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DEC 2020

FOOD, NUTRITION & SAFETY MAGAZINE

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- HEALTHY PROTEIN FROM SEA

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PFNDAI FOOD, NUTRITION & SAFETY MAGAZINE

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Cover Design & Bulletin Layout by Ms. Leena Shanbhag

EDITORIAL

Children are very fussy eaters. If parents could not start them on vegetables in early years then it is going to be a lifelong struggle for them with vegetables. Parents must start them early and should also eat the vegetables with them. This has been shown that when both parents eat vegetables with them they also eat them.

Indians have a little more advantage over the western parents. We use a lot of spices to make the vegetables more palatable or even desirable. The vegetables as prepared in the west with only their own flavour are a little difficult to stomach. This makes their task even harder.

Vegetables could also be given in a variety of different forms. Our parathas and rotis are quite famous with vegetables like methi included in them. All kinds of vegetables especially the green vegetables which are difficult for kids to gulp down their throats, should be used for making vegetable parathas. Alu paratha is very famous and tasty but does not provide as much healthy components as green leafy vegetables.

There are also ways of making biryani and pulao with vegetables added to them. Care should be taken to make very small pieces of vegetables before adding so either the children do not realise they are eating vegetables or they don't mind.

There are other ways of disguising the vegetables by making their mash and adding into a variety of food items. If they don't see them they won't mind.

There is one more way the healthy ingredients could be provided to children. As they love snacks and fast foods, these could be made healthy. Such foods are criticised because of their high fat, sugar and salt content. These could be excellent targets for pushing some healthy ingredients including vegetables. Already samosa is available with peas included which increases the protein content.

Formulations should not be drastically changed as the taste would be so adversely affected that they would reject it outright. Cutting back a little of unhealthy ingredients and then adding healthy ingredients with higher protein, dietary fibre and micronutrients would be highly desirable.

Vada pav by one franchise company has already been made with peas and palak to make it more nutritious without losing any taste part. Another burger company has vegetable muffins that includes vegetables.

There are now khakhras available which add peanut and chickpea flours to increase the protein contents of their khakhra.

Adding these ingredients would improve the nutrition and the taste will not be affected noticeably. However, addition should be adequate to increase nutrients substantially. It should not be just to add them in ingredients list to help marketing.

Some ingenuity could convert many products into more nutritious and healthier products which children would be happy to consume.

Prof Jagadish Pai,
Executive Director,
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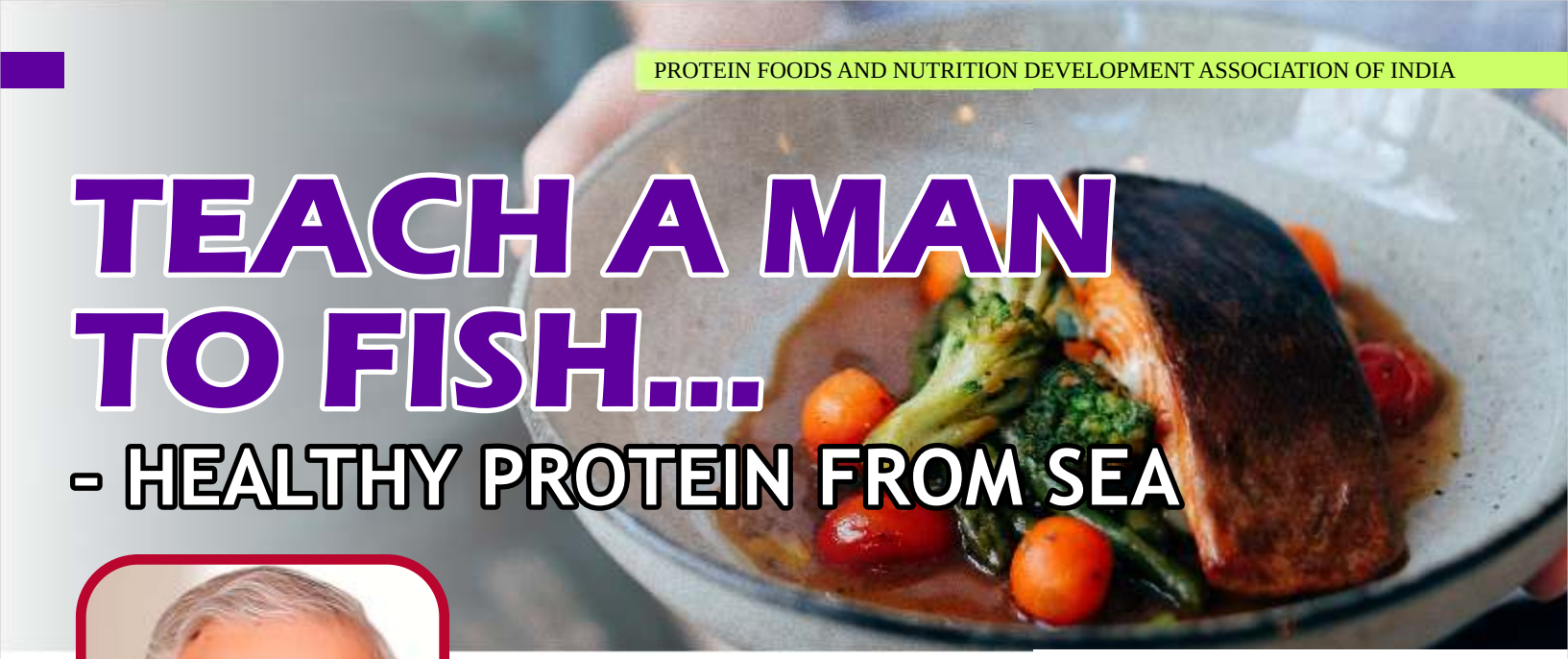

