



PFNDAI

PFNDAI Bulletin

MAY 2016

FOOD, NUTRITION & SAFETY MAGAZINE

MULTI-SENSORY EXPERIENCES

Your Senses
Can Fool You.

Also Inside

Sensory Evaluation:

Understanding the Basics

Proprietary Foods:

A Forever Changing Regulatory Framework

PROTEIN FOODS AND
NUTRITION DEVELOPMENT
ASSOCIATION OF INDIA

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Editorial

I remember when telephone was a status symbol. Only well-connected or rich could have them and others would apply and wait for years for the allotment. We used to go to a neighbour to make or receive a phone call. Slowly it became quite common and almost every household would have a phone. Then the electronic revolution took place and mobile phones appeared. I still remember using mobile which looked like a walkie-talkie that police use weighing almost half a kg with a long antenna. Slowly that also became a common thing and now even bhajiwala or raddiwala uses one. Kamwali bai uses mobile to tell the next housewife where she is due to housework, that she would be delayed.

Mobiles have been used for a lot of things including banking, ordering things online, checking news, watching movies and videos, playing games, sending sms or whatsapp, reports, emails, to have video-conference, to check label information and also locating places by GPS especially with smart phones. There may be many more applications including the one I saw on Shark Tank where an inventor uses smart phone with his software to open a lock to a door. Thus possibly the imagination may be the limitation to what gadget can do.



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Some smart people have been using it with an app for cab hiring. Now it is in India so we can hire a cab using their app which tells us how long it would take for it to come and we can actually see on the map his progress and direct him also. After the journey you get the fare on your mobile and you can pay either by cash or through their payment system. There are now a couple of aggregator-based companies working here offering air-conditioned cars with very reasonable fare, except for surge-pricing.

With the success of cab-services Uber has starting recently in many cities in the US & Canada as well as in London, Paris and Singapore food delivery system, UberEATS. This is separate app but Uber drivers are given extra incentive for delivery from local restaurants to nearby offices and residences. A person can select from restaurants displayed on the app from the menu, a selection of food which will be delivered for a charge.

In Mumbai, this has not yet started but there is already one company Swiggy which is doing a similar thing. They have an app which tells you the restaurants you can order from along with the approximate time it would take for delivery. All kinds of restaurants along with places of sandwiches, burgers, pizzas, snacks, sweets, chaats, ice-creams etc. are also included. Thus, eating has become a lot easier with your smart phone so one does not have to spare many calories going to the eating places. This will certainly add many more calories and kg but then I am sure there are many apps that will help you lose those.

We may also think of having an app that would allow you to read our Bulletin on your smart phone and keep in touch more regularly. Hoping to do that soon

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Image © iStock.com/Siphography

MULTI-SENSORY EXPERIENCES

Your Senses Can Fool You.



By
Dr. Shobha A. Udipi,
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“More than just eating with the mouth, we also eat with the mind”.

Is it only our taste buds that determine whether we like and accept a food? What is the role of our other senses when we eat? Many people remember with pleasure a hot tea and pakodas on a rainy day. Across the world, food occupies an important place during social gatherings and celebrations. Eating and drinking are among life's most pleasurable activities and the most multisensory activities. Studies in neuro-gastronomy and gastro-physics are helping scientists to understand the associations and perceptions humans have with different foods. We now know that the process by which man accepts/ rejects food is of a multi-dimensional nature. Food products are unique and different from other industrial products, because man's sensory experiences with foods involve all five senses: vision, audition, touch, smell, and taste. Each sense contributes



different physiological, sometimes emotional reactions to the food. Each sense is individually important, but the satisfaction derived depends on the interaction between them all.

When we consume something, we have a distinctive but fleeting experience in the mouth. Within a short span of time, we are able to decide whether or not we like the food. The pleasure and enjoyment we derive from food / drink comes not only from the unified oral sensation of taste and smell, but also from the sound it makes and what it looks like. Our senses work together to provide awareness about the environment.

Psychologists and neuroscientists say these experiences are multimodal. We may not consciously realize that our perception of food arises from an integration of different sensory inputs. Our brain combines and synthesizes information from the different senses to create a unified multisensory experience and stores an impression about that food. Hence, our perception of food is said to be multisensory. Food is said to be one of the most effective stimuli that modulates brain activity. Neuroimaging studies have shown that whole-brain metabolism and activity increased in diverse brain regions, when participants viewed images of food especially if they were hungry.

What happens when a person tastes a food? Only a small amount of information about the food comes from the tongue. The taste buds on our tongue help us detect/identify taste, but they do not really give inputs when we taste and eat the great variety of foods that we do.

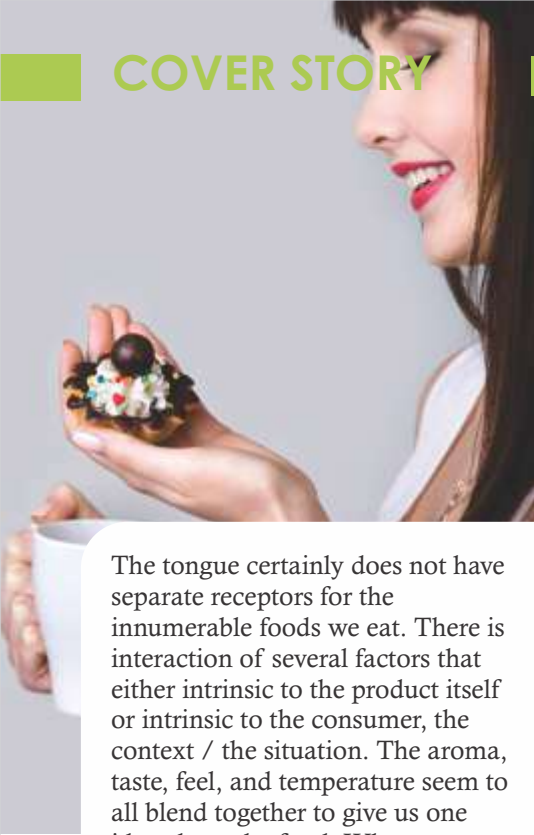


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The tongue certainly does not have separate receptors for the innumerable foods we eat. There is interaction of several factors that either intrinsic to the product itself or intrinsic to the consumer, the context / the situation. The aroma, taste, feel, and temperature seem to all blend together to give us one idea about the food. When a person has a bad cold, or when food is not served at the right temperature, the food does not taste the same. Our pleasure in eating food depends on all sensory attributes being right, and can be ruined, simply by serving a food at the wrong temperature or if the food has an inappropriate colour e.g. kheer that is purple in colour? What about appearance and texture? Would anybody enjoy a samosa that had been ground up in a blender? The answers to these questions clearly indicate that what the food looks like, its odour contribute to how we judge the food and the pleasure derived.

Our perceptions are influenced by tactile, thermal, painful and/or kinesthetic effects, as well as by sound, colour, shape and aroma, texture, temperature, even pain (known as nociceptive) and emotional and functional associations. Our olfactory nerves provide us inputs by detecting volatile compounds. The trigeminal nerve helps us to perceive hot, cold, tingling, burning and electrical sensations. So, our perception depends on several oral-somatosensory important qualities, influenced by a “complex

combination of olfactory, gustatory and trigeminal sensations”.

Let us briefly look at the role of each factor:

Touch: Texture is a multi-parameter attribute. Texture is important because the appearance of a product, how it adheres to a container or pouring characteristics of a beverage depend on its texture. The overall experience of how a food product feels is important from the time when we stir a beverage or apply some spread onto bread or the crunchiness when we bite a chip.

In the US, “Szechuan button,” a small yellow flower bud is being added to many garnishes and sauces in the food service industry. This “button” is said to produce a tingling sensation in the mouth similar to that experienced when touching a 9-volt battery to the tongue.

Similarly, products that give unexpected heating/ cooling sensations in the mouth are reportedly becoming popular. These products offer consumers opportunities to experiment with different mouthfeel and experience the importance of touch in the eating process.

Vision /Sight : Our first interaction with food is usually visual and determines how much we think we will enjoy that food. Colour is probably one of the most important components of the visual information that our brain processes and we associate flavour of the food product with its colour. In a workshop conducted at the Culinary Institute of America, participants were asked to taste a French confectionery - apricot macarons that were identical in flavour and texture, but differed in colour. The participants felt that the lighter coloured macarons were less intense in flavour and some found it difficult to identify the flavour.

Some participants reported that the different macarons had entirely different flavours and the whiter macarons were creamier than the others.

When red colour was added to cherry- and strawberry-flavoured sucrose solutions, they were perceived to be sweeter than a plain sucrose solution. A green-coloured pear nectar was perceived to be less sweet than a colourless pear nectar. A cherry-flavoured beverage was said to taste of lime, when it was coloured green and was said to taste of orange when the drink was coloured orange.

In one study, members of the Flavour Group of the Society of Chemistry and Industry in London were offered a buffet of foods, some of which were inappropriately coloured. Some members complained about the off-flavour of many of the foods and some even reported that they felt ill, although only the colour not the taste, smell or texture of the food was changed and the food was wholesome.

Can food colouring be used intelligently to make foods taste better, example for the elderly whose sense of taste and smell are impaired or have begun to decline?

Presentation of food: In one study, participants were presented with sweet or salty popcorn served in four differently- coloured bowls: white, blue, green, and red. Salty

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Sensory Evaluation: Understanding the Basics



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Taste is the ultimate criterion of the desirability of any food product. Other food attributes like colour, appearance, flavour etc. play an equally important role in either enhancing or reducing the acceptability of food. For example raw egg is a rich source of proteins but how many of us would really like to consume it? Most of us would prefer a boiled egg or an omelette as these products taste better and are also believed to be free from bacterial contamination! Organoleptic properties of food like colour, appearance, aroma etc. are judged by human sensory organs and evaluation of these attributes is therefore called as Sensory Evaluation. The best food quality would be a perfect blend of chemical, microbiological and sensory parameters and which is evaluated by Objective and Sensory means.

Objective evaluation measures the chemical and microbiological goodness of a food product. This evaluation involves testing of parameters like measurement of pH, sugar, cholesterol, cis-trans fat, protein, pathogens etc. from food. However, we all will agree that a product passing all objective evaluations if fails in the sensory evaluation, acceptability of that product would be certainly poor! While a lot has already been written about objective evaluation of food products for the benefit of layman, very little is written about sensory evaluation.

Why Carry Out Sensory Evaluation?

Sensory evaluation is a critical requirement of food industry because it is a means of determining how consumers will approve a food product. There are five important sense organs in the human body, Nose, Ear, Tongue, Eyes and Skin. These sense organs help us to evaluate various sensory

characteristics of food like appearance, colour & flavour.

Appearance is the surface characteristic of a food product. For ex. Black spotted brinjal suggests insect infested product.

Colour is used to assess the ripeness of fruits like banana, tomato, guava, mango etc.

Flavour is an extremely complex collection of sensations. It comprises of 3 components - Odour, Taste & Mouth Feel.

Odour (aroma) is due to volatile chemical compounds present in food which interact with olfactory receptors in the nose. High temperatures tend to volatilize aromatic compounds. For ex. Spices when not stored properly tend to lose their aroma.

Taste sensation is registered by the taste buds present on the tongue. For ex. a sweet cherry would be preferred to a sour one.



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Mouth feel is the perception of textural qualities of food like grittiness, stickiness, hardness, crispness, brittleness, crunchiness, spiciness, etc. in mouth. For ex. a crisp wafer is more desirable than a soggy one.

Unlike the objective tests, sensory evaluations do not need any sophisticated equipments. They provide a quick and ready reference to the quality of product.

Who should carry out sensory evaluation tests?

Sensory evaluations should be carried out by all the food producers during various stages of food production. These evaluations can benefit the food producers in following ways. It helps them

1. To understand the consumer preferences in case of new product developments
2. To understand the effect of process variation on organoleptic properties of a food product. Process variation may be necessary for better storage stability, better packaging options or for process simplification of a product.
3. To detect off-quality of raw materials and/or products during manufacturing, packaging and marketing
4. To determine the Shelf-life of a food product

What are the prerequisites for conducting the sensory

tests?

1. Trained panel members

The panel members should be healthy, physically as well as mentally. They should have normal

organoleptic sensory capacities and should be trained adequately so that they can differentiate in specific quality characteristics based on different stimuli & intensity of differences. Such trainings are offered at national food institutions like Central Food Technology Research Institute (CFTRI), Mysore.

2. Testing laboratory

Testing laboratory should consist of following units

- Reception & briefing room where the panel members are assembled, registered, given the evaluation cards & briefed about the sensory test.
- Sample preparation room where samples are prepared.
- Test booths where the actual sensory evaluation is carried out. These booths are located adjacent to the reception & preparation rooms. Test room environment should be pleasant. The entire laboratory should be air-conditioned, free from noise & extraneous odours. Lighting system of the laboratory should be appropriate for the sample being tested. Coloured lights may be used to mask the colour of sample & thereby eliminate the bias.

What are the critical points of sensory evaluation test?

- **Identical method of preparation:** All processing variables for a product like temperature, time of boiling, quantity & composition of water, blending, etc. should be controlled to ensure sample uniformity

- **Uniformity in sample presentation:** Variation in sample size, temperature and serving utensils should be strictly avoided.

Coding should be done to obscure the identity of the sample & proper order of presentation as per the experimental design should be followed when test involves more than one sample.

- **Special techniques of smelling & tasting of product:** These should be used to perceive the aroma & taste more clearly.

- **Ideal testing time** is generally 10-12 in the morning when the panel members are fresh. The tests can also be carried out one hour before lunch.

- **Number of samples:** Number of samples served in any one session should be optimum and should not produce any kind of fatigue for the panel member which may lead to errors in results.

- **The design of the experiment:** It should be decided on the basis of the accuracy needed & the amount of sample available.

How to conduct sensory evaluation tests?

There are different types of sensory tests employed for food evaluation.

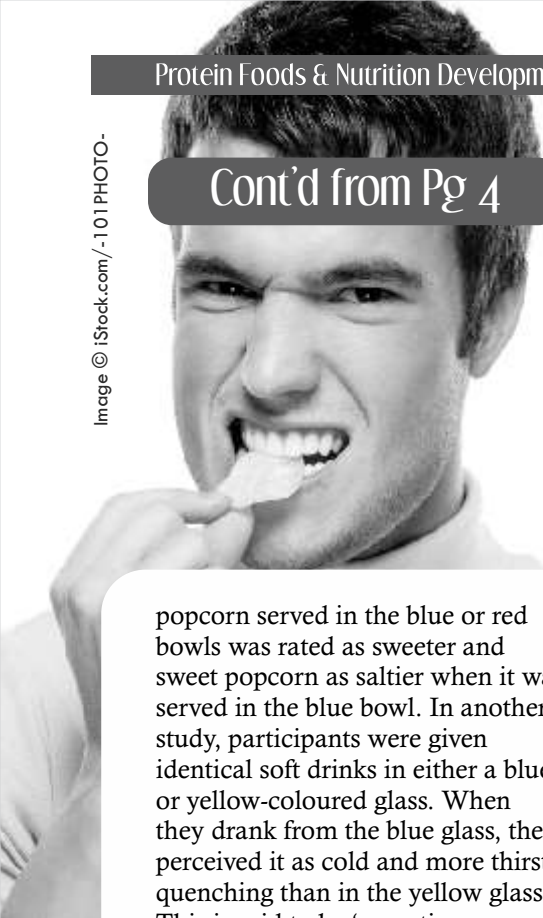
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popcorn served in the blue or red bowls was rated as sweeter and sweet popcorn as saltier when it was served in the blue bowl. In another study, participants were given identical soft drinks in either a blue- or yellow-coloured glass. When they drank from the blue glass, they perceived it as cold and more thirst quenching than in the yellow glass. This is said to be 'sensation transference' i.e. the attribute (either sensory as in cold versus warm or emotional or evaluative) may be transferred from the material properties of the container to the food/beverage.

Sound: Sound contributes to our pleasure of eating and drinking. Perception of food texture is judged by the sound emitted when we bite into and chew the food. Studies show that if there is a 'crunchy' sound while eating, the person feels the food is crunchy. Carbonated water was rated as being more carbonated when the sound level of carbonation was artificially increased. Background noise was found to decrease the saltiness/sweetness of a food. Food-eating sounds that simulate eating were found to contribute to a perception of crispness / freshness in wafers/chips, biscuits, breakfast cereals.

Environment and surrounding, social circumstances: Our surroundings, social circumstances, emotions and sentiments influence

our perception of flavour. This has led scientists to undertake research on 'cross-modal correspondence'. Researchers say that people consistently tend to associate tastes, food aromas, and flavours with other unrelated sensory cues. In an experiment, participants were not given any information and were asked to taste vodka raspberry vodka in red lighting and sweet music (in congruent atmospheric conditions or using incongruent conditions i.e. citron vodka in green lighting and 'sour' music. The participants found that the raspberry flavoured vodka tasted significantly fruitier, under red lighting, while listening to sweet music in contrast to when the same flavour was served under green lighting, while listening to sour music.

Riesling (white) wine was liked more, when consumers tasted it under blue and red lighting than when the same wine was offered under green or white lighting. Brightness of ambient light may be important as well. When people who like strong coffee were asked to drink it under dim light versus bright light, they drank more under bright light.

Different types of background music that evoked different emotions, e.g. 'powerful and heavy', 'subtle and refined', 'zingy and refreshing', and 'mellow and soft' were found to influence participants' ratings for wine. The wine was rated as significantly more powerful and heavy when 'powerful and heavy' music was played in the background.

