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ENTWINE WORLD & NUTRIRION

FOOD ADDITVES-2

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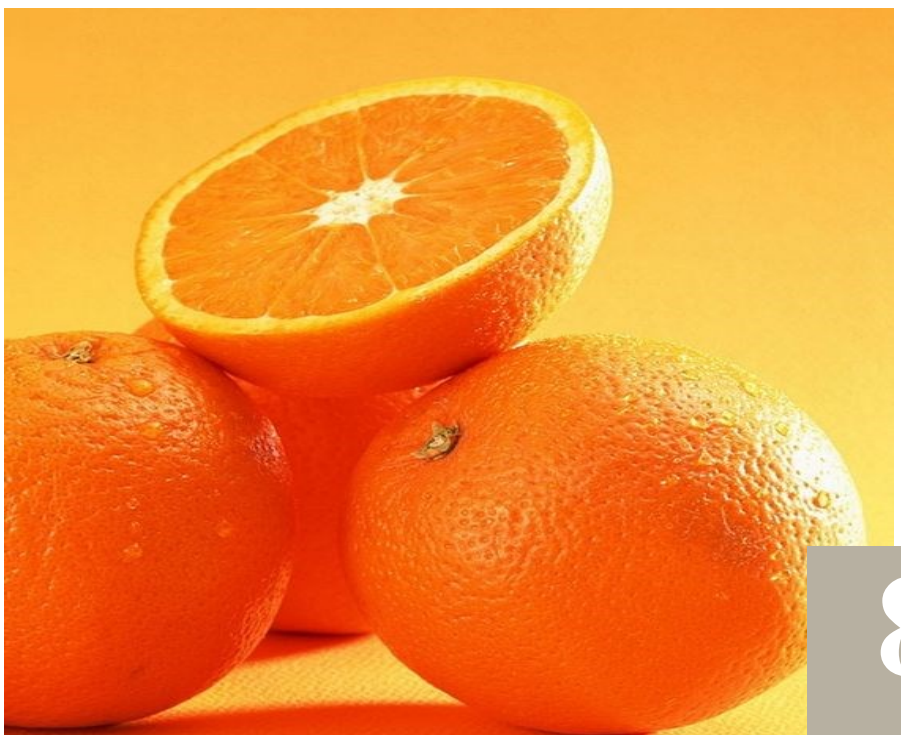
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AMENDMENT OF FOOD COLORANTS AND FLAVORANTS ……

We eat with the eye first because colorful food is more appetizing than uncolored one. In ancient times natural ingredients were used to add rich colors.Saffron, carrots, pomegranates, grapes, berries, beets, parsley, spinach, indigo, turnsole, alkanet (borage root), red saunders (a powdered wood), marigold, and turmeric were all used as food coloring agents. Some of our ancestors also used natural substances like minerals and ores, such as azure (copper carbonate), gold leaf, and silver leaf, some of which were downright poisonous. The most common natural food dyes are carotenoids, chlorophyll, anthocyanin, and turmeric. When natural food colorings became too expensive because of the cost of gathering and processing the materials used to make them, synthetic dyes that could be mass produced at a fraction of the cost, had a longer shelf life, and were more vibrant in color arrived on the scene. As early as 1856, William Henry Perkin discovered the first synthetic organic dye, called mauve, used to color foods, drugs, and cosmetics. By 1900, it was a common practice for foods, drugs, and cosmetics available in the U.S. to be artificially colored. The federal Food, Drug, and Cosmetic Act of 1938 finally created strict rules governing the use of synthetic foods and, surprisingly, only seven colors were approved for widespread use in food and they are still on the list today. They are Blue No. 1 (Brilliant Blue FCF), Blue No. 2 (Indigo tine), Green No. 3 (Fast Green FCF), Red No. 3 (Erythrosine), Red No. 40 (Allura Red AC), Yellow No. 5 (Tartrazine), and Yellow No. 6 (Sunset Yellow FCF). Today, there are hundreds of strictly regulated food colorants that are safe for consumption. Next to color, we give importance to food flavor. Food flavorings have been part of a quest to make foods and beverages taste better, leading to a more enjoyable life. The advent of the modern food industry created the need for flavors that were familiar to consumers but could also be incorporated into the new methods of food production. In the 1800s, German and Swiss businesses were the first to expand the flavor market significantly, generally through the derivation of flavoring substances occurring naturally in foods. In the United States, many flavor companies began as importers of European essential oils and extracts. They soon expanded to meet local economic and market needs by formulating and manufacturing ingredients domestically. At the beginning of the 20th century, a growing number of food and beverage companies created even more demand for commercial flavors. Today, added flavors can be found in most products we enjoy. They can improve existing flavors naturally present in foods and drinks and can also be used in creative ways to add new flavors to snacks, juices, and even water.

