On behalf of our department, I would like to congratulate and give a big thank you to the working team of the SFST who have played a wonderful role in accomplishing this task. I would like to convey my heartfelt gratitude to the senior treasurer of the SFST under whose guidance this task has been undertaken. Also, I applaud the contributors for their wonderful and inspiring articles, without which this newsletter issue would not have been possible. Finally, I invite new members to join hands with the SFST and contribute towards upgrading the nutritional status of the nation.

Wishing you all the very best!

Head/DFST

Message from Senior Treasurer

Dr. H.P.S. Senarath
Senior Treasurer
Society of Food Science & Technology
Senior Lecturer
Department of Food Science & Technology
Faculty of Livestock, Fisheries & Nutrition
Wayamba University of Sri Lanka

Greetings!

As the senior treasurer of the society, it is a great pleasure and privilege for me to write this message to the FOOD'XTRA, the first issue of the Newsletter launched by the Society of Food Science & Technology (SFST), Wayamba University of Sri Lanka (WUSL). With a long history of nearly two decades, launching of a newsletter by the SFST marks another milestone of its journey.

Our newsletter, FOOD'XTRA is an outcome of the hard work of many people. It was risen up through the tremendous commitment and dedication of the current members of the society, that has flourished over the continuous support of Prof.(Mrs.) C.V.L. Jayasinghe/ Dean of the Faculty of Livestock, Fisheries & Nutrition, Dr. P.M.H.D. Pathiraje/ Head of the Department of Food Science & Technology and the guidance of the all the academic and non-academic staff members of the Department of Food Science and Technology that we appreciate very much.

At a time where the Covid 19 pandemic has hampered most of our in-person activities, SFST members have continued to be productive and moving forward with this digital era. FOOD'XTRA will showcase inspiring news/ achievements of the Society of Food Science and Technology along with timely articles on Food Science and Technology. I believe all readers will find the FOOD'XTRA as an informative and resourceful communication.

I take this opportunity to extend my heartiest congratulations to the editors of the newsletter and authors of all the articles and appreciate their dedication and voluntary commitment to make this task successful. I wish to witness a long successful journey for the FOOD'XTRA.

Good Luck!

Message from President

Isura Madushanka
President
Society of Food Science & Technology
Undergraduate student
Department of Food Science & Technology
Faculty of livestock, Fisheries & Nutrition
Wayamba University of Sri Lanka

I am proud to announce that the Society of Food Science & Technology of the Wayamba University of Sri Lanka is issuing its inaugural first-ever newsletter in order to improve the writing skills of the students and to convey new insights of the world of Food Science & Technology to the community.

The support, assistance, and guidance are precious gifts for the growth of any organization, so as the President of the Society of Food Science & Technology, I am happy and delighted to support my fellow colleagues in all of their future endeavors. This maiden newsletter will mark a sparkling benchmark and it will make the society strive for colors, being one of the flourishing societies of the University.

Together we can achieve more and be successful!

Message from Secretary

Gayashi Jayarathne
Secretary
Society of Food Science & Technology
Undergraduate student
Department of Food Science & Technology
Faculty of livestock, Fisheries & Nutrition
Wayamba University of Sri Lanka

I am extremely happy to write this message to the premier issue of the society newsletter. The Society of Food Science & Technology is an iconic representation of the department which offers the students with opportunities to develop their varying capabilities. I consider it is a privilege to be able to contribute to the release of the first newsletter from the society. I hope the knowledge, new research updates, events, accomplishments, and benchmarks we present through the newsletter, will work more effectively at creating interest in the community and might be helpful to uplift the standard of the society's work.

I take this opportunity to thank the academic staff for their great idea and guidance. I also thank the nonacademic staff and former and current members of the society. Without their support this would certainly have been a formidable task. I wish the society would continue to embark upon this endeavor to reach much greater heights and achievements in its venture.

It's Our Department .....

Department of Food Science and Technology

Vision of the Department

"Inspiring minds to meet global food and health challenges"

Mission of the Department

"Contributing to the society through the pursuit of education in Food Science and Technology in learning, research, disseminating knowledge and meeting international standards at the highest level of excellence to meet global food challenges"

The Department of Food Science and Technology (DFST) works with the mission of contributing to the society through the pursuit of education in Food Science and Technology in learning, disseminating knowledge and meeting international standards in research and teaching at the highest level of excellence.