There is a term 'visual flavour' that refers to the expectations a person has when s/he sees a food preparation, although visual flavour may be very different from the actual flavour. Three groups of persons were asked to taste a pinkish- red

ice-cream. One group had no information about the food product, one group was told that they had to taste a savoury ice cream and the third group was informed that the product was a novel food. The ice cream was actually smoked-salmon-flavoured. The first group who had no information and who probably thought that the pinkish ice-cream was sweet, berry- flavoured, rated it as being much saltier than did the other two groups.

Odour: Odours can change perception of taste /sweetness of foodstuffs. Vanilla odour is generally reported to be sweet. Sweet smelling odours are generally perceived as pleasant and some persons may be motivated to consume such foods. Researchers suggest that such odours can activate the same reward pathways as if the person had actually tasted a sweet food. Thus, a strawberry flavour (odour plus sweet taste) has been perceived as sweeter than the sweet taste alone, although the odour alone is tasteless. When caramel odour was added to a sucrose solution, the mixture was perceived as sweeter than the pure sucrose solution. When caramel odour was added to a citric acid solution, the solution was not found to be as sour as the citric acid solution alone.

There are taste-induced odours. In an experiment, participants were asked to chew mint-flavoured chewing gum until it lost its sweetness and taste. Then they were asked to remove the chewing gum from the mouth, rub it in icing sugar and put it back in the mouth. When they did so, even though there was no mint in the icing sugar,

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they reported that the mint taste had returned.

Can we use associative memory to trick people for dietary management? When a person is exposed for the first time to an odour that is paired with a taste, s/he retains memory of it. Much later, if the same odour is sniffed, the person will remember both the flavour/taste and odour. Scientists are now examining whether this can be used to control sugar/ salt intakes. There is a need to test the possibility of effectively using odours to ensure acceptability of foods in which the sodium content is reduced. Similarly, odours could take on fat-like properties and be used to partly compensate for the actually lower fat content in the product.

Flavour: Flavour perception greatly depends on an individual's past experience with specific odour-taste combinations. Today the definition of flavour is broader and includes the other senses in contrast to the previous two-dimensional combination of taste and smell. It has been suggested that most (80%–90%) of the taste of food comes from the nose. This has implications and potential for bringing about changes in the way foods are designed by chefs in restaurants and by food manufacturers.

Does what we eat from make a difference? There is growing interest in whether plates on which food is served, glassware / cutlery

influence flavour perception. Spoons (identical in shape, size, and weight) made from seven different metals - gold, silver, zinc, copper, tin, chrome and stainless steel were tested with blindfolded participants. The gold and chrome plated spoons were perceived to be least metallic, least bitter, least strong tasting, whereas the zinc and copper spoons were found to be strongest, most bitter, most metallic tasting.

In another investigation, blind folded participants were asked to evaluate sweet, sour, bitter, salty / plain cream samples with spoons plated with gold, copper, zinc, or stainless steel. Participants felt that the zinc and copper spoons transferred a metallic, bitter taste to the cream and enhanced each cream's taste considerably, whereas the gold and stainless steel spoons did not appear to affect flavour. This suggests that certain metallic platings on spoons and plates could be used to alter food taste. Perceived saltiness could be enhanced for individuals who are on salt/ sodium-restricted diets.

Spanish scientists reported that frozen strawberry mousse was rated as 10% sweeter, 15% more flavourful and overall liking was more, when it was eaten from a white plate compared to a black plate. Similarly, when hot chocolate was served in an orange coloured cup, the intensity of the chocolate flavour was found to be more intense, than when the beverage was served in a white cup. Even the shape of the plate could influence the taste perception, with the same food being found to be sweeter when served on a round rather than an angular plate.

The material from which the cutlery is made may influence whether we think a food is more filling. When food was eaten with a heavier spoon or from a heavier pot, it was perceived to be more

filling, suggesting that individuals transfer some of the associations that they have with peripheral objects i.e. product-extrinsic cues to the food/drink. If this is really so, such strategies could be used in weight management. Also, it needs to be determined whether consumers can be tricked into perceiving tastes or flavours in foods without actually incorporating ingredients that may be unhealthy and give the particular taste/flavour.

Research on multi-sensory experiences therefore points to exciting possibilities, with its potential applications for different health conditions. For example if a beverage tastes sweeter, if it is red-coloured, we could use less sugar in the beverage. Colours associated with ripening fruits may signify more sweetness, whereas a green hue given to a beverage may be judged to be more sour (associated with unripe fruits). One of the big challenges is to modulate perceptions regarding saltiness by changing food colouring.

Knowledge about multi-sensory food perception may contribute to our understanding of how to improve food choices of persons, packaging and presentation, while ensuring that the food is nutritious and safe. Knowledge from psychology and cognitive neuroscience can help create novel flavours, taste sensations and dining experiences to stimulate consumers' minds.



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A. Hedonic rating test:

It is a 9 point scale ranging from “like extremely” to “dislike extremely”. Scales with other phrases can also be used like in case of texture characteristics it may range from “extremely soft” to “extremely hard”. These tests are carried out either to rate the sample or to find the difference between two samples on the basis of sensory characteristics. This is the most widely used evaluation food industry.

B. Triangle Test:

This test consists of two samples which are identical and one sample which is different. This type of testing is useful in assessing the competitor product or in case of assessing a new product attribute for an existing product.

C. Numerical Scoring Test: In this case the various sensory attributes of product are rated as being poor, fair, good, very good and excellent. The questionnaire should be prepared carefully for each test. There are other sensory evaluation tests like Duo Trio Test, Multiple Paired Comparison, Composite Scoring Tests, and Sensitivity Tests etc.

After the evaluation is over a suitable statistical analytical technique is used to measure variables & establish the significance of results.

Which sensory evaluation test should be chosen?

The selection of test method will depend on the objective of the test, accuracy desired & personnel available for conducting the evaluation.

How to interpret the data obtained from sensory tests?

Differences in perception of individuals, error of habituation, logical error; emotional burden/stress etc. may influence an individual's ability to assess a product without bias. Therefore sensory evaluation tests alone should never be used to determine the quality of a food product. Only when the subtle correlation between sensory and objective tests is understood we can say that the sensory evaluation is beneficial for the food manufacturer!

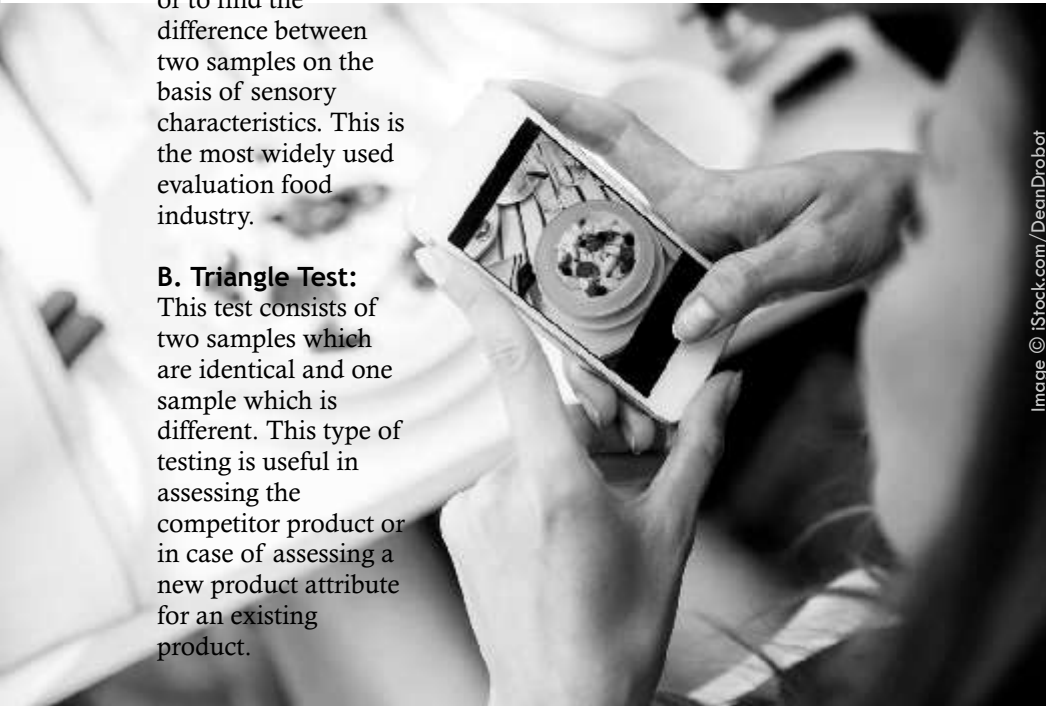


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COMING EVENTS

Institute of Food Technologists (IFT)
Annual Meeting & Expo 2016
 July 16-19, 2016
 Chicago, Illinois, USA
 W: www.ift.org

Dairy Tech India 2016
 August 26-27-28, 2016
 BIEC, Bangalore
 T: 011-65655264
 W: www.dairytechindia.in
 E: dairytechindiamtpl@gmail.com

AAHAR - The Food & Hospitality Fair 2016
 September 15 - 17, 2016
 Chennai Trade Centre, Chennai
 T: 044 - 28587297

International FoodTec India
 September 22-24, 2016
 Hall 1 & 5, Bombay Exhibition Centre, Mumbai
 T: 040-65594411
 E: m.pathan@koelmesse-india.com

Indian Ice Cream Congress & Expo 2016
 September 28-29, 2016
 Expo Centre, Sector-62, Noida, Delhi NRC
 W: <http://indianicecreamcongress.in>

PROPRIETARY FOODS: A FOREVER CHANGING REGULATORY FRAMEWORK



By **Dr. Jasvir Singh,**
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Background:

Of late, regulatory frameworks for proprietary foods have undergone a long and arduous journey. They have been subjected to an unprecedented scrutiny by all stakeholders, mostly by regulatory authorities, for the stated purpose of ensuring food safety. On one hand the presence of proprietary foods in food chain is well established through decades and centuries of human consumption, on the other hand a well thought out risk management strategy to identify, quantify and manage the actual risks involved is a desired step. This article tracks the journey taken so far, and looks into the alignment of risk management options exercised, with the prevalent global practices in this area.

Regulatory Framework in India:

Section 22 (4) of the Food Safety and Standards Act, 2006 (henceforth referred as Act) has provided the following framework for proprietary foods:
“*proprietary and novel food*” means an article of food for

which standards have not been specified but is not unsafe: Provided that such food does not contain any of the foods and ingredients prohibited under this Act and regulations made thereunder.”

This overarching guiding principle dictates the further development of regulations under the Act, and these are provided in the Food Safety and Standards (Food Products Standards and Food Additives) Regulations, 2011, duly notified on 1st August, 2011. Regulation 2.12 under the above regulations, before the recent amendment, provided the following framework for proprietary foods:

- 1) Proprietary food means a food that has not been standardized under these regulations
- 2) In addition to the provisions including labelling requirements specified under these regulations, the proprietary foods shall also conform to the following requirements, namely:—
 - (i) the name describing as clearly as possible, the nature or composition of food and/or category of the food under which it falls in these regulations shall be mentioned on the label

(ii) the proprietary food product shall comply with all other regulatory provisions specified in these regulations and in Appendices A and B.

Recently Food Safety and Standards Authority of India (henceforth referred to as FSSAI), has notified an amendment of regulation 2.12 of Food Safety and Standards (Food Products Standards and Food Additives) Regulations, 2011, and amended text is as under²:

“2.12.1: For the purpose of these regulations, -

1. Proprietary food means an article of food that has not been standardized under these regulations, but does not include any novel food, food for special dietary use, functional food, nutraceutical, health supplement and such other articles of food which the Central Government may notify in this behalf.

2. Proprietary food shall contain only those ingredients other than additives which are either standardised in these Regulations or permitted for use in the preparation of other standardised food under these Regulations.

Cont'd on Pg 23



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- Concentrated Syrups
- Powdered Drinks

CONFECTIONERY

- Candies
- Toffees
- Jellies
- Gums

BAKERY

- Biscuits
- Cookies & Crackers
- Cakes
- Pastries
- Muffins





Research in Health & Nutrition

may be particularly effective in obese women," Dr. Manni says. These fatty acids are found in fish oil as well as some plant and nut oils and are believed to convey several health benefits, including reduced risk

of coronary heart disease and improved cholesterol levels.

Previous studies have suggested that omega-3 fatty acids may help protect against breast cancer in obese women, although results have remained inconclusive. Dr. Manni suspects data obtained from normal-weight women may have caused this inconsistency.

The aim of the study was to measure the change in the participants' breast density over 2 years. High breast density appears to be a risk factor for breast cancer; according to the National Cancer Institute (NCI), women with dense breast have a four- to six fold increased risk of developing the disease. "The higher the breast density, the more likely the woman will develop breast cancer," asserts Dr. Manni. However, scientists are divided as to why breast density is an independent cancer risk.

Reduction in breast density only observed in obese participants. All the participants had a high breast density (of 25% or greater) at the outset of the study, detected via routine screening mammograms. Participants were randomized into five different treatment groups. Two groups

received differing dosages of the anti-estrogen drug Raloxifene (60 mg and 30 mg), one group received the prescription omega-3 drug Lovaza (4 gm) and one group received 30 mg of Raloxifene combined with 4 gm of Lovaza. A control group received no treatment.

After 2 years, the researchers reported an association between increasing the levels of omega-3 fatty acids in the blood and reduced breast density, but only among the 20% of the participants who were obese. In particular, the researchers singled out DHA (docosahexaenoic acid) as the fatty acid associated with breast density reduction. They now plan to examine the effects of DHA on its own in a trial involving obese participants.

"The finding supports the idea that omega-3s, and specifically DHA, are preferentially protective in obese postmenopausal women," Dr. Manni concludes. "This represents an example of a personalized approach to breast cancer prevention."

The researchers also found that the combination of Raloxifene and Lovaza - a drug approved by the US Food and Drug Administration (FDA) to treat severe high triglycerides - was better at reducing triglycerides and "bad" cholesterol (LDL) and increasing "good" cholesterol (HDL) than individual treatments.

Another problem with uncovering precisely how dense breasts impact

Omega-3s could lower breast cancer risk in obese women, study suggests

Written by James McIntosh
Medical News Today 29 February 2016

A new study has suggested that obese women could experience a reduction in the risk of breast cancer through the administration of omega-3 fatty acids.

The study took the form of an open-label, randomized clinical trial of 266 postmenopausal women with high breast density, who were either a normal weight, overweight or obese. The findings are published in *Cancer Prevention Research*. Dr. Andrea Manni, professor and division chief of endocrinology, diabetes and metabolism at Penn College of Medicine in Hershey, PA, and colleagues believe that this reduced risk could relate to increased levels of inflammation associated with obesity leading to breast cancer.

"Omega-3 fatty acids have an anti-inflammatory effect, so that's one of the reasons why we suspected it

on the risk of breast cancer is that no one method of measuring breast density has been agreed upon. Earlier this year, Medical News Today reported on a study that found up to 19% of women are being incorrectly determined as having dense or non-dense breasts as a result of inconsistency in measuring breast density.

Turmeric: Health Benefits, Nutritional Information

Written by Megan Ware RDN LD
Medical News Today 8 March 2016

Turmeric is a perennial plant of the ginger family, native to southwest India. Turmeric is commonly consumed in powder form and used as a spice.

To make turmeric powder, the roots of the plant are boiled for 30-45 minutes, dried in ovens and then ground into a deep orange-yellow powder. Turmeric powder is a common spice used in Indian and Pakistani cuisine. It is a major component of curry and can also be used for dyeing cloth. There are three naturally occurring phytochemicals in turmeric: curcumin, demethoxycurcumin and bisdemethoxycurcumin, together referred to as curcuminoids. This MNT Knowledge Center feature is part of a collection of articles on the health benefits of popular foods. It provides a nutritional breakdown of turmeric and an in-depth look at its possible health benefits, how to incorporate more turmeric into your diet and any potential health risks of consuming turmeric.

Nutritional breakdown of turmeric
According to the USDA National Nutrient Database, one tablespoon of turmeric powder contains 29 calories, 0.9 grams of protein, 0.3 grams of fat and 6.3 grams of carbohydrates (including 2 grams of fiber and 0.3 grams of sugar). That same 1 tablespoon serving provides 26% of your daily manganese needs, 16% of iron, 5% of potassium and 3% of vitamin C. Turmeric has traditionally been used in Ayurvedic and Chinese medicine to treat inflammatory conditions, skin diseases, wounds, digestive ailments and liver conditions.

Possible benefits of consuming turmeric

Curcumin is the active substance in turmeric believed to be the source of many of its health benefits. Curcumin is also responsible for turmeric's distinctly earthy, slightly bitter and peppery flavor.

Digestion

Curcumin may help improve digestion by stimulating the gallbladder to produce bile. A double-blind, placebo-controlled study showed that turmeric reduced bloating and gas in people suffering from indigestion. The German Commission E, a group that determines which herbs can safely be prescribed in Germany, has approved the use of turmeric for digestive problems.

Inflammation

Curcumin lowers the levels of two enzymes in the body that cause inflammation, which may indicate that consuming turmeric would be helpful in treating many

inflammatory conditions.

Inflammation is a common thread that links the following conditions:

- Heart disease
- Type 2 diabetes
- Stroke

- Arthritis
- inflammatory bowel diseases such as Crohn's disease and irritable bowel syndrome (IBS)
- Cancer
- Alzheimer's disease.

