ISSUE NO : 18

ESSEN RIVESTA

ENTWINE WORLD & NUTRITION

This time on dried foods

CONTENTS

HISTORY SPEAKS...

Food drying is the most oldest practice of preservation followed by our ancestors. Guess what life would depend without refrigeration and canning for storing foods especially perishables and seasonal foods? Yes it is drying. In ancient of times the sun and the wind are the natural source for drying. History speaks about the Middle East and oriental cultures actively dried foods as early as 12000BC in the hot sun. fruits and vegetables were dried before meat. They preserved fruits by wrapping it in dried palm leaves and buried it in hot sand to dry. The Romans relayed on the dried fruits they could make. Native Americans in the northern parts of the united states used smoke to dry the meat, herbs, vegetables, etc,. Indians in the Peru dried potatoes by freezing them overnight and thawing them in the morning sun which is still followed till today. The people in the Arctic created caches of surplus freeze dried foods mainly walrus meat by piling stones on the top of their treasure to keep predators from devouring it. Without dried foods nomadic lifestyle would be impossible. The effective use of sun, wind, and smoke from a fire provided the means to remove the water from the food stuffs. However the success depended upon choosing right days of drying. Luck played the major role with little ingenuity. The elements were unpredictable. But over time the evolution of drying was perfected. The Romans and the Greek successfully dried the grapes. The Persians learnt to preserve the dates and melons. The Asians were clever at the art of curing fish and sea vegetables. The Mongolian explorers packed a bundle of dried milk products to sustain them in their long journey. Drying was an alternative for fresh foods. Throughout history dried foods formed the major sustaining protein provider. Initially fish was very tough to dry because of bacterial contamination in the raw product. Hence the introduction of salt curing commenced. Just imagine about the Asian dishes without salted sea foods! Experimenting over centuries the Asians have triggered the intriguing taste and texture from
the dried foods which is not found when eaten fresh.
What about Tamil Nadu?
If you are from Tamil Nadu you must have tasted vadagam, the traditional sun dried food and karuvadu the salt cured sun dried fish.
To conclude, evolution of drying is cyclic . we eventually go back to the tradition to recreate food practices. For better drying techniques one must look back at the tradition which overcame difficulties over centuries.

Shekinah Pauline R

EVERYTHING STEVIA

Compiled by
Vinass Jamali P

Stevia! A small leaf filled with sweet possibilities. It is green. It is small. It is sweet. And it adds a sweet taste to the foods and beverages you love. What exactly stevia is? Stevia comes from the *Stevia rebaudiana* plant which is the member of the chrysanthemum family, a subgroup of the Asteraceae famiy(ragweed family). *Stevia* , a plant sweetener which is 150 times sweeter then sugar. It is a non nutritive sweetener. This means it has almost no calories. The active compounds of stevia are steviol glycosides. *Pure circle limited* is the world's leading producer and innovator of stevia sweeteners for the global beverage and food industry.

The pure circle has announced that it is building a new processing plant that will double the company's capacity to produce its stevia leaf extract upto 50% and the potential to double the company's steva production capacity moving forward.

They launched new tools to help consumers formulate with stevia for optimum taste. Purecircle announces the launch of its new Sigma- Xcelerator (SM) product development tool. This tool enable to provide maximum product taste alongside other customers requirements , such as sugar reduction, speed to market, cost and solubility.

Looking at the second quarter of 2017, the percentage of food and beverages products with stevia launched by pure circle increased by +13 vs the comparable period in 2016. It is the only company that combines advanced R&D with full vertical integration from farm to high – quality, great – tasting innovative stevia.

Purecircle unveils Stevia Cocoa and Vanilla enhancers and produce the products at a manageable price point. These breakthroughs build on Purecircle 's extensive range of flavors which allows to enhance the key benefits such as mouth feel, sweetness quality and different tonalities across a wide range of applications.

The Global Stevia Institute engages with scientific experts around the world to provide comprehensive stevia information to influencers and consumer alike. Visit the website to access digital resources on everything from detailed studies on stevia's safety and health benefits to greatest tasting recipes.

Acknowledgement:
http://www.stevia.com

TRADITIONAL DRIED FOODS OF TAMILNADU

APPALAM/PAPPADAM:

A pappadam is a thin, crisp, disc shaped food from the Indian subcontinent. It is typically served as an accompaniment to a meal in Tamil Nadu. In Tamil Nadu, it is called as Appalam.There are different varieties of pappadam like chickpeas, greengrams, blackgrams, potato, rice, etc..,

BENEFITS:

This food is low in saturated fat, and very low in cholesterol. It is also a good source of Dietary Fiber, Protein, Folate, Iron, Magnesium, Phosphorus and Copper.