REFERENCE: https://www.femaflavor.org/history-flavors,

https://www.thespruceeats.com/food-coloring-history-1807601

Kowsika. N (2016016027)

ER4

FOOD COLORANTS

colour of food is extremely important. Food colour gives us a variety of useful information before we taste or smell a food. We even learn to associate different colours with different food attributes:

Red is associated with a sweet taste like strawberries.

Yellow is associated with sour flavours as in lemons.

A bright **green** may be associated with a tart taste like green apple.

Dark colours are associated with spoiled food and signal us to not eat it because it may be unsafe.

Indeed, the *flavour* of a food can be influenced based on simply what colour it is. For example, people given samples of jello that only differ in their colour but not taste, say lemon jello coloured red, green, and yellow will report that the red tastes like cherry or strawberry, the green like lime, and only the yellow like lemon. In reality, all of the samples have the same flavour.

For this reason, colour has always been an important part of food products in the food industry. Added colours are used to enhance food and make it more desirable, to give consumers clues to the flavour of food, and to simply make food fun. Let's take a look at the main categories of colorants the food industry uses:

Anthocyanin

Red, purple, or blue colour pigments that can be found in the leaves, stems, roots, flowers, and fruits of a plant. Colour and intensity of these compounds can be changed easily with pH, which allows for many colour possibilities. Popular sources for anthocyanin compounds include grape skins and beet roots.

Anthoxanthin

White, colourless, off-white, or yellow pigments that occur in plants. Anthoxanthin is not used too often in food products as additives, but occur in many vegetables and fruits.

Chlorophylls

Bright to dull green colour. You may know chlorophyll as the substance in plants (like moringa) that allow them to absorb light for photosynthesis, but they also are responsible for making many plants green. Apart from vegetables, you probably won't find chlorophyll as a colorant in many foods at the grocery store due to its instability.

Carotenoids

Orange or yellow pigments. Think beta-carotene or the orange colour of carrots. Carotenoids are also not used too often in food products due to their sensitivity to oxidation, which can cause huge change.

The FDA regulates all food colorants and additives. Colours are under one of two categories, certified and exempt from certification. Certified colours are colours that are produced synthetically, used widely, and less expensive. There are nine of these colours that are approved for use in the U.S.: blue 1, blue 2, green 3, red 3, red 40, yellow 5, yellow 6, citrus red 2, and orange B. Colours that are exempt from certification are those that are derived from natural sources like vegetables or minerals. They are typically more expensive, less stable, and often add unintended flavours to foods. Both groups of colorants are tested for safety and must be used according to certain guidelines and amounts.

The labelling of foods containing colorants can be confusing. To sum things up, remember these three guidelines:

1. Natural colours do not exist when it comes to food, only colours that are derived from natural sources.
2. A food that contains "artificial colours" in its ingredient label does not necessarily mean that the colours used are synthetic. Synthetic colours, like blue 3, must be listed in the ingredients list. "Artificial colours" only means that a colour is added that is not native to the food it is added to. For example, beet root juice is used to give strawberry ice cream and yogurt its characteristic pink colour and is considered artificial only because beets aren't usually included in strawberry ice cream or yogurt recipe.
3. When specifically looking for products that use colorants from natural sources, look for labels that say, "no artificial colours used" or "colours from natural ingredients/sources".