Curcumin shows promise as a natural anti-inflammatory treatment and is currently being tested in phase 2 and 3 clinical trials. In a clinical study on curcumin's effects on arthritis, 50 patients were given curcumin daily for 3 months. An increase in walking performance and distance was observed, as well as decreased inflammation levels. Curcumin has also been shown to be effective for inflammatory bowel diseases, such as Crohn's disease and ulcerative colitis. In multiple studies, people with inflammatory bowel diseases who were given curcumin supplements experienced a reduction in symptoms.

Heart health

Turmeric has been shown to prevent blood platelets from clumping together, which may decrease the risk of blood clot formation. Early studies suggest that turmeric may help prevent the build-up of plaque in the arteries. In animal studies, turmeric extract lowered LDL (bad) cholesterol and prevented further accumulation. However, in a human study where participants were given 4 grams of curcumin per day, cholesterol levels were not improved.

The anti-inflammatory properties of turmeric benefit cardiovascular health. Some studies have found that turmeric's antioxidant and anti-inflammatory properties have produced the following effects in animal models:

- ✓ Reduced body weight
- ✓ Lowered triglyceride synthesis
- ✓ Increased basal metabolic rate
- ✓ Increased fatty acid oxidation
- ✓ Improved insulin sensitivity.

All of these effects would lower the risk of heart disease. The findings of these studies need to be replicated in humans before turmeric is used as a form of



treatment, however.

Cancer

There is preliminary evidence that turmeric may be helpful in cancer prevention due to its antioxidant and anti-inflammatory properties. Epidemiological studies have identified inflammation as a major risk factor for cancer. More research is needed in this area.

Topical curcumin has also been found to relieve or reduce some secondary cancer symptoms such as reduced sense of smell, itching, lesion size and pain.

Brain health

The antioxidant, anti-inflammatory and circulatory effects of turmeric are all helpful in the prevention and treatment of neurodegenerative diseases, including as Alzheimer's disease, Parkinson's disease and multiple sclerosis. In a large population-based study of over 1,000 elderly patients with dementia, subjects who consumed a turmeric-rich curry throughout their life either occasionally, often or very often scored significantly better on the Mini-Mental State Examination (MMSE), an established measure of cognitive function, than those who rarely consumed curry.

Type 2 diabetes

Oxidative stress and inflammatory reactions are major factors in the occurrence and development of type 2 diabetes. Curcumin appears to influence diabetes by stimulating the pancreas to produce and secrete insulin. Several studies have found that curcumin can help regulate glucose and lipid metabolism in type 2 diabetes. In a study in which 240 pre-diabetic participants were given 250 mg curcumin supplements or a placebo twice daily for 9 months, those who were given the curcumin supplement were less likely to progress into full-blown diabetes.

Turmeric or curcumin?

Although all of the above benefits are attributed to curcumin, some studies

have indicated that whole turmeric has more benefits than curcumin in isolation. As well as improving the bioavailability of curcumin, whole turmeric includes aromatic turmerone, a compound that could induce stem cell proliferation and, as such, could be harnessed in the future to in treatments for neurodegenerative disorders. Studies investigating curcumin-free turmeric have shown that its components exhibit anti-inflammatory, anticancer and antidiabetic properties, further suggesting that curcumin is not the only component of turmeric to have healthful qualities.

Additionally, a comparative study found that the levels of compounds such as aromatic turmerone were higher in the essential oils of fresh turmeric compared with dry turmeric, indicating that fresh turmeric has higher antioxidant properties than dry turmeric. Turmeric is also available as a supplement in powder-containing capsules, fluid extract and tincture. Bromelain, a protein extract derived from pineapples, increases the absorption and effects of turmeric, so it is often combined with turmeric in these products.

Potential health risks of consuming turmeric

Using turmeric as a spice in food is considered safe; however, supplements are not regulated and may or may not contain what they claim. Long-term large doses of turmeric may cause upset stomach and ulcers in extreme cases. Anyone with bile passage obstructions or gallstones should talk to their doctor before taking turmeric. Turmeric should not be taken with drugs that work to reduce stomach acid. Turmeric may lower blood sugar levels. If you have diabetes, talk to you doctor before taking turmeric supplements because they may increase your risk of hypoglycemia.

Pregnant and breastfeeding women should not take turmeric supplements. Because turmeric may act as a blood thinner, it should not be taken in supplement form at least 2 weeks before surgery, or combined with blood-thinning medications.

Recent developments on turmeric from MNT news

Promising drug candidate for Alzheimer's found in turmeric compound

Researchers from the Institute of Neuroscience and Medicine in Jülich, Germany, say a turmeric compound promotes stem cell proliferation and differentiation in the brain, giving hope for patients who suffer from stroke and Alzheimer's disease.

Pomegranate, green tea, turmeric and broccoli may help fight prostate cancer

British researchers have scientifically proven that broccoli, turmeric, green tea and pomegranate help fight the most common cancer in men in the United States and the United Kingdom - prostate cancer.

High-salt diet may harm liver

Written by Catharine Paddock PhD
Medical News Today 25 February 2016

It is well known that consuming too much salt is linked to high blood pressure. Now, a new study suggests it may also lead to liver damage in adults and developing embryos. The new study, led by



Jinan University in Guangzhou, China, is published in the Journal of Agricultural and Food Chemistry.

Our bodies need salt - the chemical name for which is sodium chloride - to carry out essential functions. For example, sodium ions help control the transport of water and carry electrical impulses in nerves. However, according to the Centers for Disease Control and Prevention (CDC), most Americans consume too much sodium - most of it from salt. Excess sodium intake is linked to high blood pressure, a major cause of heart disease and stroke. The average daily sodium intake for Americans aged 2 years and older is over 3,400 mg of sodium - more than double the 1,500 mg limit recommended by national dietary guidelines for most American adults.

Most of the salt people consume in the US does not come from the salt shaker - it is already in food by the time it reaches the table - it comes from processed foods and foods prepared in restaurants. So, while asking people to reduce salt intake has some effect in that they can look at labels to pick lower salt products, there is also a need to get producers to reduce sodium content of packaged and prepared foods.

Too much salt led to changes in liver cells linked to fibrosis

Previous studies have already suggested that too much sodium can damage the liver. In the new study, the researchers wanted to look in more detail at what happens at the level of cells. The team carried out experiments where they fed adult mice on a high-salt diet and exposed chick embryos to a salty environment. The results showed that too much sodium led to a number of changes in the liver - such as misshapen cells, higher rates of cell death and lower rates of cell division - all of which can lead to liver fibrosis.

Liver fibrosis occurs when there is excessive accumulation of "extracellular matrix" proteins like collagen that support the cells that do the work of the liver - such as breaking down old and damaged cells and metabolizing fats for energy.

The researchers suggest the mechanism through which too much salt may cause liver damage and fibrosis in both adults and developing embryos is through oxidative stress. Oxidative stress is where the balance between the production of reactive oxygen species (free radicals) and antioxidants is upset in favor of the former. Such an imbalance can increase inflammatory cells and promote the death of liver cells, leading to progressive fibrosis.

However, on a more promising note, the team also found that treating damaged cells with vitamin C - an antioxidant - appeared to counter some of the damage brought on by too much salt. Meanwhile, Medical News Today recently learned how a new review of published evidence finds that coffee may protect against liver cirrhosis, an advanced stage of fibrosis.

Time to rethink your vegetable oil? Leaner bodies, less heart disease and diabetes risk found in people with higher levels of linoleic acid

Medical News Today 8 March 2016

Risk of heart disease and diabetes may be lowered by a diet higher in a lipid found in grapeseed and other oils, but not in olive oil, a new study suggests.

Researchers at The Ohio State University found that men and women with higher linoleic acid

levels tended to have less heart-threatening fat nestled between their vital organs, more lean body mass and less inflammation. And higher linoleic acid levels also meant lower likelihood of insulin resistance, a precursor to diabetes. This finding could have obvious implications in preventing heart disease and diabetes, but also could be important for older adults because higher lean body mass can contribute to a longer life with more independence, said Ohio State's Martha Belury, a professor of human nutrition who led the research.

But there's a catch. Low-cost cooking oils rich in linoleic acid have been disappearing from grocery shelves, fueled by industry's push for plants that have been modified to produce oils higher in oleic acid. "Vegetable oils have changed. They're no longer high in linoleic acid," said Belury, an expert in dietary fats and part of Ohio State's Food Innovation Center. The research appears online in the journal *Molecular Nutrition & Food Research*.

The research team also looked at the health effects of oleic acid, found in olive oil and some other vegetable oils, as well as long-chain omega-3 fatty acids, found in fatty fish including salmon and tuna. Though inflammation decreased as blood levels of those fatty acids rose, higher levels of oleic acid or long-chain omega-3s did not appear to have any relationship to body composition or signs of decreased diabetes risk despite longstanding recommendations



that people eat more of these "healthy" fats. "It really kind of popped out and surprised us," Belury said.

Previous research found that taking linoleic acid supplements increased lean body mass and lowered fat in the midsection. As little as a teaspoon and a half was all it took, Belury said. The current study is the first study to examine linoleic acid alongside body composition and other health markers in people who hadn't been given supplements or prescriptive diets, she said.

Because of previous research showing cardiovascular benefits of linoleic acid, the American Heart Association in 2009 recommended people take in at least 5 to 10 percent of their energy in the form of omega-6 fatty acids, which includes linoleic acid. But U.S. consumption of linoleic acid is declining because of genetic modification of plants for food manufacturers seeking oils higher in oleic acid, Belury said. There's been a pronounced shift in the last five years, she said, and it is linked to the push against trans fats. When linoleic acid is made solid (hydrogenated) for processed foods, it is more likely to convert to trans fat than its oleic cousin.

So oils, notably safflower, sunflower and soybean, now routinely contain less linoleic acid - it often makes up less than 20 percent of the fatty acids in commonly purchased oils, based on food labels and confirmed by testing in her lab, Belury said. Grapeseed oil for now remains an excellent source of linoleic acid, which constitutes about 80 percent of its fatty acids, she said. Corn oil also remains a decent source, she said.

The team used data from two previous studies that focused on stress and included 139 people. In those studies, researchers assessed body composition using DXA scanning, an advanced way of measuring fat and muscle mass. They tested blood drawn after the men and women

fasted for 12 hours, calculating the amount of linoleic acid (and other fatty acids) in red blood cells. All of the linoleic acid in our bodies comes from food sources. They also evaluated the blood for insulin resistance and two markers of inflammation that are connected with disease.

Then they plotted results for each health category against the group's results for each of the three fat categories: linoleic acid, oleic acid and long-chain omega-3 fatty acids. Belury said the study doesn't explain the apparent interplay between linoleic acid and measures of risk for heart disease and diabetes. It shows an association between those things, but not a cause and effect. And its power is limited because it relied on looking back on two previous research efforts and those involved middle-aged men and women who were slightly healthier on average than the general population.

The study participants lived in and around Columbus, Ohio. It's possible that the results would have been different in a population with diets that tend to be higher in omega-3 rich fatty fish, Belury said. Belury's collaborators, all from Ohio State, were Rachel Cole and Jia-Yu Ke of the College of Education and Human Ecology, Brittney Bailey and Rebecca Andridge of the College of Public Health and Janice Kiecolt-Glaser, director of the Institute for Behavioral Medicine Research.

Adolescents drink too much caffeine

Written by Yvette Brazier
**Medical News Today:
 Tuesday 8 March 2016**

Teens need more information about the potential damage that results from caffeine

consumption, says a new study published in the Journal of Nutrition Education and Behaviour.

Caffeine is a drug: a readily available, widely used, legally accessible and socially acceptable psychoactive substance. Anyone, of any age, can use it, and its popularity is growing, especially among young people. Statistics show that adolescents are the fastest-growing population of caffeine users. Studies have indicated that 83.2% of teenagers consume caffeinated beverages regularly, and at least 96% consume them occasionally.

While caffeinated energy drinks have received media attention, only 1% of caffeine consumption among adolescents comes from these drinks. Coffee is an obvious culprit, but many teens do not realize that tea, including iced tea, and sodas can contain substantial amounts of caffeine.

How much caffeine is safe?

The Mayo Clinic state that up to 400 mg of caffeine a day is probably safe for most healthy adults. That is approximately four cups of brewed coffee, 10 cans of cola or two "energy shot" drinks. More than 500-600 mg a day, they term "heavy daily caffeine use."

Heavy use can cause side effects, such as nervousness, anxiety, jitteriness, sleep problems, gastrointestinal disturbances, tremors, increased heart rate and even death. Even

moderate doses of 100-400 mg can cause symptoms in children and adolescents.



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Food Science & Industry News

How much oil is absorbed during deep frying?

IFT Weekly March 2, 2016

A study published in the Journal of Food Science reveals what happens to food and its microstructure when it is fried.

A University of Illinois food scientist set out to examine food's uptake of oil during frying and how that oil gets distributed throughout the food. During deep frying, as food is immersed in hot oil, water in that food quickly evaporates and steam pressure builds. This pressure affects the microstructure, including the porosity—the number and size of pores in the food as well as the twistiness of the pathways between those pores (tortuosity). This determines how and how much oil gets taken up into the food.

To understand the distribution of oil better, the researchers conducted a study using X-ray micro-computed tomography (micro-CT) to gain 3D images of the microstructure of fried potato disks after they had been fried for various lengths of time. For the study, russet potatoes cut into disks that were 45-mm in diameter and 1.65 mm thick were fried at 190°C for 20, 40, 60, or 80 sec, freeze dried, and scanned. The researchers collected about 986 2D images of the potato samples and then combined them to produce 3D images. Using the 3D images, they were able to gain more information about the pores and pore networks in the material. The researchers observed that as frying time increased, pore size increased, allowing for greater uptake of oil. They also saw a correlation between

oil content and how the network of pathways between the pores changed throughout the frying time. These pathways act like channels for water and vapor flow and oil penetration in the food.

The researchers observed oil distributed across the full thickness of the potato disks. In thicker materials with lots of moisture (like chicken nuggets and French fries), they have observed the oil to remain near the surface as continuous evaporation helps to resist oil penetration.

“It is not easy to make a product that has no oil and still provides taste, flavor, and texture that consumers enjoy,” said Pawan Takhar, study author and University of Illinois food scientist. “People like that fried flavor and the texture of crispiness outside and softness inside. At the same time you want to reduce the oil content to make the food healthier. With this network study we wanted to see how those networks are formed, because networks are also related to texture.” It's a combination of the oil content and air pockets in the pore structure that provide the desired crispy texture.

Eco-friendly packaging material may double shelf life of food

IFT Weekly March 2, 2016

Researchers from the National University of Singapore (NUS) have developed an environmentally-

friendly food packaging material that is free from chemical additives, by fortifying natural chitosan-based composite film with grapefruit seed extract (GFSE). This food packaging material can slow down fungal growth, doubling the shelf-life of perishable food, such as bread.

Chitosan, a natural and biodegradable polymer derived from the shells of shrimp and other crustaceans, has potential for applications in food technology, owing to its biocompatibility, non-toxicity, short time biodegradability, and excellent film forming ability. Chitosan also has inherent antimicrobial and antifungal properties. GFSE, on the other hand, is antioxidant and possesses strong antiseptic, germicidal, antibacterial, fungicidal, and anti-viral properties.

The researchers spent three years perfecting the formulation to create a novel composite film that not only prevents the growth of fungi and bacteria, but has mechanical



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strength and flexibility that are comparable to synthetic polyethylene film commonly used for food packaging. The composite film also effectively blocks ultraviolet light, hence slowing down the degradation of food products as a result of oxidation and photochemical deterioration reactions.

Laboratory experiments showed that the shelf life of bread samples packaged with chitosan-based GFSE composite films was two times longer than those packaged using synthetic packaging films.

The researchers will be conducting further studies to improve on this technology. They will look into the degradability of chitosan-based GFSE films, as well as carry out an accelerated shelf-life study to examine the extent of microbial growth and quality changes during storage of various food products.

Food industry slow to react to demand for natural colours & flavours: Mintel

Food Navigator 24 Feb 2016

Faced with a growing wave of consumer demand for products with simpler, natural colours and flavours, food and drink companies have been notoriously slow to respond, says Mintel.

While household names such as Mars, General Mills, Kellogg and Kraft Foods acknowledge the need to meet consumer expectations, the majority of food and drink companies have yet to rise to the challenge and opportunities of reformulating with natural colours. Analysts at Mintel point to the US cereal market as a good example of the slow pace of change.

According to Mintel's research only 10% of cereals launched in the US

since January 2013 make an all-natural claim on pack. Marcia Mogelonsky, director of insight at Mintel, told FoodNavigator: "As consumers voice their demand for 'cleaner' labels, manufacturers are responding. Artificial flavours and colours have come under scrutiny, and manufacturers are swapping out chemical-derived dyes with colours derived from fruits and vegetables, while also swapping chemical-derived flavours with natural ones."

A long way to go

However, Mogelonsky added that, while some companies work at reformulating cereals so that they will contain only natural colours and flavours, the current market is still rife with products that use artificial ingredients for these purposes. She said: "Only 10% of cereals launched in the US since January 2013 make an all-natural claim on pack, while 18% claim no additives or preservatives, suggesting that in the universe of cereal, manufacturers have a way to go before they effectively remove unnatural ingredients from all cereals."

The shift away from artificial colours comes at a time when manufacturers are scrambling to improve cereal quality in the face of a shrinking – and more demanding – consumer base. In the past decade, manufacturers have changed cereal formulations to include whole grains and more fibre, find GMO-free sources, and gravitate towards popular diet trends including low fat, high protein and gluten-free.