DRAWBACKS:

High Sodium content.

VADAGAM:

Sun-dried seasoning balls ot Thalippu vengaaya vadagam are used in Tamilnadu to prepare curries like sambhar, kootu, chutney which gives unique flavour to the curry.There are many vadagams like Rice vadagam, Onion vadagam, Star vadagam, Javvarisi vadagam etc.,.Vadagam serves as a ready to use instant seasoning.

-Haniya Azfar FAthima.A

FREEZE - DRIED ICE CREAMS

It is a ice cream that has had most of the water removed from it by a freeze-drying process, sealed in a pouch, and requires no refrigeration. It is a ready-to-eat dehydrated ice cream compared to regular ice cream, it can be kept at room temperature without melting. Freeze drying / lyophilization process removes water from the ice cream by lowering the air pressure to a point where ice sublimates from a solid to a gas.

It's known as astronaut ice cream or space ice cream. Freeze dried foods allows you to enjoy food without a need of freezer. It can be sent on long-duration space-flights ant to reduce the weight of the water and oxygen normally found in food. Vanilla ice cream bar sandwich also available, a freeze-dried ice cream sandwich is between two wafers , it's a melt proof and it's similar to astronaut to eat in space. Neapolitan flavor (made up of three separate flavoured blocks)

- Vinitha K

RISK OF BOTULISM IN HOME-CANNED FOODS

Canned goods is a good option if we're buying fruits or vegetables in off season. It is more convenient than frozen foods, specially, in storage and transportation. Home -canning is an excellent way to preserve the garden produce and is one of the emerging small scale industrial process among the women. But, improper canning of foods resulting in bulging, leaking, badly dented of cans may lead to contamination of microbes especially spores. The risk of botulism sounds well from home - canned foods with low acid content. Because, commercially canned foods undergo the process of Botulinum cook which is a high heat cook @121^{o}C for at least 3mins that reduce the Clostridium botulinum spores. Botulism is a rare but potentially fatal disease due to toxin produced by Clostridium botulinum. This spore is common both in soil and water and they produce toxin in certain conditions where food is improperly canned. This toxin can affect nerves and cause paralysis even death. Foods with low acidic pH (>4.6) are not enough to prevent the growth of the germ. Botulism spores are heat resistant . The water bath used in home-canning process fails here. Home canning should follow strict hygienic recommendations to reduce the risk by using the commericial pressure canner in which high heat (@ or above 250 F-& 10 to 15 PSI) can be obtained. Improperly canned foods should be expelled from consumption.

Kowsika.N

TECHNICAL INNOVATIONS

SPRAY DRYER

When most of us think of space food what comes to mind are probably those silver packets of freeze dried ice cream. Surprisingly, freeze drying or lyophilisation is an effective way of drying materials without harming them. It is under main phenomenon of sublimation which involves direct transition between the solid state and gaseous state without passing through the liquid phase. Earlier to achieve this, the product is first dried under vacuum, without being allowed to thaw out. Likewise, another method in which a dry powder is produced from a liquid or slurry by rapidly drying with a hot gas. This method is mainly preferred for thermally sensitive materials such as foods and pharmaceuticals. Mainly air is used as a heating medium in this process.However, if the product is oxygen sensitive then nitrogen is used. An **atomizer** or **spray nozzle** is used in all type of spray dryers to disperse the liquid or slurry into a controlled drop size spray. Main challenge in providing food for the space travelers. As they are in the space they are in need of nutritious food like energy powders which will provide them necessary supplements to their body throughout their journey. One such product developed is EGG POWDER which is obtained by spray drying the liquid egg. As we all know egg consist of three parts: the shell (10%),the albumin or egg white(60%) and the yolk (30%). An average egg weighs 55-60gram respectively. Full egg or its parts are used in various industries. Whole egg powder (WEP) is used in rising qualities of cookies and pasta. Egg yolk powder (EYP) is used as a substitute for fresh egg yolk to obtain color and texture.