TEACH A MAN TO FISH...

– HEALTHY PROTEIN FROM SEA

AUTHOR
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There is a saying "Give man fish; you feed him for a day. Teach him to fish; feed him for life."

Fish has been feeding large number of people for a long time. Fishing predates agriculture. According to FAO data, total fishermen and fish farmers are more than 38 million. Fishery, including aquaculture, has provided direct or indirect employment to over 500 million people in developing countries. Thus a lot of people depend on fish for their livelihood.

Markets for Fish & Other Seafood

Global market is estimated at different values by different organisations. One estimate states the global seafood market to be about 160 billion US dollars and is likely to go up to about 200 billion US dollars by 2027. Another estimate puts value of commercial fishing industry at over 430 billion US dollars by 2026.

India produces around 10.8 million MT of fish being the second largest producer of fish. By one estimate, Indian market is over 16 billion US dollars. Processed marine food is currently around 23% of total produce, with sizeable part going for export estimated at over 5.8 billion US dollars.

Frozen shrimp is the largest seafood export item from India accounting about 65% of total fish export. Frozen fish is the second largest item of fish export accounting for 12% of total value of export. Although marine fish catch is growing in India, there is a faster growth of both aquaculture and inland capture fisheries. About 85% of produce is in unorganised sector and about 70% fish is handled and marketed fresh so the problems of logistics and spoilage are substantial. Annual per capita consumption of fish is just 2.85 kg. The per capita availability of fish is expected to go up from present 6.5 kg to 9 kg in 2030. So consumption is also expected to go up.

Catching Fish & Taking Care

Fish can be caught in sea, river, lakes or artificial ponds as in aquaculture. All the fish caught fresh has soft and moist texture with pleasant flavour. However, if allowed to remain under ambient conditions it starts deteriorating quickly with texture undergoing changes along with loss of moisture, microbial growth and enzymatic activities causing spoilage.

As most of the fish in India is marketed fresh it is necessary to take care to delay spoilage as prevention without processing is not possible. Fishermen would go in their boats to catch fish. From sea shore they would have to go far in order to catch bigger fish. Normally they would go out to sea early in the morning and may return after within hours or even by evening with their catch depending on how soon they could fill their boats. So the catch has to remain without spoilage for the duration from catching, bringing ashore, transporting to markets and selling. All this may take several hours or even a day. Ice in many sizes is used for delaying the changes leading to spoilage as at lower temperature all the changes are slowed down.