Lauren Pradhan, wellness marketing manager at General Mills, acknowledged that the company's drive to remove artificial ingredients had been largely driven by consumer demand. She said: "We have been listening to consumers, parents, families and we've been hearing more and more that this was something they were concerned about in their cereal.



Then we did a study with Nielsen that showed us 49 percent of households are consciously avoiding artificial flavours and colours."

Kellogg also recently announced its commitment to remove artificial colours and flavours from Froot Loops, Apple Jacks and other branded cereals by 2018. The company said the move is part of its ongoing efforts to restore growth in its cereal business, which has struggled in recent years from weaker consumer demand. Kellogg said it also plans to remove artificial colours and flavours from some of its snack bars and Eggo frozen products.

Tipping point

"We know consumers are looking for foods with simpler ingredients, and work is well under way to answer that call," said Paul Norman, president of Kellogg North America. "Already in North America, 75% of our cereals are made without artificial colours, and more than half are made without artificial flavours."

Outside the cereal sector, Kraft Foods announced that it is revamping its family-friendly macaroni and cheese meal by removing synthetic colours and preservatives from the popular boxed dinner. The move comes at a time when Kraft is battling sluggish demand as consumers shift to brands that are perceived as healthier, including foods that are organic or less processed.

Kraft spokeswoman Lynne Galia said the changes were being made to address concerns expressed by consumers, including demands for improved nutrition and “simpler ingredients.” Last year FoodNavigator reported how consumer demand for natural colours in the US is nearing “a tipping point” as parents concerns increase about the potential impact on children’s health of artificial colours and more natural options become available. About 80 % of US and UK parents of 3 - 12 year olds said they were concerned about the use of synthetic colours in food and beverages for children, according to a survey of more than 1,000 US and UK parents conducted by the colour and flavour company Kalsec.

Report: Changing tastes and online sales drive Apac fresh-food growth

Food Navigator Asia , 08 Feb 2016

Fresh food consumption in Asia Pacific will increase to over 1.4bn tonnes by 2019, according to a study by Technavio as improving technology drives sales from online channels.

“Online grocery shopping is expected to emerge as the key distribution channel of fresh food products in the Asia Pacific region until 2019,” said Arushi Thakur, a Technavio lead analyst. “Speedy delivery and economical selling prices are major growth drivers of online grocery shopping.”

While Asia Pacific online vendors initially focused only on consumer goods, food and beverage retailers

entered the sway as technology has become available to make the delivery process easier, she said. “The popularity of online deliveries has prompted food and beverage manufacturers to sell their products on a national and international scale. To aid fresh food manufacturers, online grocers like Grofers and BigBasket in India offer a virtual marketplace to consumers, where they access their orders online and avail timely doorstep delivery,” said Thakur.

In order of size, the AsiaPacific fresh food market is segmented by fruits and vegetables, meat and poultry, dairy products, bread and bakery products, and fish and seafood. Fresh fruit and vegetable consumption amounted to around 452m tonnes in 2014, with Technavio analysts anticipating “huge demand” for produce over the next four years due to growing vegetarianism and increased health awareness.

In spite of being a niche market, the demand for organic food among APAC consumers increased by nearly 20% in 2014, and was particularly high in agriculturally prominent countries. The highest organic demand was for rice, dairy, and fresh fruits and vegetables in Japan, New Zealand, Australia and Korea.

Thakur expects the Asia Pacific meat and poultry market to see steady growth until 2019. While wet markets are the most preferred destinations for sourcing fresh meat, consumers are now moving towards supermarkets and hypermarkets on account of their higher standards of hygiene and labelling and greater convenience. Meat consumers are opting for higher protein intake due to growing wealth.

Fresh dairy goods accounted for 157m tonnes of sales in

2014, with most of the demand coming from developing companies. According to Thakur, effective consumer communication and improved labelling will drive the growth of this segment over the next four years. This high demand has been encouraging dairy manufacturers to develop new packaging techniques that increase shelf life of dairy products. China is emerging as a significant consumer of dairy products, with consumers developing a taste for cheese in particular.

Global shift in farmed fish feed may impact nutritional benefits ascribed to seafood

Medical News Today 15 March 2016

The fish-farming industry is increasing its use of plant-based ingredients in its feed and moving away from traditional feed made from fish, which could impact some of the health benefits of eating certain



Image © iStock.com/nicolasprimola

types of seafood, suggests a new analysis from the Johns Hopkins Center for a Livable Future (CLF) at the Johns Hopkins Bloomberg School of Public Health. The findings are published March 11 in the journal Environment International.

Half of the seafood consumed by Americans is farmed. Fish farming, also known as aquaculture, is the fastest-growing food animal sector, outpacing the beef and poultry industries. While wild fish find their own food - which includes smaller fish for carnivorous species – intensively farmed fish are fed a manufactured aquaculture feed.

Until recently, this manufactured feed was typically composed of high levels of fishmeal and fish oil derived from wild fish -- but it has become unsustainable to catch more wild fish to feed growing numbers of farmed fish, so the industry has shifted the makeup of the feed. For example, twice as much soybean meal was used in commercial aquaculture feed in 2008 as compared to fishmeal, and the use of crop-based ingredients is projected to increase 124 percent between 2008 and 2020.

"Farmed fish get their health-promoting omega-3 fatty acids, EPA and DHA, from their feed, and specifically from fish oil," says study leader Jillian Fry, PhD, director of CLF's Public Health and Sustainable Aquaculture Project and a faculty member at the Bloomberg School. "Our review found that increasing plant-based ingredients can change the fatty acid content in farmed fish, which can affect human nutrition."

The new study details the industry shift to crop-based feed ingredients, such as soy, corn, and wheat, to replace wild fish as a key ingredient in manufactured feed. The researchers -- in collaboration with colleagues from the University of Minnesota's Institute on the Environment and McGill University -- reviewed aquaculture and public health literature, and conducted a new analysis to estimate the environmental footprint for the top five crops used in commercial aquaculture feed.

The shift has been hailed by some as a positive change in light of the increasingly depleted oceans and the rapidly expanding aquaculture industry. But the shift may have some unintended consequences as well. Using vegetable oils instead of fish oil changes the fatty acid content of fish and nutritional value for human consumption, the researchers say. Considering Americans are encouraged to consume seafood high in omega-3 fatty acids, which promote improved cardiovascular health and neurodevelopment, this

has large implications for dietary recommendations and the aquaculture industry. More research is needed, they say, to better understand the impact of this shift in feed on the health benefits of consuming farmed fish.

While fish-based ingredients are seen as acutely limited, so are the resources such as land, water and fertilizer used to produce feed crops. Aquaculture's environmental footprint likely now includes increased nutrient and pesticide runoff from the industrial crop production needed to supply fish food. This runoff is a key driver of water pollution globally, and can negatively impact public health. Depending on where and how feed crops are produced, plant-based fish feed could be indirectly linked to negative health outcomes for agricultural workers and nearby communities due to exposure to air, water or soil contaminated by nutrients and/or pesticides.

Fry says that these new findings may raise more questions than they answer. "The nutritional content of farmed fish should be monitored," Fry says. "The aquaculture industry should assess the environmental footprint and public health impacts of their crop-based feed ingredients and seek those produced using sustainable methods."

Microencapsulation may increase consumer acceptance of resveratrol in foods

IFT Weekly March 23, 2016

A study published in the Journal of Food Science shows that



Image © iStock.com/sb-borg

encapsulating resveratrol in a sodium caseinate matrix may improve its stability, lessen its bitterness, and allow it to be incorporated into shelf-stable foods at biologically active levels.

One major limitation of incorporating resveratrol into food products is the instability of the compound in the presence of light. In fact, about 90% of the bioactive form of resveratrol has been shown to convert to the bioinactive form after 100 min of light exposure. Another limitation is the bitterness associated with the compound.

The researchers' prior study demonstrated that resveratrol encapsulated within a sodium caseinate matrix has a significantly higher stability and higher taste detection threshold in comparison to unencapsulated resveratrol. In this study, the researchers wanted to apply the resveratrol microcapsules to shelf-stable foods—in this case, bars and gummies.

The microcapsules used in the consumer testing contained 9.1% resveratrol and 90.9% sodium caseinate. For both bars and gummies, 10 mg and 40 mg resveratrol/serving were tested as these are effective levels that align with the therapeutic dosages. One-hundred panelists aged 18–65 participated in the two days of testing, in which they received the gummies on the first day and the bars on the second.

Four different controls were used for both gummies and bars: 1) without any resveratrol and protein (plain), 2) unencapsulated resveratrol (resv), 3) sodium caseinate and unencapsulated resveratrol just mixed without encapsulation (P + R), and 4) sodium caseinate only (PRO).

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3. Proprietary food shall use only such additives as specified for the Category to which the food belongs and such category shall be clearly mentioned on the label along with its name, nature and composition.
4. Proprietary food product shall comply with the food additives provisions as prescribed in Appendix A and the microbiological specifications as prescribed in Appendix B of these Regulations and all other Regulations made under this Act.
5. The Food Business Operator shall be fully responsible for the safety of the proprietary food.”

Global Approaches to Vertical Standards:

In order to understand the rationale of dependence on vertical standards, which are also referred to as product/ commodity/ identity standards in various countries, one needs to compare our local approaches with the emerging global practices.

a. Codex Framework: A look at developments in Codex framework in last decade or so shows that increasingly far more work is happening in the horizontal systems, compared to vertical systems. In fact many of commodity committees in Codex have either gone into “sine die” mode or are not working anymore.

b. Food Standards Australia & New Zealand (FSANZ): FSANZ has undertaken a comprehensive review of regulatory framework and published the outcomes. Their review has clearly established use of horizontal regulations as the preferred means of having much better and much effective control

over entire supply chains. It also points out that use of vertical standards serve the limited purpose of defining the identity of a commodity, and there is absolutely no need of defining identity of a large number of food products in our supply chains. Use of a documented policy and framework to establish if there is a real need for setting vertical/ commodity/ identity standards has been shown to be an effective means of identifying such areas which require setting up of such commodity standards¹.

c. Many other frameworks have also opted for the same approach, although it has not been documented as clearly as in case of FSANZ, of relying on horizontal regulations to ensure food safety.

Analysis of recent amendment by FSSAI:

Proprietary foods definition provides a clarity and opportunity for proprietary food manufacturers to continue their operations without undergoing a very tedious and unpredictable erstwhile operative regime. Such clear and transparent operative frameworks are always beneficial for providing certainty to all stakeholders, regarding what constitutes compliance.

Another aspect of the regulations is that it carves out a separate list of products which are excluded from the framework. It can be safely assumed that while the amendment carves out a separate entity of special category foods, these specialised products will probably get covered by a specific regulation for those product categories.

FSSAI has also issued a set of Frequently Asked Questions (FAQs) along with this regulation to provide clarifications to stakeholders regarding interpretations. As

a principle it is one of the most welcome structural initiatives from FSSAI. This will hopefully be given due respect by all, when the framework gets actually implemented at the field level.

However it has also raised some concerns as well. The FAQs have actually gone beyond the scope of regulation, and set up additional criteria for proprietary foods, which were originally not there in the regulation itself. This may be an unintended aberration, but it needs an immediate course correction from FSSAI, so that this practice of issuing FAQs or guidelines gets the warm welcome it deserves, and doesn't become another suspect action in the eyes of industry.

Conclusion:

An evaluation of recent amendment to definition of proprietary foods reveals that the amendment does address the concerns around those products for which vertical standards has not been set in regulations. By opting for ensuring safety of food products through effective use of already existing horizontal frameworks in Indian regulations, FSSAI has aligned their approach to emerging thought process in global regulatory approaches. It is a welcome move that that ingredient safety has been used as a base for determining

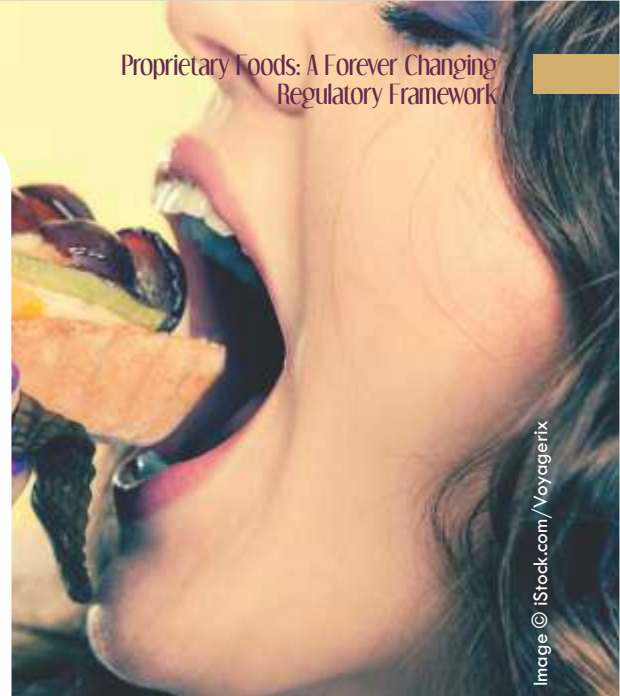


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safety food products.

Issuing FAQs to provide uniformity in interpretation is a very welcome structural move and needs to be converted into a standing policy w.r.t. all regulations to be issued in future as well. However it will serve its intended purpose well if it is used for providing clarity around interpretation of existing contents of the regulation and

not for creating new conditions, far beyond the original regulation itself.

References:

- 1) Gruber et al., Regulation of food commodities in Australia and New Zealand; Food Control; volume 14 (2003); 367 -373
- 2) F. No. 11/12/Reg/Prop/FSSAI-2016, dated 19th April, 2016, issued by Food Safety and Standards Authority of India.



Mr. Adsule, Dr. Amritkar, Dr. Jasvir & Ms. Pandey

The inaugural address was delivered by Mr Sailesh Venkatesan, Vice Chairman, PFNDAI. He very succinctly and crisply outlined the challenges faced from the industry perspective, posed by the current scenario of increase in knowledge about food safety along with rising expectations of consumers. The FSSAI-2006 has enabled a shift from an enforcement driven approach to reliance and compliance to a proactive approach wherein there is harmonization between Indian and international standards and encompasses a risk-based framework.

The Government has started progressive initiatives including

amendments, issue of FAQs and most importantly has shown willingness to engage with all stakeholders. In the context of the new scenario, he pointed out that the food industry has a unique opportunity to partner with FSSAI and work together through effective and high engagement.

The keynote address was delivered by Dr. B Sesikeran, former Director of National Institute of Nutrition. His address focussed on very salient and important issues. His address began with a brief description on what regulation is and its difference from laws. He spoke about the five principles of good regulatory practices – good governance, regulatory impact assessment,

scientific basis and proportionality, open consultation and minimal restrictiveness. He emphasised on the need for training in good regulatory practices and that regulation is meant to promote rather than restrict; standards should be well-designed to achieve the intended objectives in order that they can be effectively enforced.

He recommended that cost-benefit analysis be employed to enable making judgements about the reasonableness of a regulation and the practicalities. Besides cost-benefit analysis, a risk-benefit analysis should be undertaken if it has not been already done. Results of inappropriate regulation are likely to be: higher cost and prices,



Panellists

REGULATORY PRACTICES: INTERPRETATION AND COMPLIANCE

HELD IN MUMBAI ON APRIL 18, 2016

Report By **Dr. Shobha A. Udipi, Senior Nutritionist, PFNDAI**

misallocation of resources, lack of product innovation and poor service quality. He gave excellent examples regarding regulations and the gaps and that in many cases when there is no valid scientific method for estimation, setting up regulations and requirements for information on labels. He briefly described the efforts made by EFSA about added sugars and pointed out that lack of evidence makes it difficult to set upper limits related to risk of disease e.g. added sugars and risk of dental caries, weight gain, triglycerides or cholesterol. He concluded by saying that science cannot be translated into regulation unless it is implementable.

Session on Rulemaking Process - Understanding the Objective

Two eminent speakers made presentations in this session. Dr J. I. Lewis spoke on Labelling Regulations: Structure and Compliance and Dr V. Sudershan Rao on Exposure Analysis for Risk Assessment.


Dr Lewis spoke about the FSSAI in terms of 'hope', 'faith' and 'clarity'. He said that while it was time for good regulatory practices, the reality of physiology and science often do not get considered when regulations are made. The salient points made by him included: the need to institutionalize and not allow 'ad-hoc' intervention, the three phases of making regulations – pre rule phase, rule-making phase and decision making. Citing the process followed by the USFDA, he highlighted that the public can access records, analyse data and examine the analysis behind the proposed rule. The need for transparency at all levels was emphasized. He also pointed out that labelling of packages should be based upon whether the prepackaged food is for direct retail sale or whether the bulk package is to be delivered to distributors and whether the bulk package is likely to be seen by the consumer. Contradictions in construction of regulations often make it difficult for the FBO to comply. He ended

his talk by listing three important aspects related to law: the intent, the construct and compliance and enforcement.

Dr. Rao began his presentation saying that exposure analysis for risk assessment is a critical component of risk framework. He described the NNMB survey that tries to capture actual intakes and in a nutshell explained how scientists calculate nutrient intakes and that the data is presented as per consumption units and as a percentage of the recommended daily allowances. He also presented data on the contribution of processed foods to energy intakes, and the data from Dr. Anura Kurpad on the nutrient analysis of commonly consumed Indian sweets with reference to their content of total fat, saturated fat and carbohydrates. He pointed out that when developing the RDAs, the weight of the reference man is taken as 60 kg whereas when setting limits for additives, the basis is 50kg body weight for a standard man.