COLOURED WHEAT—NEW FARMER'S CROP

As we (India) are the major producer of wheat and majority of our population depends on it but most of the nutrient requirements are not fulfilled by it. National Agri-food Biotechnology Institute (NABI) has developed a bio-fortified coloured (purple, black and blue) wheat with high anthocyanin content (40-140 ppm) compared to white wheat (5-15 ppm) and zinc content. It has been developed by crossing high yielding Indian cultivars PBW550, PBW621, HD2967 with coloured wheat procured from Japan and America. Anthocyanin is a pigment found in fruits like blueberries and jamun, acts as antioxidants and remove free radicals from the body and help in prevention of cardiovascular diseases, diabetes, inflammation, cancer, obesity and aging. Zinc is one of the most deficient micronutrients in the developing countries and its deficiency leads to skin problems and reduced ability to fight infections. "Biochemical, cell lines based and mouse model studies on this wheat variety showed good antioxidant activity, anti-inflammatory activity, reduced obesity (high fat diet induced), helped in reduction of blood glucose and cholesterol levels, and formed good quality bakery products," NABI scientist, Monica Garg instrumental in developing new seed of staple said. The yield of coloured wheat compared to normal varieties would rise to 17 quintals per acre against normal 20 quintal per acre," she said. NABI has signed an MOU with "Farm grocer Products Pvt. Ltd", Ambala, - A company established by the Farmers. Company will not only cultivate coloured wheat with the help of farmers but also make healthy coloured wheat products and take them to the consumers through their market network.

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KOWSIKA.N
2016016027

IS SYNTHETIC VANILLA A CARCINOGEN?

Vanilla is one of the most popular flavoring ingredient in food, beverage, cosmetic, pharmaceutical and tobacco industries. Besides being the second most expensive spice (next to saffron), there is a huge demand for vanilla whereas the worldwide production of natural vanilla extract is only 40 to 50 metric tons per year; which is not enough to meet the demands. Thus vanilla extract is the most common form of vanilla used and it occurs in two forms –natural and artificial. The production of vanilla beans is a labor intensive process and harvesting takes about 2 to 3 years after planting. This makes the natural form of vanilla fetch a higher price to about three to five times than artificial vanilla preparations. Due to quality, price concerns and demands it has been necessary to discover a method of synthesis-artificial synthesis of vanilla.

The principle agent of natural vanilla is **vanillin (4-hydroxy-3-methyl benzaldehyde)** which is predominantly responsible for its characteristic flavor. Natural vanilla is extracted by infusing vanilla beans with alcohol solution. Due to the scarcity and expense of natural vanilla extract, synthetic preparation of vanillin is of great interest. The first commercial synthesis of vanillin was done with the natural compound eugenol (4-allyl-2-methoxy phenol). But now a days, artificial vanillin is derived from either guaiacol or lignin. Apart from vanillin, natural vanilla extracts have **4-hydroxy benzaldehyde**, which is absent in artificial vanilla preparations. This compound can be used as a marker ion to rapidly differentiate between natural and artificial vanilla preparations. A variety of analytical techniques such as gas chromatography, mass spectrometry, liquid chromatography and stable isotope ratio analysis have been used to differentiate natural and artificial vanilla preparations. Though 4-hydroxy benzaldehyde lacks in artificial vanilla preparations, it has the presence of benzoic acid which acts as a preservative instead. Coal tar is widely used in synthetic vanilla and consumption in huge quantities causes health issues and is specially **carcinogenic**. Compound like cinnamon, paper waste and pine bark mimics the smell and taste of real vanilla. Besides, vanillin may trigger allergic reactions and migraine headaches in a small fraction of people.

REFERENCE: https://www.google.com/url/sa=t&source=web&rct=j&url=sciencedirect.com

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2016016032

HEALTH CORNER

The curry leaf is a very cheap item which is very easy to get in every kitchen of the house. Curry leaves are natural flavoring agents with a number of important health benefits, which make your food both healthy and tasty. For your information that, curry leaf is extremely beneficial for our health. It can relieve us from various types of diseases, if you drink a teaspoon curry leaf juice in half glass of water daily. If you are a diabetic patient, then consume curry leaf juice every day. It serves to keep our sugar levels in control. Curry leaves are found in the elements which are very useful in fighting prostate cancer and cholesterol cancer. Vitamin A is found in abundance in curry leaves, which proves to be very helpful in increasing our eyesight. For your information, the curry leaf is able to remove diarrhea because it contains carbon alkaline. If you consume curry leaf juice, you can get rid of diarrhea-like illness.