Use of motorised boats helps fishermen to go deeper into sea to catch the fish as well as come quickly to shore. Larger boats employed by fishing companies allows even deeper fishing, using mechanised nets to catch more efficiently and faster and at times

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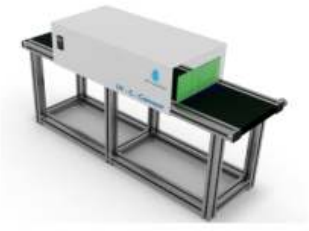

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refrigerated or frozen storage on board allows to minimise the changes further. Fish needs to reach the consumer in good condition. Fish starts spoiling soon after it is caught so in order to deliver a high quality product, it necessary to control all operations including catching, landing, handling, storage and transport. When fish becomes spoiled it is unusable due to off-flavours, mushy texture or bad colour that discourages buyers.

Spoilage is caused by a series of complex enzymatic, bacterial and chemical changes that start when fish is caught. The process begins soon after fish dies and the spoilage rate is faster when temperature is warmer. Gut of the fish is a rich source of enzymes which live fish uses to digest its food. Once fish is dead, these enzymes begin digesting the stomach itself migrating into fish flesh digesting it too making the fish softer and smelly.

There are bacteria naturally present on skin of fish, in the gills and in the intestine. They are not harmful to living fish but once fish dies they begin to multiply rapidly helped by enzymes softening the tissues. There are some problems that need to be tackled. Seas have got polluted and mercury may be a concern for some and that is why some are not consuming. However, there are benefits that outweigh the risk.

Benefit of Lower Temperature

Various changes in fish after catching take place more rapidly at warmer temperatures so lower temperature maintains quality for longer time. Textural changes due to rigor may set in 5 min at 30°C in trout but will take 30 to 40 hours at -1°C. Low temperature also delays growth of spoilage bacteria. In other foods, storage at 5°C is good enough for longer shelf life as bacteria present are inhibited at that temperature. This however, does not happen in fish as natural bacteria present are able to grow rapidly even in the region of 5°C. Hence temperature reduction of temperature in the range of -1° to 5°C delay growth markedly and increase shelf life.

Storage of fish without ice in sun rapidly increases its temperature from about 12°-15°C to about 27°C in less than 2 hours especially in tropics. When the fish is bruised the spoilage is faster with formation of TMA (tri-methyl-amine).
It is a good practice to remove gut (evisceration) as there are digestive enzymes which can cause undesirable changes in texture allowing further proliferation of spoilage bacteria.

Health Benefits

Fish is very important in a healthy diet. It provides omega-3 fats along with vitamin A and D, high quality protein and is low in saturated fat. There is strong evidence that eating fish or taking fish oil is good for heart and blood vessels. Eating one or two servings of fatty fish per week such as salmon, mackerel, sardines etc. substantially reduces risk of dying from heart disease. Fish is one of the most heart-healthy foods. People who regularly consumer fish have lower risk of heart attacks, strokes, and death from heart disease. Omega 3 fatty acids are essential for growth and development. Docosahexaenoic acid (DHA) is needed for brain and eye development, so it is recommended that pregnant and lactating mothers have adequate omega 3 in diet.

Brain function declines with aging. Mild mental decline is normal but sometime serious neurodegenerative ailments like Alzheimer's disease occurs. People who eat more eat fish have slower rates of mental decline. Also people who eat fish every week have more gray matter, brain's major functional tissue, in the parts that regulate emotion and memory.

Depression is a common mental condition characterised by low mood, sadness, decreased energy and loss of interest in life and activities. It is one of big health problems. People who eat fish regularly are much less likely to become depressed. Omega 3 fatty acids may fight depression and also increase effectiveness of antidepressants.

Fish or omega 3 and vitamin D consumption is seen to be associated with reduced risk of diseases such as type 1 diabetes, rheumatoid arthritis and multiple sclerosis. Fish may also help prevent asthma in children and it has also shown benefits in reducing risk of Age-Related Macular Degeneration (AMD) with protection to vision in old age. There are also some indications that fish may help improve sleep. Eating fish a couple of times a week is considered to provide the health benefits. Marine fish is expected to have more of omega 3.