Dr. V. Sudarshan Rao



He explained the different methods used to study exposure/intake-poundage method, household surveys, model diets, use of individual data and study of total diets. He ended his presentation by highlighting the need for regulatory impact analysis in which the cost of a regulation and the benefit from the regulation are both studied.

Session on Rulemaking Process- Understanding the Objective

This session was chaired by Dr Jasvir Singh and three presentations were made by Dr. Nilesh Amritkar on Analytical Reports- Failure and Risk, Selecting Food Additives under the Food Category System and Role of Processed Foods and Beverages in National Food and Nutrition Security.

Dr. Amritkar, Managing Director of EnviroCare Laboratories emphasized that in a business, the regulator governs compliance that the FBOs adhere to and that an analytical laboratory is a team player but not a vendor, with quality and the analytical report being an important determinant for good business. He said that there are 326 standardized products but there are many non-standardized foods that are called 'Proprietary Foods'.

There are several issues that remain to be addressed because these are grey areas at present. Some of these are: what would be the test parameters for the wide variety of proprietary foods, is a given method validated for a particular matrix, what if an ingredient that is not listed is used in a food formulations?; microbial parameters

are not spelt out when risk is to be assessed, tolerance concept in nutrition labels.

He also pointed out gaps in methods e.g. there are no standard methods available for food ingredients like alginates, xanthan gum, vegetable fat in chocolates or standards given may not be applicable to various foods.

Validated methods need to be developed and for this reason FBOs, laboratories and Authority need to work together. Present regulations do not include several food items and this could pose a problem for innovation. There is no tolerance concept for nutrition labels. He gave numerous examples of foods where there is mismatch between the parameter selected and the composition of the product. He pointed out ambiguities in regulations e.g. wines and beer should be free from pathogens but the pathogens are not specified. He also emphasized that for nutrition labels, composition that is printed should be average of results of analysing several batches. He stated that analytical laboratories need to work with FSSAI towards developing analytical methods for proprietary food products.

Ms. Shreya Pandey, GM Scientific & Regulatory Affairs (R&D), Pepsico spoke on Selecting Food Additives under the Food Category System: A step towards modernised science-based Indian food regulations. She traced the history of codex standards for food additives. She touched upon the 27 classes of additives and the INS numbering system, and that foods listed in the food categorization system are to be regarded only as examples. Her talk focussed on: risk assessment and the specifications in terms of identity, purity, analytical methods, ADI; the contents of the tables, the current status of operationalization, highlighting that the document is different from the draft. She described how the document is to be read.

Mr. Sunil Adsule, Director,

Scientific & Regulatory Affairs, Coca-Cola India, spoke on Role of Processed Foods and Beverages in National Food and Nutrition Security. He began his presentation by pointing out that organized food industry is expected to lead the way. After tracing the evolution of food processing and its critical role, pointing out that food processing ranks fifth among various industries, He pointed out that negative perceptions are often created in the minds of consumers partly due to actions taken by regulators and the myths created by media.

These negative perceptions are attributable to lack of familiarity with technology, low level of science literacy and labelling and advertising, the belief that processed foods are largely contributing to non-communicable diseases, and the perception that processed lends artificiality to the product especially due to use of chemicals, additives. He ended with emphasizing the importance of a responsible ecosystem consisting of an inclusive, transparent and enabling regulator, responsible manufacturer, responsible and discerning consumer and factual reporting to build awareness as well as the need to adopt best practices at enforcement level.

SESSION on Issues and Interpretations

Mr. Vegulaparanan Mohan, Partner, Intl Advocare & Corp. Consultant spoke on Court Judgements: Interpreting sections of Act and Regulations. He





Dr. S. Sengupta

explained the role of legislature, judiciary and executive and the process of enacting legislation. He explained how the words 'may' and 'shall' mean the same as per Indian legislation. He discussed at great length about Legal metrology and the cases of FSSAI vs. Danisco India Pvt. Ltd and United Distribution as well as the Nestle vs. FSSAI.

Dr. S. Sengupta, Company Secretary & Senior Director - Legal, Hardcastle Restaurants gave a presentation on Misbranding and Misleading: Issues and Implementation in which he explained the differences between the two terms, along with giving the definitions of each. He cited the number of cases of misbranding, convictions and penalties in 2015 and then explained how misbranding occurs in terms of A, B, Cs of misbranding. He also dealt with misleading and elaborated upon the ambiguities in the government regulations regarding advertising. He gave examples of misbranding and misleading and that for several companies where the regulator may have objected to 'misleading' statements made by the company; he explained how the statements were not in essence really misleading, when the phraseology/wording is carefully examined.

Dr Jasvir Singh, Associate Vice President & Head: Scientific Affairs, Regulatory Affairs & Nutrition at Mondelez talked on "Proprietary Foods Amendment: What is and What is Not". He highlighted that although the FSSAI gives the definition of proprietary foods in the regulations;

the construct used may be suitable at present but could pose a problem tomorrow. He noted that the FAQs issued by the authority provide clarity but there are challenges. Also new requirements are introduced into the FAQ when these were not in the original legislation. He also pointed out that the transition time of 6 months that is given to an FBO poses a challenge for completing all the necessary work and obtaining approval. Some questions that continue to pose challenges were highlighted: what is the role of standards, what should be the scope of FAQs, the lack of clarity about the intent of regulatory interventions and the lack of accountability over outcomes achieved vis-à-vis the stated intent.

Dr. Sandhya Shrivastava, Coordinator, Bhavan's Research Center (Microbiology) and Associate Professor, Department of Microbiology, Bhavan's College spoke on Microbiological Evaluation of Food Product. She pointed out gaps in regulations regarding food safety with specific reference to microbiological quality of products, although considerable progress has been made. The challenges with reference to organisms differ from the challenges related to chemical analysis and safety issues: microorganisms can multiply, mutate and release toxins. She pointed out the need for FSSAI to set up a body to review standards and that there is a need to establish Indian Specifications for Indian Foods using examples of work done in her institutions on paneer, frozen meat, to establish the CDC model for a surveillance system for food borne outbreaks, processing goals for industries and the need for training. A cyclic approach is to be used: framing regulations and regulatory actions – risk benefit assessment – evaluation – risk management – review-framing actions and regulations. She explained the need to incorporate new technologies such as rapid

assessment/estimation methods, development of field methods, analysis at molecular level, use of e-platforms and lastly responsible communication.

PANEL DISCUSSION

The panel discussion that was moderated by Dr. Joseph Lewis focussed on future actions. The panellists were Mr. Shashank Joshi, Dr. Prabodh Halde, Mr. Satish Kolhe, Mr. Kiran Desai, Mr. Kuldeep Mulik, Ms. Parna Dasgupta and Mr. Rajendra Dobriyal. Dr. Lewis requested each panellist to succinctly present two to three points.

He summed up the recommendations made by the panellists, in the current scenario of a proactive attitude:

- Drafting regulations: A consultation regarding draft regulations before notification of the regulation would be helpful.
- The consultation should be an open system, on a regular basis and not confined to one day meetings
- A shift from enforcement to compliance is required
- Small scale industries should be involved.
- What are the criteria that make vertical standards, what should be the sampling protocol, traceability should be included in the guidelines. Horizontal standards are needed to ensure safety.
- FSSAI should be developed to a level where it is respected e.g. FDA.
- There is need for better drafting of regulations so that interpretation is more uniform.



Dr. Sandhya Shrivastava

Cont'd from Pg 22

Discover the great properties of Pectin

VICTORIA WELER, Food News Latam
MARCH 23, 2016

Pectin is a fibre found in fruits and vegetables, is used as a gelling and thickening agent most jellies, jams and sweet juices.

It can also be found in medications, desserts, or as filler. It is usually manufactured in the form of white powder. As carbohydrate, pectin contributes a number of benefits to health; regulates glucose levels in the blood, removes toxins from your body being an essential part of our diet.

Pectin can be found naturally, specifically in citrus fruits, and some vegetables. Most pectin is in the skin of grapefruit, lemons, oranges, passion fruit and although not a citrus apple also offered. Fortunately, it can also be found in the pulp of these fruits. While these fruits contain pectin, a significant amount must be consumed in order to have an impact on your health. About four grapefruits will provide enough pectin to affect cholesterol levels in the blood. Other foods that are rich in pectin are bananas, beets, cabbage, carrots, beans and apricots.

For those suffering from cancer or are at risk, the unique characteristics of the pectin can be used to alleviate symptoms of this disease. In a study published by The Journal of Nutrition, scientists revealed that a diet containing pectin may reduce the risk of cancer by controlling cell growth. "We have shown that fish oil and diets containing pectin protect us against colon cancer compared to

corn oil by up-regulation of apoptosis and suppression of proliferation ... We conclude that the effects of chemotherapeutic diets on gene expression of epithelial cells can be monitored noninvasively along the tumorigenic process. Fish oil and pectin in the diet is chemoprotective, partly due to its ability to affect gene expression involved in apoptosis and cell cycle regulation in all stages of tumorigenesis." scientists said. To our surprise, the use of nasal sprays containing certain citrus pectin and pectin products may also relieve symptoms and reduce the time in which a cancer might reoccur. Research generally relate pectin with colon cancer and prostate cancer, and radiation damage. Pectin may also have health benefits for people with diabetes, high cholesterol and a deficiency in fibre.

Because today the diets of Americans contains most processed foods, they seem to be missing a lot of nutrients needed for a healthy lifestyle. Unfortunately, the fibre is one of them. There are two types of fibre: soluble and insoluble. Pectin is an example of a soluble fibre, absorbing water, and allows slower digestion. This is important because it protects your heart, makes it easier for you to lose weight and to provide a healthy bowel movement. Because of this, pectin is known for helping children with diarrhoea and vomiting.

Uber launches a new application for food delivery

FOOD NEWS LATAM MARCH 23, 2016

Last week UberEATS Uber launched a new application for a la carte food. UberEats, now available in San Francisco and four other cities, allows users to request food from local restaurants and they are delivered to your door.

It is the first time that Uber has launched a new application that



works separately from your service radio, changing the business strategy which emphasizes the commitment of the industry Uber delivery. It also means more competition for the multitude of other applications popular food distribution, as GrubHub and DoorDash. "We are very pleased to launch the UberEats application that leverages our network and technology in logistics to bring food from the best restaurants in San Francisco at the door of you, whether you're at home, in the office or even in the park," said Susan Alban, general manager of San Francisco de UberEverything in its statement.



UberEats has been available on a limited basis in San Francisco since last summer. The original delivery service offered lunch only, users had to choose between a handful of options pre-selected by Uber food. The new application, represented by an icon fork, allows users to order food from more than 100 restaurants in San Francisco between the hours of 8 am and 10 pm. Uber wrote in a blog that "request a car and ordering food are two very different experiences," so UberEats came to the creation of an entirely new application. The application also makes deliveries in Chicago, Houston, Los Angeles and Toronto. "In the same way Uber makes it easy to get from A to B, and now UberEats makes it easy to get food from the best restaurants in the city," Jason Droege, head of UberEverything, wrote in a statement. "Since a car is always just minutes away, as soon as the meal is ready Uber withdraws for delivery".

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Regulatory & Safety News



Laser tool for detecting bacterial growth in packaged food

Medical News Today 3 February 2016

When it comes to making healthier food purchases in our nation's grocery stores, the simpler the nutritional packaging is, the better.

The researchers - from Zhejiang Normal University in China and Umeå University in Sweden - describe the device and how they tested it on two types of bacteria in the journal *Applied Optics*. The reason packaged food has "sell-by" and "use-by" dates is to avoid the risk that it may go bad - due to growth of bacteria and other microorganisms - and cause illness. Such precaution means food often has an unnecessarily short shelf-life. A better understanding of the growth process of microorganisms - and its detection - could help reduce food waste and perhaps also the number of people who get food poisoning, note the researchers.

Similarly in medicine, a tool that could quickly and non-invasively detect bacterial growth could save time and reduce waste of precious medical resources. For example, it is important to be able to measure the quality of blood samples quickly and accurately. If they are contaminated, they may have to be discarded and repeated. Also, bacterial growth in medical blood supplies - while rare - means the blood has to be thrown away. And if it is not detected, then there is the risk of infecting patients and possibly death. A rapid screening tool means a larger percentage of blood could be directly tested for possible bacterial contamination.

Optical spectrometry is sensitive and gives instant results

However, microorganisms are complex beings - their growth is driven by many factors. This makes it difficult to estimate how much bacteria might be present inside sealed packages of food or blood. For their study, the team focused on the fact that bacteria let off gas - for example carbon dioxide - as they multiply. First author Jie Shao, assistant professor at the Institute of Information Optics at Zhejiang, says: "By assessing the level of [carbon dioxide] within a given closed compartment - bottle or bag - it's possible to assess the microbial growth."

The technology that shows much promise for accurate measurement of gas composition is optical spectrometry. It is highly sensitive, provides instant results and can be used non-invasively, such as through glass or the see-through films and plastics used to package food. For their study, the researchers focused on one particular optical technology called "tunable diode laser absorption," or TDLAS. They decided to investigate it because it combines all technical requirements of a measurement tool "with an ease of use and low cost," explains Prof. Shao.

TDLAS can measure concentrations of various gases - including carbon monoxide, carbon dioxide, water and methane - within a mixture. It uses tunable diode lasers to measure their presence via absorption spectrometry - a technique that can detect compounds from the specific and unique way their elements absorb different wavelengths of light. The TDLAS device the team is

developing comprises a tunable laser diode as the light source, beam-shaping optics, a place to carry the sample, plus receiving optics and one or more detectors.

Detects gases at parts per billion

The device works on the principle that when you shine a light on a sample, the different gases it contains will each absorb a particular wavelength. By getting the tunable diodes to emit different wavelengths, when a gas in the sample absorbs a particular wavelength, the device determines the amount of gas present from the reduction in the measured signal intensity (the signal-to-noise-ratio).

Combining the rapid tuning technique with a method called "wavelength modulation" or WM, makes TDLAS even more sensitive. This technique is called "WM-TDLAS." Prof. Shao says one of the features that makes the technology particularly attractive is that it can detect gases at very low concentrations - in the order of parts per billion. "Apart from concentration," adds Shao, "it's also possible to determine other properties of the gas under observation - temperature, pressure, velocity and mass flux." In their paper, the team describes how they tested the WM-TDLAS approach on two types of bacteria, *Staphylococcus aureus* and *Candida albicans*, and found it can produce "high signal-to-noise-ratio data from bacteria grown in confined spaces and exposed to limited amounts of nutrients."

Cont'd on Pg 38

OUR SERVICE OFFERINGS

- 
- FOOD**
- Nutritional Labelling (Proximate, Trans Fatty Acid, Vitamins, Minerals, Dietary Fibre, Cholesterol)
 - Sugar Profile
 - Mycotoxins & NOTS
 - Pesticides & Insecticides (590+list- EU Requirement)
 - Antibiotic Testing (Dairy + Sea Food)
 - GMO Testing (Soyabean, Cotton, Tea & Maize)
 - Shelf Life Study
 - Heavy Metals
- WATER**
- Water Testing:
 - Drinking water analysis as per IS:10500:14543 :13428
 - Quality Tolerances for Water for Processed Food Industry as per IS:4251:1967
- ALLIED SERVICES**
- Microbiological Analysis
 - Audits: GMP, Process & Hygiene, Kitchen Hygiene, Vendor Evaluation
 - Trainings: HACCP, FSMS, Sanitization
- INSPECTION**
- Method Development & Validation
 - Third party inspection, Container stuffing

Test Reports valid on over 163 countries worldwide

LAB RECOGNITION:

- NABL (ISO/IES 17025:2005 - National Accreditation Board for testing & calibration Laboratories in the field of Chemical & Biological)
- FSSAI - Local and Import Food (Food Safety & Standard Authority of India)
- APEDA - (Agricultural & Processed Food Products Export Development Authority)
- BIS - (Bureau of Indian Standards, approval for Infant Formula Food, Water & Salt)
- EIC - (Export Inspection Council of India, approval for Fish, Water, Peanut and Peanut products)
- GAFTA - (Grain and Feed Trade Association, approval for Grain & Feeding Stuff)
- AGMARK

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GLOBAL PRESENCE

Europe ● North America ● Latin America ● Middle East ● Africa ● Asia-Pacific Region

Cont'd from Pg 16



Prior studies show that many adolescents are consuming 60-800 mg per day. The Mayo Clinic suggest a maximum of 100 mg a day for adolescents and none for younger children. Researchers from Brescia University College in Ontario, Canada, wanted to explore adolescents' attitudes and beliefs regarding caffeinated beverages and to establish which factors influenced their choice of beverage and consumption patterns.

44.6% consume caffeine between one and six times a week. The study investigated 166 young people, of whom 42% were male and 72% were students in grades 9 and 10. The team collected responses from 20 discussion groups and data gathered from a questionnaire.

Findings showed that 44.6% of respondents drank caffeinated beverages one to six times per week, 11.4% consumed a caffeinated beverage every day, and only 4.8% never consumed drinks containing caffeine. The main reason for consuming caffeinated drinks was to feel more alert, because this, they said, would help them study better.

Fast facts about caffeine

- ☕ One 8-ounce cup of brewed coffee contains 95-200 mg of caffeine
- ☕ One restaurant-style 1-ounce cup of espresso contains 47-75 mg
- ☕ One 8-ounce "specialty" coffee

such as mocha or latte contains 63-175 mg.