DFST has designed its syllabus to provide students with a sound theoretical knowledge in Food Science & Technology as well as hands-on experience through practical training in food processing, product development and quality control. The Department has already produced 66 graduates in its continuous process of producing skilled graduates to cater the demand in the food industry. The practical component of the degree program includes routine laboratory exercises conducted in the departmental laboratories and field visits to reputed food processing plants. The DFST curriculum equips undergraduates with valuable skills and knowledge to engage competently in activities required by academic institutions and the food industry. Food quality and safety are ensured through department actions on a global scale.

Source: https://lmsm.wyb.ac.lk/

DFST is the major contributor to the four-year degree. During the first two years, students are taught some basic courses in food science & technology and several courses in related disciplines such as human nutrition, animal science and aquaculture & fisheries. It also includes general courses like Mathematics & statistics, Information technology and English offered by the other departments of the faculty. During the third year, students follow specialization courses on highly subject specific topics. In the first semester of the final year, students are guided to carry out a mini research project in the second semester, the students are assigned to a food processing factory to undergo intensive in-plant training, or else the student can carry out research projects where they can integrate knowledge in the identification, description, analysis and solution of problems within their specialization.

It's Our Society …….

Society of Food Science & Technology

The Department of Food Science and Technology works with the mission of contributing to the society through the pursuit of education in food science, food technology, food quality & safety and all allied sciences in learning, development of skills, synthesizing, application and dissemination of knowledge and meeting international standards in research and teaching at the highest levels of excellence.

The Society of Food Science & Technology (SFST), established in 2004 allows Food Science & Technology specializing undergraduates to explore the different aspects of the field in which they are to be professionals. The Society helps to develop the creativity of these undergraduates while harnessing their potential and getting the best out of each individual. Undergraduates are directed towards finding their strengths and opportunities in the industrial and academic fields of Food Science & Technology. In its essence, the Society helps to build up teamwork, good communication skills and a strong personality in the Food Science & Technology specializing students.

Society of Food Science & Technology
Wayamba University of Sri Lanka

Annual ProFood – ProPack Exhibition…….

Among the different activities participated by the students of SFST, the annual ProFood -ProPack exhibition is a regular as well as very important event. The exhibition is organized by the Sri Lanka Food Processors Association together with Lanka Exhibition and Conference Services (LECS). Profood Propack & Agbiz is the most comprehensive food, beverage and packaging exhibition. Our department students are facilitated by our society to participate in Profood Propack and Agbiz for many years. We showcase our innovative and creative products in processed food and beverage and packaging, with the intention of benefitting the Sri Lankan food processing industry. It is proud to declare that we were able to be winners at that exhibition in several product categories. Also, along with that exhibition, Institute of Food Science and Technology in Sri Lanka organize Inter University Food Science Quiz Competitions. It is a great Pride to announce that we, Wayamba, Food Science and Technology Students were able to be winners at that quiz Competitions. In two Consecutive Years; 2018 and 2019, our students were able to be the runners up by showing their knowledge. Definitely in the coming years also we will be able to be winners from those events.

Source: https://flfn.wyb.ac.lk/?p=3292

Source: https://flfn.wyb.ac.lk/?p=3292

Sri Lanka Packaging Awards – Lanka Star Packaging Competition……

Sri Lanka Institutes of packaging annually conduct Sri Lanka Packaging Awards – Lanka Star Packaging Competition to recognize packaging excellence of the packaging industry of Sri Lanka. Our department students are also Participating for the Year 2020 and it is Glad to say that two groups of our students were able to win gold and bronze medals in Student Category by showing their innovative talents. Those are some of our victories which we were able to obtain to build our pride as Wayamba Food Science and Technology.

Article Series……

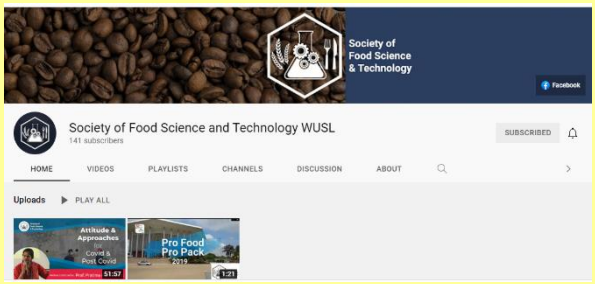
As the Food Science and Technology Society of Wayamba University of Sri Lanka, we actively act on social media by maintaining our own Facebook and maintaining a YouTube channel too. It is delighted to declare that we have a society Facebook page with more than 6750 followers who are inspirationally engaged throughout our journey. Main Purpose of maintaining such a Facebook page with a huge number of followers is to expose our department to the outer environment from the university premises by building social interconnections between us and the general public. Through the Facebook page we do our best to give and update our viewer's knowledge regarding the food related concerns, novel food technologies and what we do and our role as Food Science and Technology specialized undergraduates at Wayamba University.