Egg albumin powder (EAP) is used in a range of items from fish, meat and potato preparations to bakery and pastry products. After the removal of egg shells the mixture is filtered and stored in a tanks at about 4 degree Celsius and then it is taken to a tubular heater, wherein it is dried at about 65 degree Celsius for 8 to 10 minutes and it is filtered and passed to high pressure spray drier with the help of high pressure pump. The material which comes out of high pressure spray drier is not only in dried form but also in powder form, which is then packed in polyline boxes. The average year around 80% of eggs are produced in a powder form. This spray drying is often referred as a **encapsulation** technique by the food and other industries. The nano spray dryers offers new possibilities in the field of spray drying. Particles can be produced in the range of 300 nm to 5 micrometer with a narrow size distribution. High yield upto 90% can be produced by this technique. India is the lowest cost egg producer in the world. As egg is the primary animal protein in many parts of the world. Egg products will continue to be an important part of our daily diets. This encapsulated technique will help to improve nutrition, safety and shelf life of product respectively.

MICROWAVE ASSISTED VACUUM DRYING (MWVD)

In order to prevent significant quality degradation, vacuum drying is introduced to replace the conventional hot airflow drying. During vacuum drying, high-energy water molecules rapidly diffuse to the surface and evaporate into the vacuum chamber. The vacuum in the drying chamber sharply reduces water vapor concentration at the surface of the products. In addition, it lowers the boiling point of water in the interior of the products. These create large vapor pressure gradients between the food interior and surface, resulting in significantly rapid drying rates. Thus, for a given rate of drying, vacuum enables the products to be dried at a lower product temperature than that under atmospheric pressure. Moreover, the absence of air during dehydration reduces oxidation. Because of these advantages, the color, texture, and flavor of dried products are all improved ,Vacuum drying is especially suitable for products

that are heat sensitive such as fruits with high sugar contents and certain vegetables with high value.

External heat transfer by convection is, however, absent in vacuum. One must use MW or radiation or conduction in conjunction with vacuum to provide thermal energy needed for water evaporation. Vacuum drying has high operating costs due to the need to maintain vacuum over long periods of drying.

To overcome the drawback of vacuum drying, MW-assisted combination drying with vacuum has been investigated to speed up the process. Most MWVD studies focus on the fruits and vegetables that need the 'puffing' quality in the final product. But the same method can also be applied to other food products, such as parboiled rice and shrimp. In particular, MWVD techniques are reported to be used successfully for the dehydration of grapes , cranberries , bananas , tomatoes, carrots, garlic, kiwi-fruit, apple and pear. These products possess excellent quality in terms of taste, aroma, texture, and appearance.

Cui _investigated temperature changes during MW-assisted vacuum drying of sliced carrots and developed mathematical models for predicting the sliced sample temperature. Regier compared the convectional drying of lycopene rich carrots with MW vacuum drying and concluded that by MWVD the drying time was shortened to less than 2 h compared with 4.5e8.5 h in convection drying with similar carotenoid stability (50e 70 C).

Lin _compared MW-assisted vacuum drying of carrot slices with air drying and freeze-drying. MWVD sliced carrots had higher rehydration potential, higher *a*-carotene and vitamin C contents, lower density, and softer texture than those prepared by air drying. Although freeze-drying of carrot slices yielded a product with improved rehydration potential, appearance, and nutrient retention, the MWVD carrot slices were rated as equal to or better quality than freeze-dried samples by a sensory panel for color, texture, flavor and overall preference, in both the dry and rehydrated states. As noted earlier, energy savings and product quality enhancement are feasible when MW field is applied intermittently rather than continuously. It is also possible to lower the MW field strength as the material dries to avoid potential for overheating. Although not reported in the literature yet it is possible to apply MW field intermittently or continuously while the ambient pressure is cycled between atmospheric and vacuum levels.

OXYGEN ABSORPTION TECHNOLOGY BY MITSUBISHI

Producers of organic and natural foods face particular challenges in keeping their products from spoiling without preservatives and additives. Consumers who buy organic have the expectation of "clean" products that are also fresh and shelf-stable. So in the era of increases scrutiny towards reducing food spoilage and wastage, there is pressure on the producers. Thus only innovative packaging technologies will help meet consumer demands and fresh foods.

Reducing oxygen is key to extending shelf life because oxidation leads to moulding, as well as to degradation in colour, texture and taste. By reducing oxygen levels within a sealed package, producers can dramatically improve the shelf life of processed foods. There are significant benefits for natural and organic brands seeking to reduce preservatives in their products.

The new Mitsubishi oxygen absorption technology, which was highlighted on the Innovation Stage at Pack Expo Las Vegas, promises to more than double the shelf life of some food products. The technology is particularly relevant for organic and natural food brands looking for shelf-life extension solutions, including in the baking and snack space. The Company has come out with the technology in the form of a resin that can be layered into any barrier film to provide oxygen absorption. It reduces oxygen levels within a sealed container down to 0.1 percent or less, without the need for gas flushing or sachets. It is particularly well-suited for retort and heat-treated packaging as well.