AN ALTERNATE

Potassium bromate is typically used as a flour improver (E number E924). It acts to strengthen the dough and to allow higher rising. Usually 15-30 parts per million (ppm) of potassium bromate is used during the flour treatment stage. Ideally, the act of baking changes its chemical composition and thus leaves no trace in the finished product. If too much of the additive is used, or the bread is not baked long enough or at optimal temperature, then a residual amount will endure. This is a massive concern given that an expert committee administered by the World Health Organisation and Food and Agriculture Organization confirmed that potassium bromate is a 'genotoxic carcinogen' after a long-term study. Potassium bromate is classified as a category 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC). Potassium bromate has been banned from use in food products in the European Union, Argentina, Brazil, Canada, Nigeria, South Korea, Peru and some other countries. It was banned in Sri Lanka in 2001 China in 2005, and India on 20 June 2016. Only the US allows it up to 75 ppm even though bakers there are officially asked not to use the compound. In fact, many manufacturers and bakers in the US have voluntarily ceased using the compound in their bread. Ascorbic acid, commonly known as Vitamin-C, is a harmless alternative to potassium bromate. Glucose oxidase is yet another alternative which was approved by the FSSAI. In the countries where potassium bromate has already been banned, industrial bakers categorize ascorbic acid as a flour 'improver' or dough conditioner. Some of its major benefits to baking are greater loaf volume, finer crumbs, improved softness of the crumb, reduced crust thickness and most importantly, faster rising of the dough during the baking process. The other alternative, glucose oxidase, is an enzyme that provides an oxidising effect and has the same effect as ascorbic acid on the finished bread product.

REFERENCE:
https://en.wikipedia.org/wiki/Potassium_bromate

KOWSIKA.N(2016016027)

ER 8

ANTIMICROBIAL ACTIVITY OF CITRUS SINENSIS (ORANGE PEEL) ON BACTERIAL ISOLATES BY AEROBIC PLATE COUNT METHOD:

ABSTRACT:

The antibacterial activity of ethanolic extracts of *Citrus sinensis* against *Escherichia coli* and *Bacillus cereus* was determined. This work aimed to discover the effect of orange peels extract in the treatment of bacterial isolates. Three different concentrations (200mg/ml , 1000mg/ml, 2000mg/ml) of each extract were used against the test organisms. The pour plate technique was carried out and the colonies were counted by aerobic plate count method. Higher concentration of extract had less microbial population which indicates the presence of antimicrobial activity in *citrussinensis*. The extract from orange peel may be used as an antimicrobial agent.

REVIEW OF LITERATURE:

Sweet orange (*Citrus sinensis*) is a small evergreen tree, whose origin is in China & it has been cultivated over the years, but is grown commercially worldwide in tropics, semi tropical and some warm temperate and has become the most widely planted tree fruit in the world today (Antimicrobial activity of orange peel on bacterial isolates). The Flavonoids in orange peel inhibit a protein (termed as RLIP76) that is linked to cancer. The peel contain another compound called Limonene which can cut cancer risk. Orange peels help break down congestion and cleanse the lungs. The peel are rich in pectin, a fiber that is known to regulate blood sugar levels. In this research work, *Citrus sinensis* peel extract was studied for their antimicrobial activity against microbial organisms .There are two organisms that were used in this experiment :*Bacillus cereus* and *E.coli* . Bacillus is a rod shaped gram positive bacteria. It can form a protective endospore which can be extremely tough. This endospore has the ability to protect organism from harsh environmental conditions. *E.coli* is a gram negative, rod shaped, non spore forming, motile with peritrichous flagella or non motile. It is facultative anaerobic.

MATERIALS REQUIRED:

Nutrient agar medium
Orange peel extract
Petriplates
Conical flask
Micropipette
Test tube.

MEDIUM PREPARATION:

Nutrient agar medium is a general purpose medium, Supporting growth of a wide range of non fastidious organisms. To check the anti – microbial properties of orange peel, nutrient agar . Medium was used as growth media which remain solid even at high temperatures.

The media consists of :

Glucose	**- 2.5 g**
Nacl	**- 2.5 g**
Peptone	**- 2.5 g**
Beef Extract	**- 1.5 g**
Agar	**- 10 g**
Distilled water	**- 500 ml**
pH value	**- 6.7**

Heat to dissolve, dispense into tubes or flasks, and autoclave for 15 minutes at 121 degree Celsius.