Time to time continuously we publish very important reliable food related articles which give you sound and brief knowledge about a selected area in the food world. Recently we have introduced a segment called "Denagena Kamu Bomu "; a food fact album through the Facebook page which our most viewers got attracted to. Aim of that segment is to update and seek new trends, hidden but interesting facts which are related to the food we consume and about the food industry. Weekly we update and give you short & sweet, interesting facts about the food.

Due to the prevailing COVID 19 pandemic situation in the country we thought to make you happy from your bored lives at home and make your interest in foods by thinking out of the box by organizing a food photography contest named "Capture the taste" in November 2020. Purpose of this contest was mainly to get rid of the monotonous life that we are facing unwillingly due to the pandemic situation. Contest was conducted under two categories, as photos of culinary arts and fresh foods. All selected winners had been honored with cash prizes and certificates. We are sure that this was an opportunity for artistic food lovers who were bored at home and distance apart more than one meter always. This Contest will be continued for coming years too.

Our YouTube Channel……

Not only the Facebook page, we also have our own YouTube channel as another social media tool. Our participation at ProFood ProPack exhibitions, conducted webinars and some other videos clips have been published there. In near future we hope to be close to the public and to expand our social network via LinkedIn professional platform too.



Webinar Series……

Also, due to the COVID 19 pandemic situation, we proudly present and hope to present you several webinars via zoom platform with the support of knowledgeable and professions souls under different important topics, that will be very much meaningful and beneficial to build our careers in the future world of work. As a society we normally organized such important lectures and speeches physically before this pandemic situation with the helping hand of internal and external resource persons and institutions. But from last year we have to organize such in virtually.

PET Collection……

Look after the environment and the environment will look after you, destroy the environment and it will destroy you. So as a society which loves nature, we try to conduct an eco-friendly project to protect the environment in our university premises. Following that we have taken steps together with Coca Cola Beverages Sri Lanka to install a PET collection to recycle PET Waste at Makandura premises of Wayamba University of Sri Lanka. Without stopping by this project, expect to engage with more eco-friendly programs in future.

Welcome Party…….

Young ones are the future of us. So, each and every year we have an internal big celebrative event which is organized by the Society of Food Science and Technology to warmly welcome our new brothers and sisters who select the Food Science and Technology family to build their future journey. Last time we had it in great condition under the name Fagito"21.

"Main aim of our society is to direct and build an undergraduate who can lift mother Wayamba in a pride position in industrial and academic fields of Food Science & Technology"

As the Society of Food Science and Technology of Wayamba University of Sri Lanka, this is a brief introduction about who we are, what we did and what we hope to do in future. And also, the winnings and achievements that we grab. Hope to do many more in the future. Be with us inspirationally and enthusiastically along our journey.

It's Our Success……

Innovation Commercialization Enhancement Grant

The Innovation and Service Support Center (ISSC) brings technical expertise and resources to solve issues related to Food Science and Technology. ISSC is housed within the Department of Food Science and Technology, Faculty of Livestock, Fisheries and Nutrition, Wayamba University of Sri Lanka.

The ISSC operates its own laboratories, research, and services. The ISSC connects with industries and collaborates towards commercialization of research. The collaboration of the academia, government, and industry provides a unique opportunity in uplifting the Sri Lankan food sector.

Our vision is to create a platform to provide competitive food research and development (R & D), and high-quality technical services to elevate the food sector of Sri Lanka.

Our mission is to incorporate the intellectual leadership of academia, industries, and government to focus on technology, products and services related to the development and enhancement of safe food systems for the betterment of living beings.

Our Services

- Conduct research for improving product quality and technical processes in the food industry
- Discover new food products and technical processes to be used in the food industry
- Provide accurate and useful knowledge, expertise, training and awareness programs to students, undergraduates, postgraduates and entrepreneurs in food industry
- Deliver reliable food testing service

ISSC in collaboration with Innovation Commercialization Enhancement Grant (ICE-AHEAD), always connects with the food industry. As a new event, it is going to transfer new technologies to industrial partners and sign the License Agreement.

1. Baby JackFruit Burger Patty (Gluten Free)

Adamjee Lukmanjee & Exports (Pvt.) Ltd

2. Fortified Rice Flour

Colombo Commodities (Pvt.) Ltd

Department News

8th Undergraduate Research Symposium (UReS) - 2021

The 8th Undergraduate Research Symposium (UReS) – 2021 of the Faculty of Livestock, Fisheries & Nutrition, Wayamba University of Sri Lanka was successfully held on January 28, 2022, at the faculty premises, as a virtual event.