What Form It Reaches You

Indian market is mostly of fresh fish. Fish industry is growing rapidly in processed form. Dried fish has been marketed for long but there are now frozen, canned and chilled as well as ready-to-eat meals available providing convenience for preparation and consumption of fish. Availability of ice and refrigerated & frozen storage and transport facilities have made it possible for consumers to get high quality fish and products in the market. There are some processors having large vessels with freezing facility on board so they prepare the fish and process it as frozen on board of the vessel itself. This probably gives the best quality of fish of all.

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Indian market is also mostly unorganised so fishermen bring in fish by their boats and try to sell it locally in fish markets. This is the most difficult situation as fresh fish can easily spoil if not maintained, cleaned and handled properly. Most use ice in various forms to chill them as soon as possible and initial phase is most critical to decide the storage and eating quality. For this the aquaculture is easier as it allows controls over time and temperature involved in catching fish and storage & transportation to land.

Drying of Fish

This was the earliest form of processing. As fish is a highly perishable food anything that was not to be consumed immediately was then dried. Spoilage organisms and enzymes need moisture for their activity so by drying water was made unavailable to them their spoilage is arrested. Earlier times sun drying was the only means but later cabinet dryer using hot dry air would control the drying rates producing higher quality product. Small fish would be easier to dry while bigger ones take longer so need better care to prevent spoilage during drying. Salting and smoking would help in preserving them while drying and also would add some flavour. Some fish products using salt and other condiments are produced including pickles to extend the storage life.

Temperature Control

It is known that lower temperatures delayed spoilage so use of liberal amounts of ice is the first defence against spoilage. The moment fish is caught icing is done. Chilled temperature during storage and transport would maintain the high quality of fresh fish. Freezing has been one of the most preferred forms of processing as it causes the least amount of changes affecting the loss of quality for over months of storage. The ideal temperature would be -18°C at which many products would last for over a year without noticeable changes in colour, flavour and texture in many fish. Freezing also allows preserving of fish without chemicals so it is preferred by consumers as well.

Canning of Fish

Heat destroys both enzymes and bacteria which is done in canning while preventing any contamination of bacteria after processing due to sealed cans. As the heat needs to travel to the middle of fish pieces with many pieces in a can, the amount of heat given to adequately preserve the product may cause some changes in quality of fish. However, some popular products in brine or other liquids are produced by canning. Here also the advantages are that the product is without chemicals and can last for over a year or more. High pressure processing is recently developed process which overcomes some of the quality problems of traditional canning by allowing milder temperature conditions used to preserve the product affecting colour, flavour and texture minimally so the acceptability is much higher. Some of the delicate seafood like oysters have been successfully processed by this method.

Ready-to-Eat and Ready-to-Cook Fish Products

As consumers want to spend less time in preparing and cooking food many convenience products have appeared in market. Fish products are available cleaned sectioned and even slightly spices in the form of pieces and either chilled or frozen. These Ready-to-Cook products may be just thawed and cooked by roasting or pan frying. Some snacks from fish are also available in this form e.g. fish fingers or fish cakes which are batter fried and frozen. One may have to finish frying or heating in microwave.

The ultimate in convenience would be Ready-to-Eat products. They may be canned in retort pouches made of several layers of heat stable plastic materials. Usually the thickness is not much more than an inch so less distance and time for heat to travel through fish pieces, maintaining the high quality of fish pieces. Since it is already seasoned and cooked, one only needs to warm it before eating. Some alternative method is Ready-to-Eat frozen products. Here the products are fully cooked and then packed. Since they may still contain some microbes unlike in retort pouches, the product is frozen to prevent their growth. These products also may just be heated to warm up and eat.

New Fish-based Products

Some exotic products have started appearing especially with origin in Japan. Surimi is made from ground meat of fish or other seafood like crab meat formed into different shapes. Sushi is prepared with vinegared rice with raw or cooked seafood or vegetables sliced or diced and held together with edible seaweed. Sashimi consists of fresh raw fish or meat sliced thin and eaten with soy sauce.

Finally

Fish is becoming popular everywhere both because of its health benefits and it new flavourful forms and convenience. Because of improvement of cold chain the quality of fish available has also improved. Fish prepared in different style and cuisines has added to its attraction. Availability of better quality is also because of large proportion is now harvested inland using aquaculture. This has improved the growth in fish industry and exports.