PREPARATION OF ORANGE PEEL EXTRACT:

The plant used in this study *Citrus sinensis* was obtained from fruit sellers at a local market. After collection, the orange was peeled and grinded using mortar and pestle. 150 ml of 70% ethanol was added to the powdered extract. The powdered extract was filtered using muslin cloth and clear extract was obtained. The obtained extract was spread in two watch glass for the added ethanol to evaporate. The dried orange peel extract was added with distilled water in the ratio of 1:1 and the clean extract was stored in sterile clean bottle at 4 Celsius for further analysis.

The extract obtained was 100% concentrated extract, which is further diluted into 3 different concentration (200ppm, 1000ppm, 2000ppm) for further analysis.

PROCEDURE:

- **With the above mentioned, composition of the media, medium was prepared for 500ml . The medium was taken separately in 2 conical flasks of 250ml each and petriplates were sterilized in an autoclave.**
- **The process is carried out aseptically in a laminar flow chamber.**
- **The test sample extracts (orange peel) was diluted to 200ppm, 1000ppm, 2000ppm using sterile water. (E.g.: 200 microlitre of 100% extract dissolved in 1ml of sterile water).**
- **1 ml of diluted extract of 3 different concentration was added to 3 petriplates. The process was repeated for replication.**
- **After sterilization, the media was allowed to cool slightly, till a temperature of about 60 Celsius and 1% of the bacterial culture was added to each conical flask i.e. 2.5 ml of culture in 250ml of medium. 1 flask with Bacillus and 1 flask with E.coli.**
- **The medium with Bacillus culture and E.coli culture added to 16 petriplates each rotated 3 times clockwise and anti-clockwise each and allowed to solidify.**
- **Out of all the 16 petriplates, 8 petriplates containing Bacillus culture, 6 plates for different concentration of extract, 1 for control and 1 for standard antibiotic *Streptomycin*.**
- **Repeat the above procedure for medium containing E.coli culture.**
- **The plates were labelled and sealed and incubated at room temperature for a period of 24 hours.**
- **After 24 hours, plates were observed and the bacterial colonies were counted.**

ER9

OBSERVATIONS:

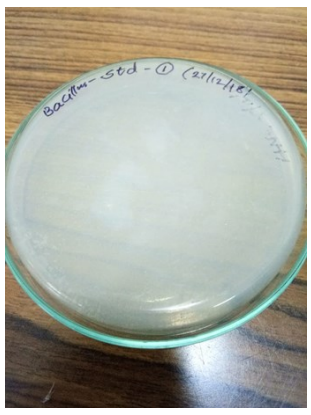
The number of colonies formed in each plate were measured to see the effect of orange peel on the growth of the organisms. The values (in cfu/ml) where as follows:

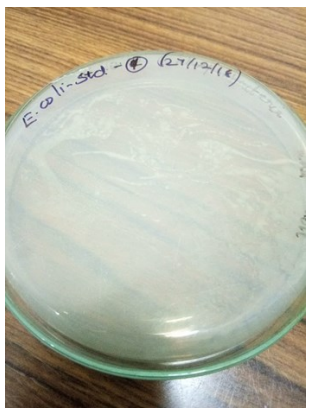
	NUMBER OF COLONIES (CFU/ml)	
CONCENTRATION (PPM)	**E.COLI**	**BACILLUS**
200	**88**	**80**
1000	**59**	**48**
2000	**28**	**25**
CONTROL	**112**	**132**
STANDARD (*streptomycin)*	**15**	**0**

RESULT AND DISCUSSION:

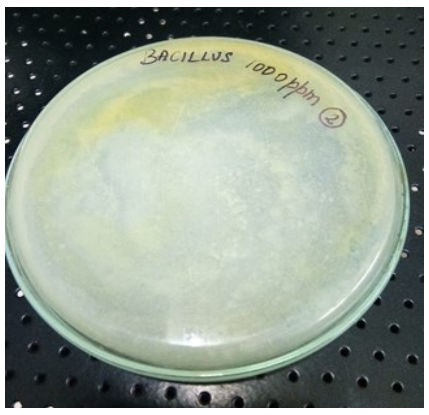
The colonies formed in bacillus and E.coli culture decrease (20-30 CFU/plate) as the concentration increases from 200 ppm to 2000 ppm. The number of colonies formed were found to be maximum in petriplates inoculated with *E.coli* compared to *Bacillus*. Hence, *Bacillus* have shown maximum resistance to inhibit the growth compared to *E.coli*. Control have maximum number of colonies in both *Bacillus* and *E.coli* culture as per logic. The standard antibiotic *Streptomycin* have zero colony in *Bacillus* and few in *E.coli* as per proven data. The result obtained from the pour plate technique showed characteristic colonies of *Bacillus* and *E.coli* in the nutrient agar plate. The orange peel extract shows resistivity over microbial growth due to its chemical properties. These extract peels are rich in a flavonoid called *Hesperidin* (a promising anticancer agent from orange peel) which exhibits antibacterial properties. Hence orange peel are used in Ayurvedic medicine to heal wounds.