The retort process can be very harsh on foods because the intense heat in combination with the oxygen in the product and in the headspace dramatically alters a food's taste, colour and texture, as well as its nutritional value. By absorbing oxygen during retort, degradation is avoided while dramatically improving shelf life. Essentially, the technology both protects and preserves food. Manufacturers often add extra flavourings, sodium and other ingredients to compensate for the effects of the retort process. That makes this technology a game changer in the food industry because processors can reduce or

eliminate many of these additives, leaving the food's genuine, original flavour.

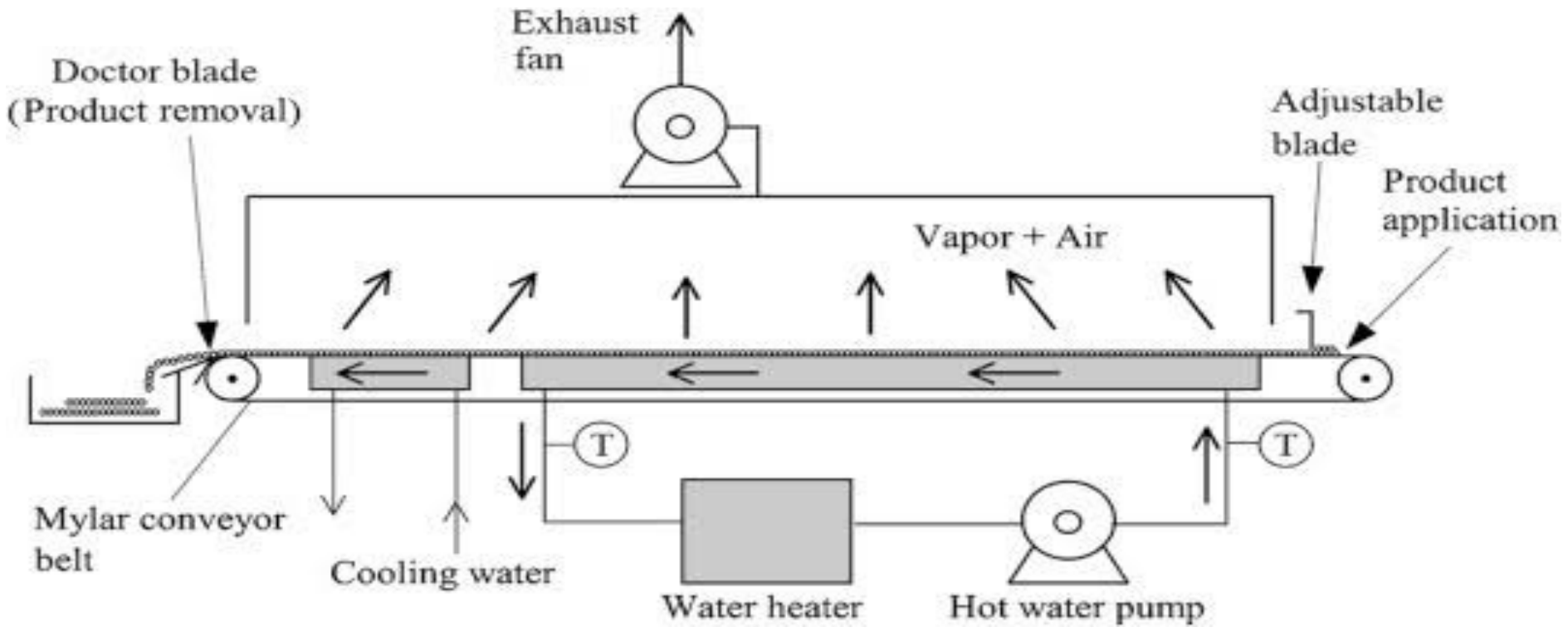
This technology is also well-suited to the organics market because it meets the specific demands of consumers, brand managers and retailers. Consumers of organics want fresh-tasting, wholesome food with as few added ingredients as possible. In addition to meeting these customer needs, brand managers and retailers want shelf stability to save on costs and minimize waste. By putting oxygen absorbing technology within the package, they can satisfy all of these multiple demands: a clean label, great-tasting food, and extended shelf life and reduced waste. Other similar products on the market function more like a super barrier rather than an oxygen absorber, which makes this technology unique. Other technologies require some type of activation, which this technology does not. In addition to films, this resin can be incorporated into rigid containers.