Caffeinated beverages are also popular because they are "grown-up" and easy to access. For example, students can generally go from their school to a nearby store to purchase drinks. Many consume caffeine because it happens to be present in popular soft drinks. Parental role modeling was an important factor. As parents commonly drink coffee in the morning, and many offer it to their children, it appears to be safe and acceptable.

Media and advertising, including brand image, celebrity endorsement and advertising on TV and at sports events, encourage consumption. Social norms also play a role, as adolescents either want to feel included or they are curious to try a friend's new drink. There was a high awareness overall of the negative health effects of caffeine and of the sources, although most respondents were unsure about the caffeine content of tea and soft drinks. The researchers concluded that further education could help young people to make better decisions about caffeine intake.

Senior author Danielle S. Battram, PhD, comments that developing more comprehensive educational strategies and enhancing policies could help to discourage adolescents from consuming caffeine, thereby limiting the potential health risks. She adds: "Caffeine overconsumption and caffeine intoxication have serious health effects, even in moderate doses. With that in mind, we need to correct the misconceptions adolescents have regarding certain aspects of caffeine."

The team hopes to develop specific educational strategies to reduce caffeine intake, and to establish user-friendly ways to help people remember what the recommended daily intake

should be. The authors also recommend promoting alternative ways to boost energy, such as a healthy diet and getting enough sleep. Medical News Today recently reported that caffeine may have benefits in staving off multiple sclerosis.

Could yogurt help lower high blood pressure?

Written by Catharine Paddock PhD
 Medical News Today: Monday 7 March 2016

Yogurt may have a beneficial effect on women's blood pressure, especially when part of a healthy diet.

This was the conclusion of a study recently presented at the American Heart Association's (AHA's) Epidemiology/Lifestyle 2016 Scientific Sessions in Phoenix, AZ. The researchers found that women who consumed five or more servings of yogurt a week had a lower risk of developing high blood pressure than similar women who hardly ever ate yogurt. According to the AHA, high blood pressure - defined as higher than 140/90 mm/Hg - is potentially dangerous because it strains the heart, hardens arteries and raises the risk of brain hemorrhage and kidney problems.

If not controlled, high blood pressure can result in heart and kidney disease, stroke and blindness.

Previous studies have already shown that dairy products can reduce the risk of high blood pressure in at-risk adults, say the researchers, but few long-term studies have looked at the independent effect of yogurt alone.



"I believe that this is the largest study of its kind to date to evaluate the specific effects of yogurt on blood pressure," says lead author Justin Buendia, a PhD candidate at Boston University School of Medicine, MA.

For the study - which was funded by the National Dairy Council - Buendia and his colleagues used data from the first and second cohorts (NHS and NHS II) of the Nurses' Health Study, where the participants were mainly women aged 25-55, and also from the Health Professionals Follow-up Study (HPFS), where the participants were mostly men. Over 18-30 years of follow-up, 75,609 of the participants developed high blood pressure.

20% lower risk of high blood pressure with higher yogurt intake

After adjusting for other factors that might influence the link to high blood pressure, such as age, race, family history of high blood pressure, physical activity and diet, the researchers examined the link between yogurt and the development of high blood pressure in the three groups.

They found that compared with women who ate fewer than one serving per month, women who ate five or more yogurt servings per week had a statistically significant 20% lower risk of developing high blood pressure.

A serving of yogurt is a cup, or around a scoop the size of a baseball.

There was a much weaker link between regular yogurt consumption and high blood pressure in men, but this could be because the men in the groups they examined consumed far lower amounts of yogurt than the women, say the researchers. It does not necessarily mean that yogurt has no beneficial effect on men's blood pressure.

The team then looked at the

women's data again and focused on diet. They assigned a score to each participant, depending on how closely her diet matched one designed to lower blood pressure, called Dietary Approaches to Stop Hypertension (DASH).

Yogurt's strongest effect is as part of healthy diet

The DASH diet is rich in fruits, vegetables, fat-free or low-fat milk and milk products, whole grains, fish, poultry, beans, seeds and nuts.

The results showed that women whose diets most closely matched DASH and who ate five or more servings of yogurt a week had a 31% lower risk of developing high blood pressure. This was compared with women with the lowest DASH scores and who had the lowest yogurt intakes (one serving or less per week).

The team also looked at the links between other dairy foods and high blood pressure. They found a positive link between daily servings of milk and cheese and lower risk of high blood pressure, but according to Buendia, this was not as strong as the effect of yogurt. The researchers suggest the beneficial effect of yogurt on lowering risk of high blood pressure, especially when consumed as part of a healthy diet, could be by lowering body mass index (BMI - a measure of obesity); the links were weaker when they adjusted for BMI.

This reinforces the idea that you are unlikely to reduce your risk of high blood pressure just by adding yogurt to your diet. It is when yogurt is part of a diet plan designed to reduce high blood pressure, which also has a positive effect on helping you reach a healthy weight, that it appears to have the most benefit. As Buendia concludes: "No one food is a magic bullet but adding yogurt

to an otherwise healthy diet seems to help reduce the long-term risk of high blood pressure in women."

Meanwhile, from another study presented at the same meeting, Medical News Today learned that cutting the price of fruits, vegetables and grains by 10%, and marking up sugary drink prices by the same amount, could prevent more than half a million Americans dying prematurely of cardiovascular disease between now and 2035.

Drinking more water reduces sugar, sodium and saturated fat intake

Written by Marie Ellis
Medical News Today 6 March 2016

Based on the fact that about two thirds of our bodies are comprised of water, it may seem obvious that consuming water is important for our health. But a new study finds that by increasing plain water consumption, we can control our weight and reduce intakes of sugar, sodium and saturated fat.

Though most people meet their body's fluid requirements by drinking plain water and other beverages, we also get some fluids through certain foods, such as soup broths, celery, tomatoes and melons. To further investigate how increasing water intake can affect parameters of health, the researchers used a nationally representative sample of more than 18,300 adults in the US from the National Health and Nutrition Examination Survey (NHANES) 2005-2012.

The researchers asked participants to recall all foods and drinks they

Image © iStock.com/Juri Samsonov



consumed on 2 days that were between 3-10 days apart. Prof. An then calculated the amount of plain water that each participant consumed as a percentage of daily dietary water intake from both foods and drinks. Although drinks such as black tea, herbal tea and coffee were not assessed as sources of plain water, Prof. An did include their water content in the calculations of total water consumption.

Promoting water consumption: a public health strategy

On a daily basis, the participants consumed an average of about 4.2 cups of plain water, which accounts for just over 30% of their total water consumption. The average calorie intake for each participant was 2,157 calories, which included 125 calories from sugar-sweetened beverages and 432 calories from "discretionary foods" - desserts, pastries, snack mixes and other foods that are not essential. The results of the study revealed that people who increased their consumption of plain water by one to three cups daily lowered total energy intake by 68-205 calories each day and their sodium intake by 78-235 g each day.

Fast facts about water's benefits

Water keeps the body temperature normal and lubricates and cushions joints

It protects the spinal cord

Water also gets rid of waste through urination, perspiration and bowel movements.

For purposes of the study, "plain water" was defined as water from a tap, cooler, drinking fountain or bottle. Further results showed that the people who increased their water consumption also consumed 5-18 g less sugar, as well as 7-21 g less cholesterol.

"This finding indicates that it might be sufficient to design and deliver universal nutrition interventions and education campaigns that promote plain water consumption

in replacement of beverages with calories in diverse population subgroups without profound concerns about message and strategy customization," says Prof. An.

He and his team add that these effects were similar across race, ethnicity, education attainment, income level and body weight status, however, they were larger among males than females, and among young or middle-aged adults than older adults.

Prof. An suggests these differences could have been linked with the higher daily calorie intakes associated with men and young or middle-aged adults. The researchers conclude their study by noting that "promoting plain water intake could be a useful public health strategy for reducing energy and targeted nutrient consumption in US adults, which warrants confirmation in future controlled interventions." Medical News Today previously reported on a study that suggested placing water dispensers in schools lowers obesity in students.

Peanuts, peanut butter may hold key to preventing obesity

Medical News Today 4 March 2016

Hispanic middle school children, at high risk for being overweight or obese, reduced their Body Mass Index (BMI) when they adhered to a nutrition intervention that included a snack of peanuts, compared to those children who did not.

The 12-week study was conducted by researchers at the University of Houston, Department of Health and Human Performance (HHP), Baylor College of Medicine and Texas Woman's University. Their findings are published in the Journal of Applied Research on Children.

"Obesity is the most pressing health

issue facing us today," said Craig Johnston, HHP assistant professor. "We'd like to think it's preventable, but from where I sit right now, there hasn't been a lot shown to be very effective on a large scale."

The study acknowledged that snacking is more common during the adolescent years and that the unhealthy eating habit can lead to an unhealthy weight. This is especially true if a student doesn't have access to other meals during the school day.

"We have a lot of kids skipping meals for a whole bunch of reasons," he said. "What we found is that kids get home from school around 4 p.m. There's less supervision by parents and less structure. Kids are sitting down at the TV and eating, eating, eating because they really didn't eat at school."

Instructors guided 257 Latino adolescents from three Houston-area charter schools through a program of physical activity and nutrition education. About half the students received a snack of peanuts or peanut butter three to four times a week, while the rest received the snack fewer than once a week. The snack was administered after school as students were boarding the school bus to go home. Peanuts were chosen because nuts are nutrient-dense snacks that promote a feeling of being full.

Following the 12-week intervention, students spent 12 more weeks maintaining the healthy snacking habit. At the end of the period,



Image © iStock.com/EdrZambrano

those students who received the snack more regularly experienced a decrease in their overall BMI (-.7kg/m²) compared to those who did not receive the regular peanut snack (-.3kg/m²). The researchers conclude that afterschool programs and schools can replace energy dense, unhealthy snacks with peanuts to provide a healthier alternative for children (researchers in the study ensured students did not suffer from nut allergies).

Johnston says the fight against obesity needs creative solutions that help people manage their weight, appetite and hunger by offering socially acceptable food choices. "Schools are doing a great job of teaching kids, getting them workforce ready, and a whole bunch of other things. We've just got to make sure that our kids are going to live long, happy lives with that kind of education," he said.

Participants in the study were part of a larger longitudinal study on a school-based obesity intervention program. The Family Lifestyle Overweight (FLOW) Prevention Program is a school-based pediatric intervention for urban, low-income, minority students.

University researchers create agave drink with probiotics to regulate sugar levels

Medical News Today 4 March 2016

With a drink designed from agave and probiotic microorganisms, specialists from the Popular Autonomous University of Puebla (UPAEP) in Mexico succeeded in reducing blood sugar levels in students who were given a glucose solution.

"We tested a sample group of 10 students who were administered a glucose solution and then 250 milliliters of the beverage, their

blood glucose levels were measured after and the results showed that they dropped significantly," said Beatriz Perez Armendariz, principal of the School of Biotechno-environmental at UPAEP.

The technology with which the beverage was designed consists of a pasteurizing heat treatment in which the microflora existing in mead is removed, thus preventing the liquid to ferment. "We try to prevent the fructans from changing, because they have the ability to be a fiber and a sugar trap".

Mead contains sugars, called fructans or non-soluble fibers with a hypoglycemic effect that controls sugar levels, the problem is that the product is fermented rapidly and can become pulque (a type of typical artisan spirit), hence the importance of creating a method that can keep the product fresh for a long period, said the PhD in biotechnology Beatriz Peres, who leads the project.

The beverage is nondairy and doesn't contain alcohol, therefore is recommended in the diet of people with diabetes and those who are lactose intolerant. Also, an assessment of the microorganisms present in the mead was performed and some bacteria were selected such as *Lactobacillus leichmannii*, which was isolated and integrated into the pasteurized agave juice, which reaches a shelf life of 20 days, optimum time for marketing. In addition, tests were made to see the effectiveness of the product for different conditions such as gastritis and irritable bowel syndrome and the team seeks to create an agreement with local hospitals to perform studies in patients with overweight and obesity.

Perez Armendariz said that dairy products should contain at least one million lactic acid bacteria per milliliter to obtain a health benefit. "In this drink we got up to 900

million." But they have to be careful with the number of microorganisms that are present in the drink, because the metabolites generated by fermentations can give a mild unpleasant flavor, hence the need for taste tests to provide the most palatable formulation.

The project is part of Innovation Match, an international forum of Mexican Talent that will be held in Guadalajara Jalisco from the 6th to the 8th of April, which seeks to link researchers and entrepreneurs to create products with added value.

A multidisciplinary group of doctors are involved in the research; Beatriz Perez Armendariz, specialist in biotechnology; Judith Cavazos in marketing; Genoveva in sustainability and ElieGirgisElkassis molecular biologist from Lebanon.

Increased protein consumption linked to feelings of fullness: new study

Medical News Today 3 March 2016

Many people turn to high-protein foods when trying to lose weight because eating protein-rich meals is commonly believed to make dieters feel fuller.

Surprisingly, this idea hadn't been

Image © iStock.com/ AlexPro9500

tested on a large scale. In a new study featured in the Journal of the Academy of Nutrition and Dietetics, researchers conducted a systematic review of the evidence on the effect of protein intake on perceived fullness and confirmed that protein does, in fact, make us feel fuller.

The recent popularity of low-carb, high-protein diets can partially be attributed to the fact that dieters often feel fuller when protein intake is high, even if they are consuming fewer calories overall. "A good deal of evidence suggests that protein activates satiety hormone release and so should be most strongly tied with fullness ratings," said lead investigator Richard D. Mattes, MPH, PhD, RD, Distinguished Professor, Department of Nutrition Science, Director of Public Health, and Director of the Ingestive Behaviour Research Centre at Purdue University, "but individual studies are often conducted in small populations or with different approaches that can make interpretation of results challenging. Our study combined multiple experiments to confirm the presence of an effect."

The research team used a variety of statistical approaches to make sense of the data. These techniques included a quantitative meta-analysis and a secondary directional analysis using a vote counting procedure. Both the meta-analysis and directional analysis indicated that higher protein loads have a greater effect on fullness than lower protein loads.

With the confirmation that protein intake is related to satiety, defined as fullness between meals, modestly higher protein intake may allow individuals to feel fuller between meals. Yet, while protein may help dieters feel fuller, it is by no means a magic bullet. "Feelings like hunger and fullness are not the only factors that influence intake. We often eat

for other reasons. Anyone who has ever felt too full to finish their meal but has room for dessert knows this all too well," explained Dr. Mattes.

"The exact amount of protein needed to prolong fullness as well as when to consume protein throughout the day is not resolved, and our study did not determine this," said Heather Leidy, PhD, Assistant Professor, Department of Nutrition & Exercise Physiology at the University of Missouri. So while the researchers encourage the public not to consume protein to the point of excess, people looking to moderate their energy intake by enhancing the sensation of fullness might consider a moderate increment in protein consumption as a first step. "Though this study did not specifically evaluate dieters, feeling fuller could help to reduce food intake, an important factor when dieting," concluded Dr. Mattes. "If these effects are sustained over the long-term - and our study only looked at short-term effects - increased protein intake may aid in the loss or maintenance of body weight."

Report analyses sports drink opportunity

Ingredients Network 26 Feb 2016

A new report from beverage development consulting company MyDrink Beverages notes that an increasing number of non-athletes are turning to sports drinks as a low-calorie way to stay energised, and that the sports drinks category will continue to expand.

A new report from beverage development consulting company MyDrink Beverages notes that functional sports drinks have been used by athletes for decades but now, an

increasing number of non-athletes are returning to them as a low-calorie way to stay energised. The report suggests that as more people become health-conscious and seek an active lifestyle, the sports drinks category will continue to expand.

MyDrink Beverages says the report aims to explore the marketing strategies that have made businesses in this category successful. To this end, the company has looked at ten successful products all launched in the United States or Europe in the past few years.

These functional drinks are increasingly sought out for their health benefits. "Sports drinks are becoming multifunctional, incorporating rehydration, nutrition and recovery to benefit the body before, during or after sports," said Juste Akmenskyte, Partner Marketing Consultant at MyDrink Beverages. "It used to be that most sports drinks contained electrolytes like sodium, potassium, and chloride, and a high percentage of sugar. But now an increasing number are being made with natural ingredients, which appeals more to health-conscious consumers."

The report finds that choosing the right consumer segments is a vital element in soft drinks marketing. The companies that were most successful targeted niche consumer segments, rather than the mass

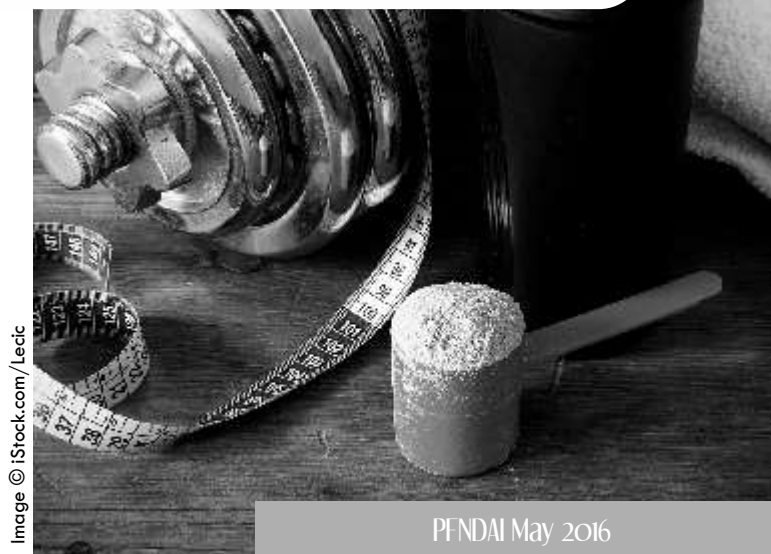


Image © iStock.com/Lectic

market. The report suggests that the under34s are a key consumer segment for functional sports drinks. "With high production and marketing costs, these beverages are usually expensive," said Akmenskyte. "However, as practice shows, an increasing number of Generation Z and Millennials are health-aware and willing to pay the premium for products that are better for them."