UReS 2021 was coordinated by Mrs. A.M.M.U.Adikari, Senior Lecturer, Department of Food Science & Technology. The keynote speaker of the event was Prof. Meththika Vithanage, Director, Ecosphere Resilience Research Centre & Faculty of Applied Sciences, University of Sri Jayawardhanapura. The keynote speech was based on the topic: Environmental Wellness for Sustainable Food Systems.

The undergraduates of the Department of Food Science & Technology excelled in their fields of study, bringing in valuable contributions to the theme "Environment Well-being for Sustainable Food Systems". The following DFST students were selected as best presenters in UReS 2021.

New Chapter begins with FST Family…..

Mr. Umesh Rajapakse, who has joined the Department of Food Science and Technology of Wayamba University as a Lecturer (probationary) as of 14th of February 2022, is a graduate of the same Department with a First-class honors degree in Food Science and Nutrition, specializing in Food Science and Technology. Prior to his appointment, he was attached to Fonterra Brands Lanka as a Research and Development Associate.

Best presenter in Food Science & Nutrition oral presentation
Name : V.S.B.Witharana
Topic : " Development of instant herbal porridge cubes incorporated with nano encapsulated Coccinia grandis extract"
Supervisors : Prof.CVL Jayasinghe, P.U.S.Peries & K. A.C.Madumali

Best presenter in Food Science & Nutrition poster presentation
Name : C. T. Jayadewa
Topic : "Comparative studies on nutritional and functional properties of selected traditional rice varieties in Sri Lanka"
Supervisors : K.D.P.P. Gunathilake

Source: https://www.bobsredmill.com/

Sugar substitutes are healthy?

Sugar substitutes are one of the most controversial ingredients in the modern diet. Health experts have debated for years the use of sugar substitutes. As excessive sugar consumption has been linked with many serious diseases, including obesity, heart disease, and diabetes, many food processing companies go for cheap alternatives for sweeteners to claim their products are healthy and complying with the government's food regulations.

Thus far, the real problem is not answered completely whether these sugar substitutes actually are healthier enough to be chosen over refined sugar. Nowadays, many foods and beverages, claimed as "Zero Sugar", "Zero Calorie" or "Low Calorie" have been invading the food market. Have you ever gone through their ingredients list? Most of them are added with artificial sweeteners to satisfy the sweet tooth of their consumers. Over the years, there has been much research done concerning the safety of sugar substitutes. Artificial sweeteners are safe for use in moderation within the approved regulations. According to the Food and Drug Administration (FDA), some sugar substitutes are "generally recognized as safe" (GRAS). There are five non-nutritive sweeteners, approved by FDA, which are Acesulfame-K (brand names: Sunett and Sweet One), Aspartame (two brand names: Equal and NutraSweet), Neotame (brand name: Newtame), Saccharin (two brand names: Sweet 'N Low and Sweet Twin), Sucralose (brand name: Splenda). Their approval process includes the determination of acceptable daily intake, the cumulative effect from all uses, and animal toxicity studies.

Source: https://hr.goodlooksecrets.com/

Is Aspartame safe?

Aspartame is a common low-calorie sugar substitute. It's a combination of 2 amino acids: Aspartic acid and Phenylalanine.

It's about 200 times sweeter than sugar. It has been approved by the FDA as a food additive since 1981. People who have a rare condition called Phenylketonuria (PKU) shouldn't consume Aspartame. That's because their bodies are unable to metabolize Phenylalanine, which is one of the amino acids in Aspartame. Apart from that, there is no evidence that Aspartame and other sugar substitutes approved for use by the FDA cause cancer or other serious health problems.

Stevia sweeteners

Stevia is a plant-based sugar substitute that has no calories. The term "stevia" refers to *Stevia rebaudiana*, which is a South American plant. Only certain parts of the plant are sweet. Highly purified extracts from the leaves of the plant are called "Steviol Glycosides." They are 200 to 400 times sweeter than sugar. The clinical studies show that they do not affect either blood pressure or blood glucose response, indicating stevia sweeteners are safe for use by individuals with diabetes. Just because a substance is natural, does not mean that it is safe. Many natural plant components are toxic. Stevia has a very low acute toxicity, and no allergic reactions to it seem to exist. And although a long history of use indicates that the substance has no serious and acute toxic effects, it does not guarantee that the substance is completely safe. Steviol Glycosides have been reported to have mutagenic effects in some bacteria in vitro, but results have varied and are not thought to be related to the daily use of Stevioside as a sweetener. In the 1990s, the US FDA rejected Stevia as a food ingredient. In 1995, the FDA issued a statement allowing Stevia to be used as a dietary supplement, so it must be labeled. Similarly, the Canadian and European Community Scientific Panels have not approved it and declared that Stevia cannot be used in food.