REFRACTANCE WINDOW FOOD DRYING SYSTEM

Refractance Window Technology is a new drying system, invented and developed by Richard Magoon, owner of MCD Technologies, Inc. of Tacoma, Washington. It is a novel drying method for converting liquid foods powders,flakes etc.Refractance Window drying uses circulating water at atmospheric pressure to carry heat to the product to be dried. Moist product is applied to the upper surface of an infrared-transparent, plastic conveyer belt that floats on the surface of the heated, circulating water. This water is continuously re-circulated and re-heated, so as to maintain temperature as heat energy is transferred to the product.Unlike hot air tray or tunnel dryers that require several hours or freeze dryers that take from 12 to 72 hours, Refractance Window dryers require only 2 to 6 minutes to dry most products. Refractance Window drying has major advantages over tray and tunnel drying, as well as over drum drying and spray drying, in that foods and pharmaceutical ingredients are exposed to much milder temperatures and final products maintain high levels of sensory qualities, such as color, flavor, and aroma.

The Self-Limiting Infrared 'Window'

The term "Refractance Window" relates to the dryer's principle of operation. Water transmits heat energy within itself by all three heat transfer methods: conduction, convection and radiation. Of these, radiation is the most rapid, taking place at nearly the speed of light. If the water's surface is covered by a transparent medium such as plastic, evaporation and its associated heat loss is blocked and only conduction occurs. But when a moisture-laden product is placed on the plastic surface, a "window" for passage of infrared energy is created at the point where the moist product contacts the plastic and the plastic bears on the water. At this point all three methods of heat transfer, radiation, conduction and convection, occur for exceptionally effective heat transfer into the product, producing rapid evaporation. As the product dries, however, the infrared "window" closes, effectively limiting heat transfer to the product to conduction. Since plastic is a poor heat conductor, the product is protected from overheating.

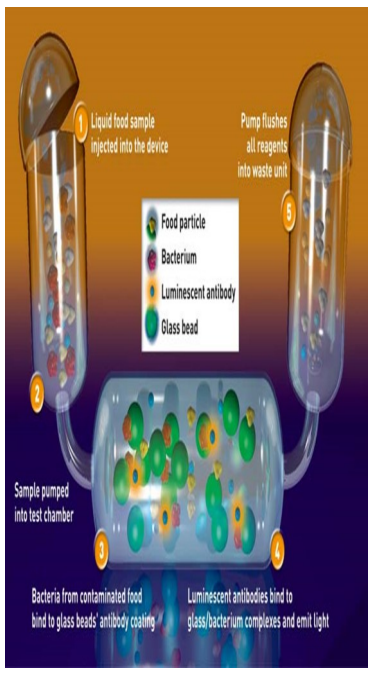


Refractance Window drying uses a low-temperature/ short-time continuous process to dry delicate, heat-sensitive products such as fruit and vegetable purees. Drying takes place at atmospheric pressure to retain product color, flavor, aroma and nutritional content. Product quality is comparable to and, in some instances, better than that achieved by freeze-drying. This is done at significantly less capital and energy cost. One dramatic example: The patented process dries raspberry puree from 92% moisture to 2-4% moisture in just five minutes. The rapid, gentle drying minimizes product degradation caused by heat and oxidation and maximizes retention of color, flavor, vitamin, antioxidant resistance and aroma. They operate at atmospheric pressure. Dried product has high bulk density.

Infact, a self-limiting drying process is built into the system, a system that is less dependent on operator intervention for maintenance of quality characteristics in products to be dried. It is a system where water transmits heat energy into the product, forcing product moisture to evaporate. In other words, the process uses water to evaporate water.

IMMUNOFLOW

Immunoflow is a light portable automated device to detect poisoning and spoilage of food samples invented by **Dr. Bart C Weimer,** a microbiologist at Utah State University, Logan. The gadget could tests for microbial contamination of raw -food, cooked food, meat and meat products. It saves time of food analyzers by ascertaining the presence of bacteria in a time less than **15-30 minutes**, which when analyzed conventionally, takes 24 to 48 hours. It could be so easily used and it is so sensitive to detect *Salmonella, E.Coli O157, Listeria* even if present less than 100 cells/ml. The suspect liquid foods of 50 ml can be simply flown into the immunoflow's chamber.