STANDARDS

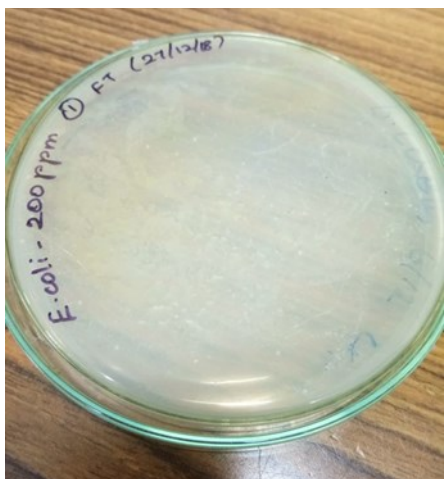




***Bacillus* SAMPLE PLATE**



***E.coli* SMPLE PLATES**



CONCLUSION:

This present work has shown us that extracts form *Citrus sinensis* have activity against laboratory isolates used in this experiment. The rate at which pathogenic bacteria are developing resistance at low concentration to common antibiotics is alarming therefore it is heartwarming to note that we could find succor in abundantly available local remedy like orange peels for the treatment of wounds.

REFERENCE:

https://www.umyu.edu.ng, https://www.researchgate.net, https://derpharmachemica.com/archive.html

DONE BY:

T.P. Maunica (2017016025), Kratu (2017016022), Madhubala (2017016024), Mohammad basher (2107016026), G.M. Praveen (2017016056).

FARM TO FORK

RAW MATERILAS

↓

COMBINE THE INGRE-DIENTS

↓

FLOSS HEAD

↓

LIQUEFICATION

↓

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↓

SHAPING THE CANDY

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CUTTING & PACKAGING

Hello Readers, Welcome back to the session. Pink, light and fluffy sugar confectionary swirling on a stick at the fairs, carnivals, amusement parks, exhibition etc., Everybody has it and you all want it. We're here to give the detailed production process of Cotton candy. Before 1970, Cotton candy was produced only on small scale. Due to automation of cotton candy manufacturing in 1972, mass production was achieved. As usual one of the processes' name is left and find it the upcoming editions.

MAKING PROCESS:

Sugar is the most important ingredient in the Cotton candy's preparation. It is responsible for the physical structure as well as sweet taste of the candy. Since the sugar is naturally white, dyes impart the desire colors. Mostly used federally regulated dyes are Red dye #40, Blue dye #1, yellow dye #5. To produce desire flavors, both natural and artificial flavorants are used. The sugar used for cotton candy production, called floss sugar, is mixed with the flavoring and coloring dyes. The process starts from converting granular sugar to fine filaments. Other ingredients like flavorants and dyes are mixed well with sugar. The mixed sugar or floss sugar is fed into the hopper and the process is termed as floss head or spinning head. After feeding into the hopper, the hopper has a tapered bottom which funnels the sugar into extruder. The extruder is a rotating cylinder, which has a holes along its sides and is equipped with heating element. As the floss mix heats up, it begins to melts. The fast-spinning floss head forces the liquid out to the sides of the bowl. As it exits the extruder, the liquid sugar cools and forms solid strands. The strands, which have the characteristic cotton like consistency, are collected in the large circulating pan surrounding the extruder. Moisture is minimized during making to avoid coagulation. Sticks are passed around, the sticky sugar adhere to it to form a cone or candy strands are combined into a continuous bundle, which is then molded into a consistent shape by non-stick rollers. To Prevent sticking of sugars to the rollers non-stick substances such as Teflon are used. After this, cotton candy is segmented to a desired length. Since moisture can make cotton candy rubbery and sticky, the packaging is designed to inhibit the interaction with air. Mostly high molecular weight polymer is used.