However, prolonged use of non-nutritive sweeteners can constantly change someone's sweet preference, causing an increased intake of sugars throughout life. It may mislead you regarding the relationship between sweet tastes and the delivery of calories. While they're considered safe, sugar substitutes can cause diarrhea. This can happen when you consume large amounts of a product such as sugar-free candy. Artificial sweeteners may contribute to metabolic dysregulation by altering the composition of the gut microbiota. Therefore, consumers should be aware of the science-based information about certain artificial sweeteners and the research on using them to promote eating pleasure, optimal nutrition, and health.

Yasara Kavindi Kodagoda
BSc. (Hons) Food Science & Nutrition
Wayamba University of Sri Lanka

Source: https://www.coca-cola.ie/


Source : https://lemetropolitain.com/

Going nuts about milk?

Let's know about milk from plants

Most of us start our day with a cup of tea or milk coffee. Have you ever gotten tired of the regular milk we drink and want to try something new? Fear not, we have so many options these days other than regular cow's milk. Yes, I am talking about plant-based milk products. Sri Lankans are not much familiar with the plant-based milk concept, but our major cooking ingredient "Coconut milk" is also a sort of plant-based milk but the difference is We do not consume it as a "milk".

Plant based milks can be produced using legumes, cereals as well as nuts. Soy milk is the major legume-based milk and it has been around the world since the 12th century. Chinese have been using it for their cuisines for centuries. When in 1945, the American entrepreneur Bob Rich developed and launched a soy-based whip topping, the dairy industry filed a lawsuit against him, accusing him of imitating their dairy products. At the end he won the lawsuit, presuming the idea that this is not an imitation but a replacement. That is bit of a history


Sources: https://www.pinterest.com/


Source: https://www.backfithealth.com/

on soy milk, which I have seen very commonly in the Sri Lankan markets as a plant-based milk.

Rice milk, Oat's milk are some cereal based plant milks. Almond milk, Hazelnut milk, Cashew milk and Macadamia nut milk are very famous nut milks.

You might think people who use plant-based milks are vegetarians or vegans. Yes, some of them are, but that is not the only reason to add plant-based milk to your diet. Even though it is not very common in Sri Lanka, Lactose intolerance is a pretty common condition in western countries. Lactose is the major carbohydrate in cow's milk and some people do not have the necessary enzymes in the body to digest them, so whenever they consume cow's milk they suffer from abdominal discomforts. With the proteins in milk some people might develop allergies towards them also. In such difficulties, plant-based milks would be an obvious choice. When some do not like the taste of cow's milk but still love to have a creamy component in their diets, go for plant-based milks. Ethical concerns and concerns on pesticides, antibiotics and hormones can drive you towards the plant-based milks. Dairy-alternative milks tend to have fewer calories, less fat (except for coconut-based milk), more water content (for better hydration), less protein (except soy). Some are fortified with other vitamins and nutrients. Soy milk contains all the essential amino acids, but soy is also one of the 8 common allergens that people may be intolerant nutritionally balanced of the plant-based milk alternatives, and closest to cow's milk or sensitive to as well and is the most Cashew Milk is a good alternative for those who don't like almond flavor and are concerned about calories, however, it is not a great option for those looking specifically for protein in a milk substitute. Rice Milk calories mainly come from carbohydrates, making it a good option for active people pre-exercise, particularly for those with nut, dairy, or soy sensitivities.

Those were the few facts that I wanted to introduce about plant-based milks. Hope it was worth something to think about.

Gimhani Gamlath
2015/2016 batch
Faculty of Livestock Fisheries & Nutrition
Wayamba University of Sri Lanka

Source: https://www.foodnavigator.com/Article/2021/08/26/Should-plant-based-or-cow-s-milk-have-a-


Source: https://www.comerpescado.com/

Fish...Let's eat...But be careful...

As eating fish is a controversial topic these days, we are trying to focus you on some highly important facts that you should be aware of...