The MyDrink Beverages report also finds that it's increasingly viable to market these drinks as suitable for children. Previously, sports drinks were unsuitable for children due to the inclusion of artificial ingredients like colour and flavour additives. However, now with beverages that contain natural and organic ingredients, drinks companies can benefit from the involvement of this rather new consumer segment.

Since functional sports drinks contain numerous health benefits, companies have found success in promoting their brand by educating consumers en masse. "The consumers need to be collectively educated (via TV shows, various health blogs, social media, product packaging, etc.) in order to understand the benefits of new functional sports drinks for their health and sports performance," said Akmenskyte. "To achieve the best results, it's also useful for different means of communication and media to be interrelated and support each other. Local sampling event can be engaging through social media, video advertising can then lead to social media engagement and so on".

MyDrink Beverages says that the report is grounded in qualitative research. It presents the findings of extensive market studies, consumer surveys, research in social media and specialised blogs, and interviews with the business people behind the ten successful products used as case studies.

"By looking at these recent successes in our report rather than focusing on long established players," said CEO Adomas Pranevicius, "we intend our report to show entrepreneurs in the drinks industry what it takes to build a successful brand from scratch. It presents the marketing strategies which helped drive results and build the brand image of the 10 sports drinks used as case studies, while providing insights about opportunities for new sports drinks."

Michelle Obama, happy for the new and improved nutrition label

FOOD NEWS LATAM MAY 23, 2016

Its new design and relevant information to help consumers make healthy food.

On the 20th of May, the Food and Drug Administration US (FDA, for its acronym in English) took an important step to ensure that consumers have updated most packaged foods or packaged nutritional information they sold in the United States, which will help people to make informed choices about the food they eat and provide for his family.

"I am very pleased that the FDA has completed a new and improved nutrition label will be in food products across the

country," said First Lady Michelle Obama. "This will be a remarkable to provide families across the country the information they need to make healthy choices change."

"For over 20 years, Americans have relied on the nutrition label information as a primary source of information regarding calories, fat and other nutrients to help them understand more about the food they consume in a day", Dr. Robert Califf explained, MD, commissioner of the FDA. "The updated label makes improvements to this valuable resource, so that consumers can make better informed decisions about their diet, one of the most important steps a person can take to reduce the risk of heart disease and obesity."

Important changes

The new nutrition label includes the following:

- An update to highlight the "calories" and "lots", two important elements to make informed decisions in selecting food design.
- Requirements for the portion sizes that will reflect more accurately the quantities of food that people

consume today. What and how much you eat and drink people is something that has changed since the size requirements of the most recent portion were published in 1993. The law Labeling and Nutrition Education requires that the portion size is based on what people actually eat.

NEW LABEL / WHAT'S DIFFERENT

Nutrition Facts	
8 servings per container	
Serving size	2/3 cup (55g)
Amount per serving	
Calories	230
% Daily Value*	
Total Fat 8g	10%
Saturated Fat 1g	5%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 160mg	7%
Total Carbohydrate 37g	13%
Dietary Fiber 4g	14%
Total Sugars 12g	
Includes 10g Added Sugars	20%
Protein 3g	
Vitamin D 2mcg	10%
Calcium 260mg	20%
Iron 8mg	45%
Potassium 235mg	6%

*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Servings: larger, **bolder type**

New: added sugars

Change in nutrients required

Serving sizes updated

Calories: larger type

Updated daily values

Actual amounts declared

New footnote

Image © <http://www.fda.gov>

Cont'd from Pg 30

100% of RDAs is too much of a good thing, Danish researchers warn

Nutra Ingredients, 09 Mar 2016

Supplement manufacturers should not be offering 100% of recommended dietary allowances (RDA) in vitamin and mineral supplements, Danish research highlighting the risk of overdose has warned.

A survey of nearly 4000 people conducted by the National Food Institute at the Technical University of Denmark (DTU) found six out of 10 Danes take at least one vitamin or mineral supplement despite them getting enough from their diet alone.

The researchers urged consumers to buy supplements that contained less than 100% of RDAs to avoid the risk of overdosing on certain micronutrients. But how easy is this when almost all of the 455 different supplements taken by the participants boasted this maximum dose? Senior researcher at the institute AnjaBiltoft Jensen told us manufacturers should change products to offer no more than 50% of the RDAs.

"I think it should be lowered to only half of the dose – because it's only a supplement, it's not supposed to provide the whole amount." She said while manufacturers were not aiming to offer products that could harm consumers, the issue did come down to their desire to sell products. For this reason regulatory action may be needed, be it at a national or EU level.

Health-conscious consumers saw supplements as a way to boost intakes without considering possible

risks of exceeding upper tolerable limits. "We didn't ask why

people were taking supplements but I think it's because it's an everyday routine and because I think people want to feel on the safe side. Interestingly it is the adults who have the healthiest diets that take the supplements."

Much too much, much too young

The survey showed through the diet alone 30% of four to ten year olds exceeded intake limits for the vitamin A retinol and 73% for zinc. When supplements were added into the equation the rate of four to six year olds exceeding the upper tolerable limits rose to 43% for retinol, 45% for iron and 73% for zinc.

Among supplement users aged seven to ten and 11 to 14, the limits for zinc were exceeded by 46 and 25%, respectively. For retinol this was exceeded by 21 and 10%, respectively. The institute said only a few groups of the population actually needed to be supplemented. Women of child bearing age were at particular risk of iron deficiency and vitamin D was an issue for the whole population.

"The majority of Danes do not need to take a supplement as a healthy and balanced diet and thoughtful sun exposure are the best ways to meet the need for most vitamins and minerals. If people still want to take a supplement they should choose them wisely," Biltoft Jensen said in a release.

The survey shows 62% of 11-17 year olds and 34% of adults in Denmark have a "very high probability" of inadequate vitamin D intakes from their diet. Even among supplement users, 35% of 11-17-year olds and 26% of 18-50 year olds had a risk of inadequate vitamin D intake.

For iron, 79% of 14-17-year old girls and 53% of 18-50 year old women were below recommendations.

Supplementing subgroups - poisoning the masses?

But these were subgroups, Biltoft Jensen said, and this did not warrant supplementation on a mass scale. "Other groups like teenagers also have low intakes of other nutrients, but the question is if everyone taking a supplement should be endangered with very high total intakes for several vitamins and minerals? Because very few groups have inadequate intakes."

She said fortification may be warranted in cases where clinical signs of deficiency were clear, such as iodine, but this had to be evaluated on a case-by-case basis. "Fortification can make it very difficult for people to know how much they are consuming." Denmark's only mandatory fortification scheme is for iodine in salt. For micronutrients like vitamin D this was less clear cut, she said.

EU healthy eating funding discriminates against plant proteins: ENSA

Food Navigator, 15 Mar 2016

The EU is discriminating against soy and plant-based proteins that are nutritionally similar – or even healthier – than the sugary dairy products it has pledged to subsidise, says the European Natural Soy and Plant-Based Foods Manufacturers Association (ENSA).

The trade group said today it regretted the European Parliament's



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decision to adopt “an incomplete report” on the aid scheme which subsidises the supply of fruit, vegetables and dairy products in schools across the EU.

Approved by Parliament last week, the law merges previously separate EU school milk and fruit schemes and boosts their combined annual budget by €20m to €250m a year. €100m has been allocated for the milk programme, which includes processed dairy products such as fruit yoghurts and chocolate milk.

The British industry group Dairy UK welcomed the prominence given to dairy products with chief executive, Dr Judith Bryans, saying Parliament had quite rightly put milk at the core of the EU’s health agenda. But ENSA says the move “promotes discrimination” against products that are as nutritious as dairy and serve the same needs, namely plant-based proteins.

ENSA president Koen Bouckaert told FoodNavigator including soybased drinks in the scheme along with dairy would ensure a level playing field. “The scheme has a very strong educational component and this is what ENSA would like to contribute to in order to make sure that children and their parents are made aware of the health and environmental benefits of soy and plantbased foods. Additionally, including soybased drinks in the scheme together with dairy would ensure a level playing field between foods with similar use and nutritional value,” he said.

A statement issued yesterday by the association drew attention to the higher levels of sugar in dairy products. “It [the scheme] allows the distribution of processed foods and flavoured dairy products with added sugars but completely excludes healthy and resource-efficient plant-based drinks which have a lower total sugar content than milk,” it said. “The total sugar content of a chocolate-flavoured

dairy milk is approximately 11 g/100 ml, as compared to the total sugar content of a chocolate-flavoured soy drink which is 7.5 g /100 ml. This decision contradicts the current efforts of the European Commission and member states to curb the excessive sugar intake of the European population in order to reduce obesity.”

A report published last year by the UK’s Scientific Advisory Committee on Nutrition (SACN) recommended that no more than 5% of people’s daily energy intake should come from added sugar or ‘free sugars’, but this does not include sugars naturally present in milk.

Meanwhile the eligibility of processed foods with added sugar for funding has been criticised by members of the Dutch Presidency. Under the terms of the scheme, EU countries must prioritise fresh produce over processed foods, but the uptake of this varies from country to country. Belgium, Bulgaria and Portugal allocate 100% of the money they receive to fresh produce but in Hungary and Poland 25% goes to processed foods, rising to 50% in Slovakia.

Dutch minister for agriculture Martijn van Dam was reported in Dutch media as calling the decision to allow taxpayers’ money to subsidise drinks that contain as much sugar as cola “irresponsible”. If approved by the Council, the rules will come into effect in August 2017.

Graphical display of nutrition information helps keep health-conscious eaters on target

February 4, 2016 Science Daily

Diseases such as obesity, diabetes, and heart disease can often be prevented or treated by managing

the intake of certain nutrients.

However, in a time-constrained situation, such as standing in line at a cafeteria or restaurant, it can be difficult for consumers to quickly calculate and use numerical nutrition information--beyond the amount of calories--provided for menu items. A new study from the University of Illinois found that when consumers are shown a graphical display of select nutrients on a 2-dimensional plot when ordering in a café setting, they purchase healthier, not just lower-calorie, menu items as a meal.

Manabu T. Nakamura, an associate professor of nutrition at U of I, said understanding how to best present nutrition information is an important, new area of research for him and his lab. “We have researched how fats or carbs metabolize and are regulated, for example. Based on this kind of research, the message of what nutrients we should eat is pretty set. The important thing is learning how you select the right foods. We need to provide a way to communicate what foods to select for certain health problems. “Current nutrition labels provide comprehensive nutrient information, but unfortunately they’re not working for consumers to help them make decisions in restaurants and grocery stores,” he said.

As part of the Affordable Care Act, chain restaurants and retail food establishments with 20 or more locations are required to provide nutrition information for menu items. But Nakamura said most people, except those who have specific health concerns or food allergies, don’t ask to see this

Image © iStock.com/a-wrangler





Image © iStock.com/a-wrangler

information or don't know how to use the information provided. Previous research has been done showing that a "traffic light" labeling system in which menu items are designated as green, yellow, or red based on calories had some effect on diners' choice of foods. But Nakamura explained that even that system had no effect on consumers' purchases when multiple nutrients are color coded.

In order to see if presenting the nutrition information graphically would change diners' purchasing behavior, Nakamura, along with doctoral student, Nathan Pratt, and a team of other researchers set up two experiments using a visual, 2-dimensional plot showing the values of fiber and protein per calorie for each menu item. The graph also includes a target box that represents the recommended dietary amounts of those nutrients per calorie of food.

The researchers chose to plot fiber and protein per calorie values because these two nutrients are closely tied to weight management. Fiber has been linked to greater satiety and lean protein has been linked to improving body fat loss. "Promoting fiber intake is important. It could help in preventing overeating. Only 10 percent of the U.S. population meets the fiber recommendation. So there's a long way to go."

"Most people would agree that these are two nutrients most relevant for managing weight," Nakamura said. "Of course sodium, saturated fat, and all vitamins and minerals are also important for overall health. But we had to limit the number of nutrients in order to have an impact on decision making

in a time-constrained condition." He added that other combinations of nutrients, depending on specific dietary needs, could also be plotted using the graph.

The team began with an experiment to see how well participants could recall nutrition information when shown the information for foods either using the 2-dimensional graph or numerical information.

The participants were then asked to recall the information. Recall accuracy improved by up to 43 percent when they were shown the information graphically versus numerically. The second experiment was a 12-week study of purchasing behavior in U of I's Bevier Café. In this setting customers stand in line to order and pay for their food at registers near the entrance of the café.

During some weeks of the study, menu items were plotted either on the 2-dimensional graph according to their fiber, protein, saturated fat, and sodium per calorie values with the information signposted where customers could see before ordering, or other weeks, nutrition information was displayed numerically. Facts about managing a healthy weight, such as keeping calories in a healthy range, limiting saturated fat and sodium, and increasing fiber and protein was also signposted near where food was ordered.

How did having a visual target to shoot for when ordering a meal work for consumers?

Ultimately, when nutrition information was provided on the 2-dimensional graph, consumers purchased fewer calories, but purchased more protein per calorie and more items that were rated high as healthy on the plot. Nakamura calls this a "clear success." "This may be the first study that shows unambiguous purchasing changes from displaying the nutrition information," he said. During the weeks in which nutrition information was displayed graphically, calories purchased from

entrees decreased by 10 percent compared to when no information was displayed, and decreased by 13 percent compared to when numerical information was provided. During the graphical stage, calories from side items purchased decreased from 43 percent compared to when no label was displayed, and 47 percent from the numerical stage.

Protein per calorie increased by nearly 24 percent when the graph was present compared to when no nutrition label was provided, and 20 percent from the numerical stage. "If you are looking at just calories when choosing food, that's not enough. If you stop eating something, you can certainly reduce calorie intake. But the important thing is that when you make your meal healthy, it's not just about calories, you have to think about other nutrients, too," Nakamura said. "In terms of weight maintenance, you can reduce calories but increase the protein per calorie and the same with fiber, a fiber per calorie increase. These two things have to be maintained or it's a bad diet that you can't maintain." In the future, the researchers hope the graph can be used to present nutrition information in restaurants, grocery stores, and dining halls, as well as in households for recipe analysis. Nakamura said future studies on this graphical method may look at more diverse populations, menus that offer a greater variety in fiber offerings, and more nutrient combinations.

Another possibility Nakamura is excited about is the possibility of creating mobile apps with the graph that consumers can use to plot nutrients in menu items as they order during time-constrained situations. "We are hoping this system can be quickly understood and can provide the information needed to make a decision," Nakamura said. "Improvements in recall and food choices using a graphical method to deliver information of select nutrients" was published in *Nutrition Research*.

Could consumers see GM as an eco-friendly food choice?

Nutra Ingredients USA, 03Feb2016

Swedish researchers have suggested that food labelled both GM and eco-friendly may become commonplace in the future but is this an idea consumers will buy into? According to the University of Gävle researchers, as the demand for eco-friendly food — produced without pesticides and environmentally harmful chemicals — increases, the need to develop genetically modified (GM) organisms that are more resistant to parasites and other environmental crop threats may increase. "Because of this, products labelled both 'ecofriendly' and 'genetically modified' could become commonly available on the market," they write. Sustainable GM: perfect match or oxymoron?

Patrik Sörqvist, professor of environmental psychology and lead author of the study told FoodNavigator he believed the concepts of genetic modification and sustainability could be reconciled. "The way I see it, environmentally friendly production, that is, less pesticides in the production process, for example, may well require biotechnology to improve the crop's parasite resistance, to allow for proper harvest even without pesticides. That way, GM food becomes a necessity for the production of eco-friendly food. I see no conflict in that."

But there are others who see the two as mutually incompatible. Alexander Hissting, managing director of OhneGentechnik, an association which represents food manufacturers and retailers and advocates food production without the use of GMOs, said: "GM can definitely not [be seen as an eco-friendly choice] from my perspective, not from the perspective of the 320 companies we represent and not from the perspective of

German consumers. GM plants have way too many negative eco impacts to be considered even close to ecofriendly."

But a Eurobarometer survey from 2010 which questioned Europeans on their attitudes to GM foods and biotechnology found that the picture is not as clear cut. Overall only 23% of respondents said they believed GM did no harm to the environment, but a breakdown shows attitudes vary per country. Greeks were the most GMsceptic with 88% saying it made them feel uneasy while 45% of Icelanders said it didn't and 40% of Maltese respondents were undecided.

Some believe that food producers and retailers need to communicate more openly about the challenges of food production and distribution in order to make consumers more receptive to GM: in an open letter to Prime Minister David Cameron in 2014, the chair and co-chair of the Council for Science and Technology Sir Mark Walport and Professor Dame Nancy Rothwell said: "The case must be made that food developed from GM is the product of sustainable agriculture, is of the highest nutritional quality, and can meet the needs of communities in different parts of the world," the letter read.