REFERENCE: www.madehow.com

KOWSIKA.N
(2016016027)

WHO AM I?

I'm one of the non thermal process, thus helps me in maintaining the fresh food characteristics like flavour and nutrients.I used the method for preserving and sterilizing food is subjecting the food to high pressure leading to the inactivation of certain micro-organisms and enzymes in the food. Actually, I'm a real alternative to traditional thermal and chemical tratments. The food to be processed sealed in flexible and water resistant packaging and subjected to a high level of hydrostatic pressure (pressure transmitted by water) up to 300–600MPa/43,500-87,000 psi for a few seconds to few minutes. The term used for me are lot and some of them are Pascalization, Bridgmanization, cold-pasteurization. Mostly they-mention me as…….Who am I?

I'm …..(answer in the following edition)

NEW TECHNOLOGY CAN KEEP COCONUT WATER FRESH FOR FOUR MONTHS

Scientists at the Indian Institute of Technology, Kharagpur have found a new method to increase shelf life of tender coconut water. They claim that it can help retain original taste of coconut water for as long as up to 18 weeks. Fresh tender coconut water is a popular, low-calorie nutritious drink, but untreated coconut water has a shelf life of only 24 hours. The method developed by Sankha Karmakar and Sirshendu De at the Department of Chemical Engineering, IIT Kharagpur increases shelf life without the use of any preservatives. The new method involves eliminating suspended debris using a nylon mesh and sterilization through a hollow Polyacrylonitrile fiber tube for an hour. This process removes bacteria and other microbes which increases its shelf life, researchers said. Coconut water thus sterilized was stored in wax-sealed glass or polypropylene bottles in a refrigerator at 5 degree Celsius and tested every month for quality and its properties. Sterilization using membranes is known but it has been used for coconut water for the first time, and the polyacrylonitrile membrane used has been modified for this purpose, researchers said. Karmakar told that, "independent experts - professors, PhD students and two kids - tasted treated coconut water. They were asked to score it on different counts such as appearance, texture, aroma, flavor, color and overall quality, besides purchase intention". He says that the new method of preserving coconut water maintained the clarity and taste for 18 weeks. The results of the study have been published in *Journal of Food Engineering*. Amit Jain, professor at Department of Chemical Engineering, who was not involved with the study but was one of the tasters, commented that the new method is better because it increases the shelf life without adding preservatives. However, he cautioned that "membranes used for sterilization are prone to fouling or clogging and this could limit large scale use of this process". If membranes are maintained appropriately by routine cleaning, the method can be used on industrial scale and can also be optimized for other beverages, he said. Researchers claim the method can be scaled to an industrial scale in lesser cost. Currently available preservation methods such as pasteurization, microwave heating, freezing, and refrigeration have some limitations. While heating reduces taste and quality, refrigeration increases cost during transportation that limits marketability.

INDUSTRIAL UPDATES

Sea6Energy develops AgroGain; Inks marketing pact with Mahindra Agri

Sea6Energy, the Bengaluru-based start-up which focuses on the development of novel technologies to solve global agricultural problems, has developed AgroGain, and inked a pact with Mahindra Agri Solutions to market and ensure the maximum reach of the product across India. The product, which took about five years to develop, contains Tarma Spurt technology to provide growers with a reliable solution to improve crop quality and productivity. The company spent nearly a million dollars on the development of AgroGain, which bagged the Agro Awards."We also have our own distribution channel to increase the reach of the product to maximum consumers. As we are a research organisation, we continue to upgrade and develop throughout the life cycle of the product," Sowmya Balendiran, director, business development, Sea6Energy, told F&B News. "We have tested our product in over 100 locations in India and overseas. We are in talks with global agri majors to take our product to various geographies around the world. We plan to launch it initially in the South-East Asian countries and then expand to the United States and Europe," she added. "We have launched this product in 2015, and the product has reached over a million farmers in three years. We have been fortunate to become one of the leading brands in India in the bio-stimulant segment," Balendiran said. "The farmers currently use fertilisers and insecticides as the major input in agriculture. The use of products to boost the growth and stimulate the plant to produce quality and additional yield has been improving in the last few years," she added. "We believe that our Indian farmers are always open to using new products if clear economic benefits can be demonstrated to them," Balendiran said. "There is a lot of thrust from the consumers about requiring organic and safe agricultural produce. Since all the products of Sea6 Energy are entirely natural without harmful chemicals and certified organic as per Indian and international standards, we believe that the farmers and consumers will benefit by using the product enabling us to continue growing in this space," she added.Sea6 Energy is one of the few companies globally which develop patented products backed entirely by strong scientific understanding. Though there are many players in the market, a consistent product which delivers good-quality yields to the farmers always manage to survive in the market. "We are currently working on products which can enhance the plants ability to fight viral and fungal infections in a natural way effectively. Products that help in aiding the growth rates of fish and poultry are also underway," she said.