Fish is commonly consumed by people who are near coasts with plenty of fresh fish available so their habits have formed over a long time. However, due to the health benefits and also easy availability of cuisines over distant places have brought fish preparations through social media and many publications. This trend will make fish more popular with better quality and processing techniques being available. Markets will certainly spread.

INDIAN CHUTNEY
A NEW PERSPECTIVE
(PART 2)

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In different regions of India, the chutney preparations have got some local names and their own unique recipes. It is hard to make a complete list of such preparations as it is too vast. Here are some examples representing a subsegment of Chutney, specific to that region and referred to by different names.

Thengai Thogayal or coconut thiamylal in Tamilnadu are specifically served with rice. These preparations have different flavours like mint, beetroot, tomato onion, Zucchini, Turdal, Coriander, Eggplant and many more. In Karnataka, Maharashtra and Tamil Nadu the dry form of Chutney is referred to as Chutnipudi or Milagaipodi. These are made from roasted black gram and chickpea mixed with chilly, dry coconut and curry leaves. These powders can be preserved for up to six months and are served as dry powders with rice or mixed with ghee or oil of choice or as paste with butter milk with Idli and dosa or other snacks. These are particularly good source of protein and fibre. In Karnataka a semi solid form of chutney called as Hindi is made from oil containing seeds like peanut, safflower seeds, flax seeds, Niger seeds along with garlic and dry red chili and served with jowar and Bajra roti or with rice. These are good supplements of protein, fibre, and omega -3 fatty acids, PUFA and phytonutrients. A drier form of chutney with long shelf life from Kerala is called Chammanthi, which literally means a marriage of ingredients. This is because ingredients easily mis-matched and thrown out of sync in taste and attitude are well chosen to make the chutney and then their harmony is matchless.

Many chutney preparations particularly from state of Gujrat called Chunda or chundo will have sugar or date fruit as a major ingredient, which also acts as a preservative in enhancing the shelf life. The hot spicy tangy taste combined with sweet taste of sugar or date fruit is particularly good healthy alternate to only sugary jams. Chigli famous in coastal Karnataka is another form of Chutney made from red ants, garlic, red chili, and onion. The ants have a vicious sting and the sour ooze from the swollen larvae gives the typical tang and bite to the chutney. Spicy yet tangy relish is a winter delicacy rich in protein and is believed to have the ability to cure pneumonia, cough and cold. Akhuni in Nagaland is a type of chutney made from fermented Soybean. Morabba, Chavanprash in the way they are made and consumed can also be termed as sweet chutney based on their format and methods of preparation and are extremely popular as immunity boosters.

Fresh fruit chutneys are traditionally part of an ayurvedic meal because they not only add delicious taste, but they help add nutrition and improve the digestion. According to Ayurveda, fruit is one of the purest foods we can eat. Fruit is highly praised in modern nutrition as well for its vitamin, mineral content, enzymes, antioxidants, antiaging factors and fibre scontent which help in promoting disease prevention.

Fruits enhance ojas, the finest by-product of digestion, considered in Ayurveda to be that which sustains life itself. Fresh fruit chutneys add flavour to the meal and help add different tastes, sometimes all six tastes that are recommended by Ayurveda to be included in every main meal. Spicy chutneys bring balance to mild dishes and sweet chutneys bring balance to spicy dishes.

There are two major types of fruit chutneys — fruit that has been cooked with spices, or fresh fruit that has been mixed in a blender with spices. Whether the chutney is cooked or fresh, it helps to stimulate agni and supports digestion. Only a teaspoon or two of chutney is needed to enhance a meal. Chutneys can be served in a small bowl or directly on the plate with other foods. They can also be used for dipping with flatbreads or appetizers. Cooked chutneys can be made and stored in the refrigerator for several weeks if preserved properly.

Most fresh fruits can be used for making chutneys, including various berries and preserved fruits as well as dry fruits such as dates and raisins. However, melons are generally not used in traditional chutneys. There are exclusive chutney preparations using raw vegetables as the main ingredient along with chili, spices, and some nuts. Most popular ones are carrot, broccoli, radish, eggplant, Zucchini, cucumber, cauliflower, cabbage, green pea and virtually all the vegetables that one finds in their region and in given season. Raw vegetables can be used as is or slightly sautéed to extend the shelf life of vegetable chutney.