As we all know fish and shellfish are good sources of protein and healthy fats. Besides those, fish can be considered as one of healthiest foods which is loaded with important nutrients like various vitamins, especially vitamin D, vitamin B2, and various minerals like Iron, Iodine, Calcium, Zinc, Phosphorus, Potassium etc. When compared with other meat products, fish is a better food for proteins and other nutrients. Also, fatty fish are a rich source of essential fatty acids like Omega 3, which is crucial for optimal body and brain function, lowering the risk of heart attacks, strokes, autoimmune diseases and depression etc. Though we were used to eating cooked fish flesh and dried fish mainly, with the time passed so many fish products are produced by using fish flesh as well as other parts of fish too. Food like sausages, fish balls, fish oil, fish cakes and by-products like Omega 3 tablets, textile leathers etc. are some of them. Fish can be obtained from sea or fresh water resources. Sri Lanka is a country which has a precious sea line with plenty of marine sources. So, we are lucky to have sufficient fish resources and fish become a cheap, easily accessible protein source for the public.


Source: https://www.public.md/

These days mercury poisoning has become a controversial topic due to several recent incidents, especially relating to the eating of fish. Though the mercury poisoning in fish is highlighted these days

in our country, there has been an increased concern about mercury in seafood over the last decades globally. Mercury is a naturally occurring element that is found in tiny quantities in air, water and soil. It can be released to the environment in several ways like natural recycling, volcanic activities and burning of fossils. But actually, human activities such as environmental pollution are the most serious cause for this mercury release. People can be exposed to mercury in different ways mainly via foods that they consume specially with the fish and shellfish, obtained from polluted aquatic environments. Amount of mercury in fish depends on fish species and levels of pollutants in its environment. mercury can be in organic, inorganic and metallic forms but *methyl mercury* is the most dangerous form.

Source: https://www.kk-99.top/

Mercury in water is converted to methyl mercury by bacteria and some other several processes. Then fish absorb this methyl mercury into tissues through their grills as they swim and breath, and through their digestive tracts as they feed on plankton and other fish. When humans consume these fish, mercury can be seen in our tissues also. Absorbed mercury levels differ from one species of fish to another. This is due to the factors like type of fish, size, location, habitat and age. Small fish who are at the bottom levels in the food chain contain low levels of mercury while fish that are predatory, larger, long live and placed at the top levels of the food chain tend to contain more mercury.

Examples for high levels of Mercury are Shark, Swordfish, Gem fish, Ray etc. and low levels of Mercury are shellfish like Shrimps, Lobsters, Oysters and fish like Salmon, Anchovy, Tilapia etc. Those have higher levels of mercury than small fish as a result of eating many smaller fish. Bioaccumulation and biomagnification in the food chain are the causes for this high level of mercury accumulation in larger fish. There is no way of cooking or cleaning to reduce the mercury in fish.

Exposure to Mercury can cause serious health problems like brain problems, Autism, Depression, Anxiety, Parkinson, Cardiovascular diseases etc. Some population groups like women who are or may become pregnant, breastfeeding mothers and young children have a high risk of problems related to Mercury. FDA-America also declared some advice on those groups such as to avoid completely eating fish like Shark, Swordfish, King Mackerel which may have high levels of mercury and to eat many types of fish that are both nutritious and lower in mercury etc.

Last, but not least, the most special thing is, Mercury is not the only contaminant that accumulates in this way in fish. Heavy metals such as Arsenic, Cadmium, Lead, Antimony and Chlorinated hydrocarbons like DDT, PCB and PBB also can be accumulated due to polluted water. So, being very concerned about what we eat and selecting fish is very important though they are cheap, very nutritious and easily accessible. Stay Safe. Be healthy.

H.K.Shanthi Thaksala
Undergraduate student
2016/2017 batch (4th Year Batch)
FLFN Wayamba University of Sri Lanka

Source: https://images.unsplash.com/photo-1563557908-b7787229f123?ixlib=rb-

Source: https://www.thekitchn.com/5-things-to-know-about-freezer-burn-246501

Source: https://agora.resposta.net/porque-isso-acontece-e-dicas-para-evita-lo/

Is freezer burned food safe?

You may have experienced freezer burning. If not sure, open the freezer door and look at ice crystals on ice cream, vegetables. Or remember the meat surface with black patches if not well covered. If you can see the foods in the freezer appear tough, discolored spots, covered ice crystals or shriveled, they are probably freezer burnt.

What is Freezer Burning?

Simply, freezer burn is the result of moisture loss. Actually, what happens here is sublimation. The ice becomes a gas without first melting and evaporating. This dehydration and oxidation cause dry pockets within the food. It is caused by improper freezing particles and/or exposure to air. All foods are susceptible to this effect, but foods with high moisture content will develop it more quickly.