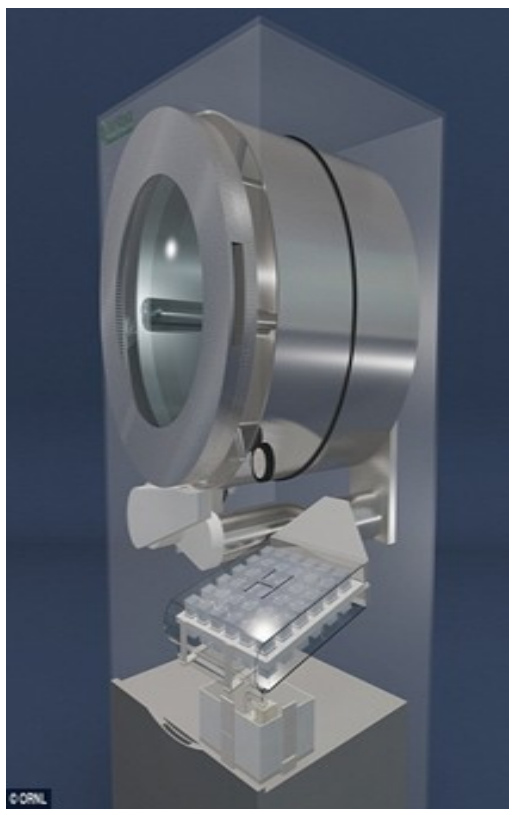


While the solid foods are pulverized with water or buffer solutions and pushed by a battery operated pump into the chamber containing hundreds of glass beads, each coated with millions of antibodies that stick to the kind of bacteria we are testing for. These antibodies are specific to specific bacteria. Thus it forms a antibody- bacterium complex. The analyzer would then add another set of antibodies labeled with luminescent marker that will bind to the antibody-bacterium complexes in the chamber and glows. The luminescence can't be spotted unless immunoflow is plugged to a device called Photon Counter. **Brighter the glow, more dangerous will the food**. This device can be even used at homes, retail shops to test the food products when the photon detector of a size of PC is made handy and portable. Weimer's immunoflow focuses only on detecting the presence of bacteria but it could also be extended to detect toxins, viruses and parasites too.

ULTRAVEG

Dehydrating foods by ultrasonic waves

Dried foods are the major element in food processing and the staple ingredients for increasing food stuffs. Dried foods offers many advantages for the food industry - longer self life, easy and inexpensive shipping and safe treatment. ULTRAVEG- the upcoming project for which the scientists works together with the experts of Technischen university –Berlin and Spanish research centre on the improving the quality of dried foods by using high power ultrasonic waves. What is ultrasonic waves? Ultrasonic waves are sound waves of very low frequency (20hz). This high power ultrasonics (HPU) is powerful new technology that is not only eco friendly, safe ,economical and efficient project. The scientists have estimated that HPU will decrease the drying time 16% and final moisture content of the food produces to 5-6%. Ultrasonics enhances the mass and heat transfer by sponge effect phenomena. Equipment used for this is ultrasonic drier.With the use of ultrasonic vibration under the vacuum condition, ultrasonic waves can intensify the mobility of water molecules and facilitate the evaporation process. Therefore, it can be used in place of heating for the removal of water molecules. HPU causes cavitation on the material which leads to the gas bubbles formation and it facilitates the degassing process resulting in higher diffusion rate in such process osmotic dehydration. Using HPU technology other physico-mechanical characteristics of food products during or after drying process such as weight-loss and thickness can also be assessed by using velocity and absorption coefficients of ultrasound in food product sample. This project would become an alternative for the Accelerated freeze-drying which holds high initial investment because of the hi-tech equipments used and meanwhile it is energy consuming.



VINASS JAMALI P

HERE COMES DRIED FOOD FOR YOU...

Here I come! Here I come!
To all your plates at happy home
With all my water begged up Rome!
Sprayed and dried, trayed and dried
Freezed and dried and more of fried
Are dried and dried for better Dine!
Being dried, I'll die delay
And make the microbes in me slayed!
Not oxidation, nor (In) toxication
Can come and make you a patient!

FOOD IS WHAT
WE ALL DON'T HATE!
"THE PROCESSED FOODS- WON'T
TAKE YOU HELL OR PUT YOU ILL!
BUT WILL MAKE YOU MORE WELL AND WELL!

-NEVETHA R

WHO AM I ?

I am a version of jerky. I am originated from Hausaland. I am a dried form of suya, made from deboned cow, sheep or goat meat. In my recipe each of the selected muscles is sliced into sheets of one metre or less for easy drying. Later my dried sheets of meat are then collected and kept for the next following process. To increase my demand for flavour a paste made from peanuts called labu is used. Labu is made by dilution of enough water,spices,salt,ground onions and sometimes sweeteners like honey is also added apart from spicy food I am enjoyed as a sweet food also. Then my dried sheets of meat are then immersed one by one in the labu paste and then left to dry for hours before roasting on a wire mesh. Can you guess who I am?. Is your mouth watering.