Indian cookbooks devoted to chutneys generally arrange the recipes according to region, since chutney styles are strikingly different in various parts of the country and among different religious groups. There are pan Indian chutneys like mango, coconut, mint, garlic, peanut, imli and coriander and tomato chutney, but the diversity representation come from the unique region-specific chutneys which will have their own hero ingredients and associated health benefits of their hero ingredients and many of them are also becoming now pan Indian.

Some examples are ; Gongura chutney from Andhra ;fresh chick pea leaves chutney from Karnataka; Jackfruit and Brahmi chutney from Kerala ; Walnut-radish chutney from Kashmir, chickpea, tisi (flax seeds), moong, Kulthi and peanut chutney of Bihar, sweet and sour mango, and peanut chutney from Uttar Pradesh; Guava and eggplant chutneys from Himachal Pradesh; fish and prawn chutney from Kerala and Goa ;various Jain, Parsee, and Sindhi chutneys defined by religious dietary rules; dry fish, shrimp, and onion chutney from Kerala;pork sepotel and shrimp ballachong from Goa; kanji, tomato and jeera chutney from Punjab; eggplant chutney from Karnataka; Kodampuli cambodge (Malabar tamarind) chutney from Kerala, mushroom chutney from Nagaland; drum stick leaves-kachari-sesame chutney from Punjab; garlic and red chili chutney from Rajasthan and so on.

Apples may have become a common ingredient in British and American chutneys because they share a sweet, tart, and savoury role with an ingredient that is common in Indian chutneys but was not available in Britain or America namely green mangoes. Mango, plum, apple, and apricot, amla chutneys, and various murabbas from West Bengalare another class by themselves. In fact, the murabbas evolved out of the Unani system of medicine and owe their origin to Indian contact with the Arab world.

Several traditional chutney recipes have been in existence for many years and have the history of human consumption and a belief in their health benefits ranging from soothing the tummy to being a detox agent to immunity booster to being cardio-protective, to being protein and fibre supplements and so on. The health benefits of the major ingredients be it herb, spice, fruit, or vegetable are also traditionally known, and the health benefits of the chutney are derived from the known benefits of the ingredients. There is no supporting scientific data, or any human clinical studies done to establish the benefits of various chutneys. The health benefits of turmeric were known for thousands of years in India, but the scientific data for the various health benefits of curcumin an active ingredient of it is a recent phenomenon.

The traditional belief in the health benefits of many traditional chutney preparations would have come only because the benefits were experienced by people over thousands of years. Taking the clues from these beliefs there is need to develop the right science to understand the benefits optimize/modify the formulations and the benefits. Consumer acceptance is already there for Chutney and it is already part of our daily diet and lifestyle.

Let us look at some of the extremely popular pan India chutneys which have the history of thousands of years of human consumption and their perceived health benefits which can be attributed to the major ingredients in the recipe.

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Coconut chutney tops the list in popularity and is a must have with Idli and Dosa. It is rich in medium chain triglycerides, lauric acid, high fibre content and polyphenolic acids which are powerful antioxidants. Ginger and green chilly added to the recipe further enhance the health benefits of coconut chutney. Overall, the chutney is good immunity booster, helps control blood sugar, prevent infections, and reduce belly fat.

Pudina Chutney has Mint leaves that play a vital role in promoting digestion, reducing inflammation, and soothing the stomach. They can also enhance appetite and prevent nausea.

Curry Leaves Chutney contain mainly Curry leaves that have been an integral part of Indian cooking for a long time. It is excellent in controlling blood sugar levels and bad cholesterol in people with diabetes. Curry leaves chutney is also loaded with iron, folic acid, vitamins A, B, C & E. It is effective in solving gastrointestinal problems. Curry leaves also have anti-anaemia, anti-diarrhoea, and antioxidant qualities.

Amla Chutney is made with amla, coconut, ginger and green chilly. It is a rich source of vitamin C that helps in improving immunity and even lowers the level of sugar in blood to control diabetes. Amla stimulates the pancreas, which further regulate the suitable secretion of insulin hormone. The Amla chutney is made from grinding fresh Amla and this will deliver the highest level of Vitamin C and other important phytonutrients. The Amla juice, candy, murabba or any other preparation will see a lot of degradation of vitamin C and polyphenols present in Amla.