Depending on what type of food you are dealing with, freezer burn can look slightly different. Freezer burning mainly affects texture and other quality characteristics like color and flavor of foods. In meat and poultry products, it is dark spots with a withered and leathery texture. When they are cooked, they will probably be tough and dry. In fruits and veggies, they become dry and shrivel due to high water content and it causes ice crystals. Freezer burned ice cream will also develop ice crystals, which ruin the dessert's creamy texture.

Can You Eat Freezer Burned Food?

Yes! Freezer burn affects quality but not safety. Actually, what happens is, it fundamentally changes a food's chemical composition, thereby affecting its flavor, color and texture to such an extent. So, it looks unpalatable and has an unpleasant texture and off-flavor. But it is still safe to eat, because your freezer is set to 0 ^{0}F (-18 ^{0}C), all pathogens cannot grow. If you want to eat food that has been affected by freezer burn, you can trim off the affected areas and use the rest. So, don't confuse it with freezer burning. It does not mean you *should*, but you *can.* So, what you can do to prevent freezer burning are,

Source: https://benessere.caffeinamagazine.it/

- **Wrap food tightly**

The packaging is very important to prevent freeze burning. You can use a layer of plastic wrap, a layer of foil and then a freezer bag should do the trick. Remove as much air as possible before sealing. (pro-tip: wrap poultry, seafood or meat by triple wrapping and if you are dealing with an open carton of ice cream, cover the container with wrap before replacing the lid.)

- **Keep your freezer at the proper temperature**

The faster the freeze, the smaller the ice crystals which prevent the freezer from burning. It is by keeping your freezer at 0 ^{0}F (-18 ^{0}C) or lower.

- **Don't thaw more than once**

Freeze food in small portions according to your needs. Every time you thaw and refreeze something, you are increasing the likelihood of freezer burn.

- **Only open the freezer when absolutely necessary and close it ASAP**

Opening the freezer frequently causes the temperature inside to fluctuate and more ice crystals form when foods start to thaw.

- **Keep an open cup of water in your freezer**

The water will slow the dehydration process by increasing the environment's humidity. Yes, the water will freeze, but it'll still slowly evaporate, which is the goal.

So, finally what I want to emphasize is, despite the quality changes, freezer burnt food is safe to eat. Wrap your food properly before freezing and remember to check what is hiding at the bottom, so nothing is stored for too long.

W.A. Ashani Rathnathunga
Undergraduate student
2017/2018 batch (3rd Year Batch)
FLFN Wayamba University of Sri Lanka

Source: https://in.pinterest.com/

Source: https://foodindustryexecutive.com/

IoT and the future of food industry

IoT (Internet of things) has had a massive surge in recent years, with the pandemic and technology leading the world to its future destination, IoT has become more prominent than ever. IoT and the food industry too have their ties and advances in recent times are making it stronger. Many applications in the food industry related to IoT are proven to offer sustainable solutions to many problems that it has faced.

IoT is a system of interrelated devices that are connected to the internet to transfer and receive data from one another. Until recently only a few devices like computers and smartphones were able to connect and access the internet. But with the development of the IoT, it has changed. Now there are about 30 billion devices that are connected to the internet and it is predicted that this number is to rise exponentially.

It is said that about one-third of the world's food is wasted. In the production and processing of these foods, the industry has to allocate huge chunks of its resources. When this much food is wasted that is a huge loss for the food industry as well as the global economy. If we consider the reasons for this wastage, the supply chain can be identified as a major one. From the farms and the processing factories to our plates, the food supply chain is crucial. Since food is a perishable product, along the way there can be losses. As solutions to these problems, IoT has given us several applications. Real-time tracking of products using the Radiofrequency Identification (RFID), networks including humidity, temperature, light, and microorganisms monitoring. Real-time monitoring can provide advantages like suggesting the drivers take the fastest route, and also reroute if there is an immediate shortage nearby without going to the destination. By such methods, it is both fuel-efficient Can prevent the losses that may happen during the supply chain in the food industry.

These predictions are done through, IoT and Data Science can be very beneficial for food industries that deal with highly perishable food products like meat, milk, fruits, and vegetables. Already these IoT applications are used in the food industry.


Source: https://nohat.cc

Raw materials are crucial for food manufacturing. Farmers, therefore, want to supply the highest quality and the highest yield to the processing industry so they can get good profits. Harvest depends on several factors like the species of the crop used, the soil, the climatic conditions, fertilizer, etc. With the advancement of IoT, a technology called smart farming emerges. Smart farming is the use of IoT in farming to optimize its resources to gain the maximum yields and also to encounter problems much more easily.