REFERENCE:
http://www.fnbnews.com/Technology/sea6energy-develops-agrogain-inks-marketing-pact-with-mahindra-agri-43637

Folic acid to be added to UK flour in effort to reduce birth defects

Flour is to be fortified with folic acid after ministers swung behind a plan that medical experts say will reduce the number of babies born in the UK with serious birth defects, the Guardian can reveal. The policy, which will be introduced within weeks, comes after ministers were convinced by their own advisers that it would reduce the risk of babies developing spin a bifida and other conditions that involve severe disability or death. Until now, ministers in successive governments have ignored repeated pleas to embrace mandatory folic fortification. A government decision to introduce mandatory fortification will mean a major positive impact for the health and wellbeing of babies born in the future. In many cases, it will be the difference between life and death."

REFERENCE:
https://www.theguardian.com/society/2018/oct/14/folic-acid-to-be-added-to-flour-in-effort-to-reduce-serious-birth-defects

FARM TO FORK (ANSWER FOR THE LAST EDITION)

Fermentation is the process that was missed in the farm to fork column of Vinegar. Two stages of fermentation is carried out in vinegar production. The first stage of fermentation is converting the fruit juices into alcohol. Due to partial oxidation of ethyl alcohol, another stage of fermentation leads in the formation of acetic acid (vinegar).

ANSWER: FERMENTATION

DID YOU KNOW ?

E numbers are codes for substances that are permitted to be used as food additives for use within the European Union and EFTA. The "E" stands for "Europe". Commonly found on food labels, their safety assessment and approval are the responsibility of the European Food Safety Authority.

1.E100–E199 (colours)
2.E200–E299 (preservatives)
3.E300–E399 (antioxidants, acidity regulators)
4.E400–E499 (thickeners, stabilisers, emulsifiers)
5.E500–E599 (acidity regulators, anti-caking agents)
6.E600–E699 (flavour enhancer)
7.E700–E799 (antibiotics)
8.E900–E999 (glazing agents, gases and sweeteners)
9.E1000–E1599 (additional additives)

Food Chemicals Codex (FCC) is a collection of internationally recognized standards for the purity and identity of food ingredients. It features roughly 1,200 monographs, including food-grade chemicals, processing aids, foods (such as vegetable oils, fructose, whey, and amino acids), flavouring agents, vitamins, and functional food ingredients (such as lycopene, olestra, and short chain fructooligosaccharides). The FCC also contains ingredients, such as sucrose and essential oils, that are not frequently found in other food additive standards resources. FCC standards are used as agreed standards between suppliers and manufacturers in ongoing purchasing and supply decisions and transactions.
The FCC has two primary sections: monographs and appendices. Monographs are listed alphabetically and typically cover a single ingredient. Monographs, where applicable, provide information about each ingredient, such as:Chemical Structure, Chemical Formula,Chemical Weight,INS NumberCAS Numbers,Function, Definition, Packaging, Storage, Labelling Requirements, IR Spectra.

READER'S COLUMN:

The topic of **24th** issue of **ESSEN RIVESTA** issue is "**FOOD ADDITIVES**". As the food additives have a enormous role in the food industry, this edition covers the area of food colorants and flavorants. This edition delineates about the synthetic vanilla. It also includes the colored wheat. And tells the process of preparing Cotton candy in a step by step manner in the Farm to Fork column. It also expatiate the research of "ANTIMICROBIAL ACTIVITY OF CITRUS SINENSIS (ORANGE PEEL) ON BACTERIAL ISOLATES BY AEROBIC PLATE COUNT METHOD". To make the readers more interested, many columns are included.

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