Ans: I am Kilishi . I can be kept for months without much change to its taste.

DONE BY
KAVYA

FLOW CHART FOR MAKING OF CHOCOLATE BAR

FERMENTATION

DRYING

ROASTING

BREAKING

GRINDING

PRESSING

MIXING

TEMPERING

HARDENING

FARM TO FORK

The processes that comes to our mind while saying chocolate is just the melting of chocolate bars and pouring into moulds of desired shapes. But, have we ever thought about how that chocolate bar is made? So the farm to fork session of this edition explains the making of chocolate bars. The interesting part is, your flow of gaining knowledge is broken and curiosity is stimulated at a point. Try to find out the missing process or you have to wait for the next edition to make your chocolate bar!

A REAL CHOCOLATE BAR OFFERS...

Chocolates are rich sources of antioxidants. Other nutrients from chocolate include protein and essential minerals

MAKING OF CHOCOLATE BAR:

The cocoa (*Theobrama cacao*) seeds are fermented for 4 -7 days and then dried for 5-14 days according to the climatic conditions. 400 dried beans would yield 1 pound of chocolate.

The beans are roasted at 95-125^0 C for about 1 hour. 45 kg of roasted beans are obtained from 100kg of harvested beans. The roasted seeds are then crushed, and broken into tiny fragments called nibs. Then the nibs are finely ground into cocoa mass which contains 54% fat.

Pressing refers to subjecting the cocoa mass to high pressure of about 550 kg/cm^2 in order to separate out the cocoa butter which is an important ingredient of chocolate. The cocoa butter is made odourless and tasteless by means of steam and vacuum extraction since chocolate industries prefer cocoa butter with neutral taste.

The cocoa mass, cocoa butter and sugar are mixed. Milk is added optionally.

Tempering refers to the cooling of hot chocolate mass.

Hardening is the process in which the chocolate is poured into desired moulds and hardened which results in chocolate bars.

Acknowledgement

xocoatl.org/prod.htm
en.m.wikipedia.org/wiki/cocoa_bean
www.eurococoa.com/en/x/152/the-production-process

DONE BY
Sarojini R

POTASSIUM METABISULFITE (KMS) TREAMENT IN RAISINS

-Is it A Boon or Bane?

Raisins are produced in many regions of the world and may be eaten raw or used in cooking, baking and brewing industries. The main treatment process which takes place in processing of raisins is treatment with potassium metabisulfite. Even though Food Safety and Standards Authority of India (FSSAI) governed by Indian government has banned the usage of potassium metabisulfite in foods, some fraudsters are existing till now. What to do? It is needed to preserve the raisins to extend it's shelf life and quality. Let us see how potassium metabisulfite preserves raisins.

How Does KMS works with raisins?

During drying of raisins, colour changes occurs due to browning process. Browning is caused by enzymatic and non -enzymatic browning reactions initiated through cell breakdown from cell dehydration. The predominant enzymatic browning occurs when polyphenol oxidase (PPO) comes into contact with phenolic compounds when cell integrity is lost. So Potassium metabisulfite is applied to raisins before drying to decrease the rate of browning caused by the reaction between polyphenol oxidase and phenolic compounds by producing sulfur dioxide which also helps to preserve flavour and prevent the loss of certain vitamins during the drying process.

Effects of KMS usage:

Potassium metabisulphite will be an allergen for some individuals. When KMS treated foods are consumed, it causes difficulty in breathing, swelling of extremities, difficulty swallowing, also it may lead to throat cancer when consumed frequently. So, to avoid the KMS effect, the raisins have to be soaked in water which will remove the sulphur compounds (which is carcinogenic).

FACT FOR YOU:

Soft drinks are commercialized into the market only after 15 days from manufacturing. The reason behind it is, if we consume the drink immediately after manufacturing, we might suffer from throat pain due to the usage of potassium metabisulfite for preservation of drinks. So it is left to you, whether it is a Boon or Bane?

Reference:

- https://www.livestrong.com/article/470024-what-is-potassium-metabisulphite/
- https://en.wikipedia.org/wiki/Raisin#Pre-treatment

DELICIOUS VALUE ADDITIONS TO FIG

Fig is an Asian species of flowering plant in the mulberry family. It is grown commercially in Middle East and Western Asia.
Figs are rich sources of dietary fibre. Fig contains phytochemicals including polyphenols such as gallic acid, cholorogenic acid, syringic acid.
Dried figs are used in jam making, ice cream, cakes, cookies, bars and bread.