One such example is soil monitoring. Sensors are used to measure the temperature of the soil, amount of Nitrogen, Phosphorus and Potassium levels, Moisture levels, the content of water, Oxygen, and many other parameters that are crucial for plant growth.

Data is collected from these sensors over a period of time, and also data about plant growth, the yield etc. Then data scientists are able to analyze and visualize the data so we are able to come to decisions based on them. Also, they are able to use technologies like machine learning and deep learning to predict what the yield is going to be after analyzing a small sample of soil. Based on this information farmers can plan how they are going to start the cultivation, what resources they need to analyze and also get a forecast on their profits. All these under your fingerprints in seconds.

The world of technology is growing and it is growing fast. Technology has been in a phase of acceleration in the past few decades and with the pandemic this acceleration has doubled. More and more innovations are coming out daily and the current technologies are updating every second. The food industry will definitely be influenced by this. With IoT, new avenues would open in the food industry that no one would ever think about.

Pathum Chamupathi
Undergraduate student
2017/2018 batch (3rd Year Batch)
FLFN Wayamba University of Sri Lanka

Source : https://www.finoit.com/blog/

ACKNOWLEDGEMENT

We are honored to present the first issue of the newsletter “FOOD’XTRA”, by the Society of Food Science and Technology (2022) of the Department of Food Science and Technology. We are sincerely grateful to our Dean of the Faculty, Prof. (Mrs.) C.V.L. Jayasinghe for her valuable ideas, support, and guidance from the beginning to the end.

We are really fortunate that we had the kind association and supervision of Dr. (Miss) H.P.S. Senarath, Senior Treasurer of the Society of Food Science and Technology. Her exemplary guidance and consistent encouragement were so great, even our profound gratitude is not enough. We were lucky enough to be able to do this under her guidance.

Furthermore, we sincerely thank Dr. (Mrs.) P.M.H.D. Pathiraje, the Head of the Department of Food Science and Technology, for taking part in useful decision and giving all necessary support, advice and arranged all facilities to us throughout this work.

We would like to express our deepest gratitude to Prof. K.D.P.P. Gunathilaka for coming up with this wonderful idea of issuing a newsletter from the Department of Food Science and Technology. This is truly a golden opportunity for us. This would not have been possible without his guidance and careful monitoring throughout this work.

We sincerely thank all our lecturers in the Department of Food Science and Technology for all their encouragement. Your valuable suggestions and guidance have been helpful in various phases of the completion of this task. We are deeply indebted to all the lecturers without whose constructive feedback this event would not have been a success. So, we convey our sincere gratitude for your proper guidance for the completion of this task successfully.

We would like to express our special thanks to Ms. Thrimali Basnayake from the English Unit of Wayamba University, Makadura premises, for the time spent correcting our mistakes and giving us support to complete this as soon as possible.

We also take this opportunity to express our deep sense of gratitude to all the writers who supported us by giving us articles. They all spent a lot of their precious time and effort on us. Last but not least, we would like to appreciate the efforts of all members of

the Society of Food Science and Technology for their hard work to make this a success. This achievement required a lot of effort from each individual involved in this task, and we would like to thank them all again.

Newsletter Designers

Newsletter Cover Designer

Pathum Chamupathi
Undergraduate (2017/ 2018 batch)
Faculty of Livestock Fisheries and Nutrition
Wayamba University of Sri Lanka

Newsletter Designer

Kasun Kumara
Undergraduate (2017/ 2018 batch)
Faculty of Livestock Fisheries and Nutrition
Wayamba University of Sri Lanka

Newsletter designer (Content)

Anjana Gunasinghe
Undergraduate (2017/ 2018 batch)
Faculty of Livestock Fisheries and Nutrition
Wayamba University of Sri Lanka

SFST Committee 2021/ 2022

Senior Treasurer: Dr. Samanthika Senarath | **President:** Isura Madusanka | **Vice President:** Pathum Chamupathi | **Secretary:** Gayashi Jayarathne | **Vice Secretary:** Ashani Rathnathunga| **Junior Treasurer:** Kalana Maduranga |**Editor:** Kasun Kumara | **Editor:** Anjana Gunasingha

Committee members

Naveen Anurada | Darshana Wajira | Chamika Sampath| Hasitha Perera |Chamodi Madushani | Parami Chandrasiri | Nethmi Adikari | Gayathri Peries

Society of Food Science & Technology
Wayamba University of Sri Lanka