This is in line with the position being pushed by EuropaBio, the European Association for Bioindustries, which says that biotech can decrease the pressure on shrinking water resources. But it believes that before GM can be associated with sustainable shopping choices, consumers need to know what is GM and what isn't. "In Europe, all food and feed products consisting of, containing, or obtained from GM plants when this is above 0.9% of an ingredient need to be labelled as GMO. This should allow consumers to make an informed choice, but in practice many European supermarkets do not put GM labelled foods on their shelves, even if it

has been proven that when given the choice, people buy GMlabelled food according to the EU Research Project ConsumerChoice from 2008 . It is hence difficult to speak about a campaign informing people of the products' sustainable characteristics when European consumers are actually not given the choice to access these products in the first place," a spokesperson said.

Putting it to the test

To test consumer acceptability, researchers showed Swedish and British consumers packets of raisins that were labelled as bearing either a GM label; an eco-friendly one; both together or none at all, and measured the impact on taste, health perception, environmental concern and willingness to pay.

They found that the raisins with both GM and eco-friendly labels were rated almost level with the non-labelled alternatives, suggesting the association with GM removes the psychological benefits of the eco-label.

This effect was larger for the Swedes than the British respondents.

"Interestingly, the Swedish and the UK samples did not differ in overall environmental concern and still the magnitude of the eco-label effect was (much) more substantial in the Swedish sample," write the authors. "This pattern suggests that environmental concern, per se, is not the mechanism underpinning the label effect. Rather, the positive effects of an eco-label appear to be underpinned by positive attitudes toward eco-friendly food more specifically, without necessarily involving concern for the environment."





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Cont'd from Pg 37



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- A statement grams and percentage of nutritional value (% DV) of "added sugars" so that consumers know how much sugar has been added to the product. It is difficult to meet the nutritional needs and stay within calorie limits if more than 10 percent of total daily calories you eat come from added sugars, and this coincides with the scientific evidence which supports the Food Guide for Americans 2015-2020.
- Labels with "parallel columns" to indicate the calorie and nutrition information "per serving" and "package" of certain products with more than one portion of food that could be consumed in one or in several portions served. Examples include a pint (473 ml) of ice cream or ice cream or a bag of chips 3 ounces (85 g). With the availability of labels with parallel columns, people can easily know how many calories and nutrients will be eating if you eat or drink the entire container or package once.
- For containers of one to two portions, such as a soft drink 20 ounces (591 ml), it is mandatory to indicate the calories and other nutrients on the label as a single serving, because people usually consume at once .
- daily values of nutrients such as sodium, fiber and vitamin D to date and in line with the recommendations of the Institute of Medicine and Food Guide for Americans 2015-2020. Daily values

are the reference quantities for nutrients to be consumed or not exceed, and are used to calculate the % DV manufacturers to include on the label.

- A statement on vitamin D and potassium that include the actual amount in grams, plus the % DV. These are nutrients that some people do not take in sufficient quantities, which increases their risk of chronic diseases. The % DV of calcium and iron will remain mandatory, along with its actual amount in grams. Vitamins A and C will no longer be mandatory because its deficiency is rare, but these nutrients may be included voluntarily.
- The "Calories from fat" will be removed because research indicates that the type of fat is more important than quantity. The "Total Fat," the "Saturated fat" and "trans fat" will remain mandatory.
- A footnote to the abbreviated label to better explain the % DV.

The FDA is also making minor changes to the Nutrition Facts label dietary supplements to be more in line with the food. Most food manufacturers must put to use the new label for the July 26, 2018, but those whose food sales are less than \$ 10 million per year will have an additional year to comply with the requirement. The FDA plans to undertake outreach and education work on the new requirements. The flagship nutrition label was introduced over 20 years ago to help consumers make informed decisions about their diet and maintain healthy dietary practices. In March 2014, the FDA proposed two regulations to update the label, and in July 2015 announced its proposal for a supplementary regulation. The regulations for the nutrition label concerns packaged foods or packaged, except for certain beef and chicken, and some processed products made from egg, which are controlled by the Food Safety and Food Inspection Department Agriculture US.

New dietary guidelines issued in US

Food Manufacture, 17 Feb 2016

Dietary guidelines are updated on a five-year cycle in the US, following review of the scientific evidence.

The guidelines for 2015-2020, published in January, place emphasis on the big picture, nutrient dense dietary patterns (examples are given) and the need to shift choices. They apply to people over the age of two and, unlike the UK guidelines, propose quantities of foods at different calorie levels for each of six different food groups.

Healthy diet

A healthy diet is described as: a variety of vegetable types fruits grains, at least half of which should be whole grains Fat-free or low-fat dairy products and/or fortified soya beverages a variety of protein foods including seafood, lean meat and poultry, eggs, legumes, nuts, seeds and soya products and oils. The term 'nutrient density' refers to nutritional value not being diluted by the addition of solid fats, sugars, refined starches or salt.

Limit on added sugars

Gone is the advice to strictly limit eggs owing to their cholesterol content and new is a quantitative limit on added sugars set at 10% of calories (the equivalent limit in the UK is 5%). Limits remain on sodium (salt), saturated fat, trans fat and alcohol. Physical activity guidelines exist in tandem.



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zinc levels above the 70 ug/dL level in people with initial levels lower than 60 ug/dL. “Zinc supplementation at 30 mg/d for 3 mo is effective in increasing serum zinc concentrations in nursing home elderly; however, not all zinc-deficient elderly reached adequate concentrations,” they wrote. “The increase in serum zinc concentration was associated with the

enhancement of T cell function mainly because of an increase in the number of T cells.”

Zinc supplements may boost immunity markers for the elderly

Nutra Ingredients 08 Feb 2016

Supplements of zinc may boost the function of immune T cells in nursing home elderly, says a new study.

Elderly people with low zinc levels benefited from three months of supplementation with 30 mg or zinc per day, with increases in serum zinc concentrations and an increase in the number of T cells, according to scientists from the Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University, Boston University School of Medicine, Hebrew SeniorLife, and Harvard Medical School. Average serum zinc concentration increases of 16% were reported in the zinc group, compared with the placebo group, they wrote, but not all zinc-deficient elderly reached adequate concentrations.

Writing in the *American Journal of Clinical Nutrition*, the researchers explained that they recruited 31 elderly people in nursing homes with low zinc levels (less than 70 micrograms per dL (ug/dL)) to participate in their randomized, double-blind, placebo-controlled study.

Results showed that while zinc supplementation increased zinc levels by about 16%, the daily 30 mg dose was not enough to increase

Vitamin B8 may help prevent neural tube defects in high risk women

Nutra Ingredients, 09 Feb 2016

Women at risk of carrying babies with spina bifida and other neural tube defects may benefit from taking inositol, also known as vitamin B8, alongside folic acid during pregnancy, researchers have suggested.

The research from a team at the University College London (UCL) Institute of Child Health, the research partner of Great Ormond Street Hospital in the UK, followed increasing concerns that many forms of neural tube defects (NTDs) are not responsive to folic acid supplementation.

The results published in the *British Journal of Nutrition* suggest adding inositol may be more effective than folic acid alone, but the scientists warned women should not stop taking folic acid, and any additional supplements should be taken under close medical supervision.

Researchers from the PONTI study (Prevention of Neural Tube defects by Inositol) funded by the children's medical research charity Sparks and the Medical Research Council hope to follow up with a large-scale controlled trial to further establish

the effects of this vitamin on NTD.

Of 99 women with a history of a NTD pregnancy, just under half agreed to be randomised to receive either a daily dose of 5 mg folic acid (the standard UK dose for women at high risk of NTD) plus 1 g of inositol, or 5 mg folic acid plus 1 g placebo, before conception and for three months after.

Many of the women who chose not to be randomised also took the inositol supplement at the studied dose of their own accord, and their pregnancy outcomes were recorded. In total, thirty three randomised pregnancies produced one NTD recurrence in the placebo plus folic acid group, and no recurrences in the inositol plus folic acid group. Of 22 pregnancies in the women who declined randomisation there were two NTD's in women who took folic acid alone. No adverse pregnancy events were associated with inositol supplementation in the randomised group.

Future research

UCL's Professor Andrew Copp told us the results were encouraging, but failed to provide a statistically significant difference because of the low participant numbers. One of the aims of the PONTI pilot study was to assess the feasibility of a larger controlled trial, and a different trial design – perhaps multinational may be preferable, say the scientists.

“There was actually a surprisingly large number of women who



declined to be randomised and just wanted to take the inositol, so that would clearly be a factor that would make it more difficult to do a randomised controlled trial – clearly you need a control group,” said Professor Copp. Discussing future public health recommendations, he said: “The main folic acid trial was also of women with a history, and that was positive back in the 1980’s and that then led to all women having it recommended, although the evidence was for women at high risk, so it might go in the same way.

“We would do a further study, if that then showed us a positive outcome for women at high risk, maybe then the next thing would be to recommend it to all women, but that’s further down the line and I wouldn’t like to predict on that really.” The study was one of over 1000 research projects currently being carried out at Great Ormond Street Hospital and the UCL Institute of Child Health, to help develop treatments and cures for conditions affecting children and adolescents.

Obesity rate growing faster in Asean than in weighty Western countries

Food Navigator Asia, 04 Feb 2016

The number of obese adults in the six biggest Asean economies increased at a faster rate than that of Britain and America from 2010 to 2014, according to data gathered by the Economist Intelligence Unit.

Based on World Health Organisation figures, the EIU found that Indonesia and Malaysia experienced a 33% increase in the number of obese individuals, while the number swelled in Vietnam by 38% and grew by 27% in Thailand. Singapore and the Philippines both saw mid-twenties percentage rates of obesity growth. Over the same period, the number of obese individuals in Britain and America grew by 10% and 8% respectively.

Japan’s obesity rate stood slightly higher, according to the figures. The study indicates that rates of obesity are rising faster in many lower and middle-income countries, as compared to that in higher-income countries, and that childhood obesity is a particular concern in these countries.

Simon Baptist, the EIU’s chief economist, said that more evidence was needed on the economic impact of obesity in Asean. “The current prevalence of obesity in many Asean countries is low by global standards—although with some exceptions for childhood obesity—but the rate is rising fast and the large populations of some countries mean that they have some of the largest numbers of overweight and obese people,” said Dr Baptist. “Initial research indicates that childhood obesity rates are growing faster in the ‘Asean Six’ than in Japan, the UK and USA.” It also showed that obesity rates in Asean’s six biggest economies are generally higher in countries with higher GDP per capita.

“Continued and rapid economic growth is therefore expected to rapidly increase the prevalence of obesity in these countries. Economic growth is typically accompanied by increased urbanisation, which provides easier access to food that is high in refined carbohydrates, saturated fat and sugar, and low in fibre—all which have been linked with obesity,” said Dr Baptist. Being overweight or obese increases an individual’s risk of diseases and conditions such as heart disease or stroke, Type 2 diabetes and some cancers. The EIU inception study points to research that shows that South East Asia is already facing an epidemic of chronic, non-communicable diseases, which now account for 60% of deaths in the region.

“Obesity is shaping up to be the number one risk factor impacting

Image © iStock.com/AndrewLam



health, more so than infectious diseases that we in the healthcare sector worry about,” said Zee Yoong Kang, chief executive of Singapore’s Health Promotion Board. “If we do not address obesity, we’ll see a huge epidemic of chronic conditions, especially diabetes. Governments need to be aware that this would be the number one healthcare challenge that we could face over the next two to three decades,” said Zee.

The report was prepared by the EIU for a study commissioned by the Asia Roundtable on Food Innovation for Improved Nutrition (ARoFIIN) and the Health Promotion Board of Singapore. Key findings from the inception report have been presented to government, regulators, academia, civil society and the food industry from around the Asian region at the official launch of the study, by the EIU at the recently concluded second annual ARoFIIN roundtable held in Singapore. ARoFIIN is convened by the Health Promotion Board, the Agency for Science, Research and Technology (A*STAR), the Singapore Institute for Clinical Sciences and Food Industry Asia.

New study questions licorice root supplement’s effectiveness as HRT alternative

Food Navigator Asia, 05 Feb 2016

Components of licorice root extract were found to have low binding affinity for estrogen



Image © iStock.com/Oliver Hoffmann

receptors, among the few things a group of researchers attributed to licorice root's low potency as a supplement for menopausal women.

To relieve the hot flushes, bone loss, vaginal atrophy, and changes in cardiovascular and metabolic function during menopause, many women go to pharmaceutical hormone replacement therapy (HRT). But as studies show HRT may pose risks by exacerbating breast and uterine cancer development, many women look to botanical supplements as an alternative. "Licorice root extracts are frequently used in dietary supplements and are believed to contain estrogenic components that might, in principle, provide a spectrum of beneficial effects with reduced stimulation of the breast and uterus compared with that of the endogenous hormone estradiol or the pharmaceutical estrogens used in HRT," said a new study published in the journal *Steroids*.

The research is a joint effort between institutions in Thailand and the U.S., with researchers affiliated with the FDA, the University of Illinois at Urbana Champaign, the University of Mississippi, and Mahidol University in Thailand.

Licorice's many components

Liquiritigenin and isoliquiritigenin are two widely known and studied components of *Glycyrrhizaglabra* (licorice) known to have estrogenic activity. In the study, researchers looked at seven other less researched flavonoids, isoflavonoids, and chalcones from the plant extract: Glabridin, calycosin, methoxychalcone, vestitol, glyasperin C, glycoumarin, and glicoricone.

The researchers compared the estrogenic activity of the seven less studied components with liquiritigenin, isoliquiritigenin, and estradiol. "Our observations reveal the biological activities present in multi-component dietary supplements such as licorice root extracts," the researchers wrote. "Furthermore, they highlight the need to standardize the preparation of licorice root extracts in dietary supplements, because the manner in which supplements are prepared could greatly impact the relative proportions of the different components and hence the spectrum of biological activities in different licorice root dietary supplement preparations."

In the lab

For the lab test, the researchers acquired estradiol from Sigma, and liquiritigenin and isoliquiritigenin from Tocris Bioscience. The components were extracted from licorice root powder by way of methanol using a percolator. The solvent was removed under reduced pressure at 48°C to yield the dried extract.

Relative binding affinities were determined by a competitive radiometric binding assay using tritiated estradiol as tracer. All of the licorice root components had binding affinities for estrogen receptors at least 1000 times lower than that of estradiol.

"The best estrogen agonists were methoxychalcone, liquiritigenin, and isoliquiritigenin, followed by calycosin, vestitol, and glycoumarin," the study said. "Interestingly, the best of these agonists had intrinsic activities equivalent to that of estradiol in terms of activation of estrogen-regulated genes and stimulation of proliferation; they reached this level of activity, however, only at concentrations much greater than estradiol."

The researchers wrote that it is important to note that the potencies

of the most active licorice root components are "several orders of magnitude less than that of estradiol and other pharmaceutical estrogens used in hormone replacement therapies."

New study supports link between Omega-3 supplementation and reduction in depression

Medical News Today 18 March 2016

According to the World Health Organization, depression is a major cause of disease burden worldwide, affecting an estimated 350 million people.

According to the National Institutes of Mental Health, in 2014, an estimated 15.7 million adults aged 18 or older in the United States had at least one major depressive episode in the past year. A new meta-analysis published in *Translational Psychiatry* supports the link between intake of EPA and DHA omega-3 fatty acids, the kind found in fish, and reduction in major depressive disorder (MDD).

The meta-analysis includes 13 studies with 1233 participants and, according to the authors, showed a benefit for EPA and DHA comparable to effects reported in meta-analyses of antidepressants. The effect was greater in studies supplementing higher doses of EPA and performed in patients already on antidepressants. According to the study's lead author Dr. RJT Mocking, Program for Mood Disorders, Department of Psychiatry, Academic Medical Center, University of Amsterdam, The Netherlands, "This new meta-analysis nuances earlier research on the importance of long chain omega-3s in MDD."



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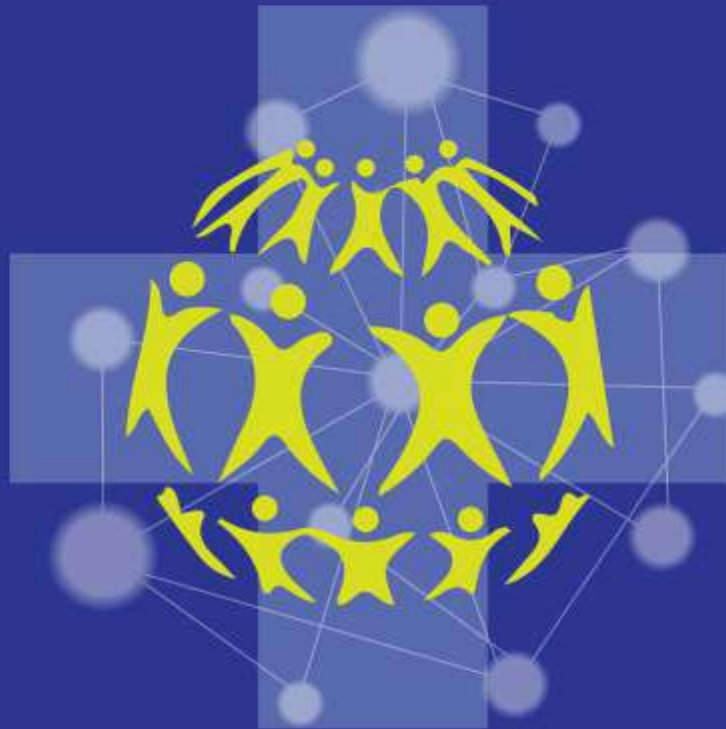
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