FIG CAKE:

Fig cake is prepared with fig as a main ingredient. Additional ingredients include cinnamon, walnuts, clove, nutmug, almonds. It is a moist cake and is topped with honey or whipped cream. It may be prepared as a pudding cake, bundt cake or a torte cake. It is a part of Greek cuisine.

FIG ICECREAM:

Fig ice cream is most popular nowadays. Fig is the primary ingredient and is combined with honey and almonds.

FIG ROLL:

Figs are a popular snack in most of the world. The Fig roll is a sweet roll with fig paste that dates back to ancient Egypt, where it is still eaten today.

FIG BREADS:

Fig breads are prepared by using figs, fennel seeds, all-purpose flour, baking powder, olive oil and salt. Dried figs can be eaten raw or converted into deserts. Figs are high in minerals vitamins particularly K and B6 and fibre.

INDUSTRIAL UPDATES

World 's first alcoholic beverage made from tofu whey

A research team from National university of Singapore (NUS) has successfully turned tofu whey, a liquid that is generated from the production of tofu and is often discarded, into a tasty alcoholic beverages which they named Sachi . The innovative fermentation technique also enriches the drink with isoflavanoes, which are antioxidants that many health benefits. The creation of Sachi was initiated a year ago, by Associate Professor LIU Shao-Quan and his PhD student Mr.CHUA Jian-Yong, who have an interest in sustainable food production. Both are from the Food Science and Technology Programme at the BUS Faculty of Science. The team has filed a patent for the novel process making Sachi, as they are looking to collaborate with industry partners to introduce the drink to consumers.

https://www.sciencedaily.com/releases/2017/11/171127093201.htm

New technique can detect impurities in ground beef within minutes

Researchers at the University of British Columbia have found a better way to identify unwanted animal product in ground beef.Students led by Professor Xiaonan My used a laser equipped spectrometer and statistical analysis to determine with 99 percent accuracy whether ground beef whether ground beef samples included other animal parts. Their new method can accomplish all of this in lea the five minutes which makes it a potentially transformative food inspection tool for government a industry. Whether a meat samples is identify or adulterated with offal can be determined by comparing its spectral image with the pre-established library, to see if there's a match. The instrumentation for this technique is not complex, and user friendly software that connects a to a robust library of spectral images. As more types of meat and offal were analysed the results stored the technique would become even more accurate.

https://www.sciencedaily.com/releases/2017/11/171127105959.htm

Unilever to acquire Tazo from Starbucks

Unilever p.l.c says it will buy the Tazo brand from Starbucks a key brand in the burgeoning specially tea category in a deal worth $384 million . Under the asset purchase agreement Unilever will acquire the Tazo grandad all related intellectual property, signature receives and inventory. The fast growing speciality tea segment makes up to 48 percent of the total U.S. $1.6billion at home tea category. Trends suggests it will become more prominent in the future. Tazo is sold primarily in the U.S and Canada. Tazo represents strategy that can bolster Unilever's tea portfolio toward high growth segments, and it's artfully crafted speciality teas perfectly complement out or global tea business which include Lipton, Pure Leaf , PG Tips, T2 and recent addition Pukka. Subject to regulatory approval, the transaction is expected to close in the fourth quarter of 2017. Once the deal is finalized, Starbucks said it will drive a single tea brand strategy and focus with its Teavana brand.

https://www.foodprocessing.com/industrynews/2017/unilever-to-acquire-tazo-from-starbucks/

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Farm to Fork (Answer for last edition):

This process is a mechanical treatment to prevent a layer of cream from separating out in finished milk. milk is pumped at high pressure through the narrow tubes, breaking up the fat into small particles which do not re-combine, so that the resulting milk has a consistent texture and taste.

Homogenization

DID YOU KNOW?

D value(Decimal reduction time)

It is the heating time in minutes at a given temperature required to result in one decimal reduction (1/10) in the surviving microbial population.

Z value:

It is the thermal resistance constant and is a unique factor describing thermal resistance of microorganisms. It is defined increase in temperature to cause 90% reduction in decimal reduction time.(D value)

F value:

It is also know as thermal death time . It is the time required to cause stated reduction in population of microorganism. It is the time required to reduce the given population of microorganism with Z value of 10ºC at 121.1ºC

READERS COLUMN:

This edition of ER deals with the dried foods. drying is the broad term, which has been the major way of preservation since ancient days. In these modern days freeze drying has its own importance in foos preservation field. Spray dryer is commonly used to arrive at fine particles from past few decades. This issue of ER gives a glimpse of new emerging techniques employed in drying foods. To make this more interesting we have also touched the area of some traditional dried foods.

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