Coriander Chutney made with fresh coriander leaves promotes digestion, stimulates insulin secretion, and helps lowering blood sugar. Coriander leaves are rich in chlorophyl, Vitamin C, Vitamin K among others.

Onion and Garlic chutney is used for promoting digestion and reducing piles problems. Garlic has anti-bacterial and anti-fungal properties and helps in lowering cholesterol.

Mango chutney is beneficial in curing summer diarrhoea, dysentery, piles, and indigestion. It also helps in preventing sunstroke.

Tomato chutney is a rich source of lycopene and glutathione. It purifies the blood and helps in the management of cardiovascular issues. Loaded with anti-inflammatory properties, tomato chutney can help in protecting the body against numerous diseases. With tomato chutney as a base we can add many other herbs to deliver more Phytonutrients, enzymes, antioxidants. Tomato-chilly and date chutney has a unique taste and additional health benefits of dates. Moringa leaves chutney is a good supplement of bioavailable iron, calcium, and antioxidants.

A popular moringa leaves-Kachari-sesame chutney combines the benefits of all the three major ingredients. Gongura chutney is beneficial in boosting immunity, aiding digestion, and preventing inflammation. Gongura leaves the main ingredient of this chutney are rich source of Vit A, B1, b2, B9, C; minerals like Iron, Calcium and magnesium and phytonutrients like flavonoids, polyphenolic acids and anthocyanins. Nutmeg chutney made by using fresh nutmeg during season has all the benefits of nutmeg and the unique refreshing flavour.

Of every 10-biodiversity population, the planet has lost seven in the past five decades. Even with increased conservation efforts, an improvement seems unlikely before 2050, said the latest bi-annual 'Living Planet Report' released by the Worldwide Fund for Nature (WWF). The situation in India is not much different from the global situation, and unfortunately, we are not making enough efforts to change this. India being the hot spot with world's largest variety of spices and herbs that offer health benefits we have more to lose when we lose biodiversity. Loss of biodiversity also means loss of diversity in the food we eat.

Green revolution, better processing technologies more suited for wheat, and economic factors have made wheat the most economical and abundant cereal in India. So, from a nation consuming a range of millets and pulses which are nutritionally denser, have lower water footprint, we have become a more homogenous population consuming only wheat. The production of pulses and millets in India is gradually coming down and so is the per capita consumption.

Chutney is the most diverse food concept we have in Indian food system and we seem to be losing this as well. The younger generation particularly increasingly prefers the western condiments like Ketchup, mayonnaise, soy sauce and jams over the traditional chutney. These western condiments are commercially available ready to serve formats and thus are offering the convenience. Replacement of chutney with ketchup can be termed as the loss of (bio)diversity on the dining table which will result in deficiency of health promoting phytonutrients.

There is urgent need to reposition this important traditional system, educate consumers about the health benefits of freshly prepared chutney. Chutney preparations offer taste, convenience, economy, health, a mind-boggling range of flavours, everything that we expect from a good food and are the best example of a sustainable food. Chutney fits in to our daily diet, lifestyle, enhances food taste, offer health benefits, is excellent and unique tool for delivering many important nutrients. Health and wellness conscious consumers of today believe in prevention than cure and are increasingly seeking natural and sustainable foods and not so much of tablets and capsules. The potential of chutney as a health supplement is huge.

The sharp intense taste of chutney ensures its limited consumption during any eating occasion. This self-limiting dosage can be very well used to deliver many micro, phytonutrients and minerals derived from natural ingredients which have better bioabsorption. There is need to preserve and promote this Indian traditional concept. Food that tastes good is not healthy is the general belief and Chutney is contrary to this belief. If there is an increase consumption of noodles, paste and pizza, then we must develop chutney that compliment these dishes as well. Chutney can be repositioned as salad dressing, dips and sauces to appeal to the younger generation. All the immunity promoting herbs and spices recommended by ministry of AYUSH are commonly found in all chutney preparations.

Many adaptogens find place in chutney recipes. We should put this concept on a pedestal, modify the existing most flexible recipes to enhance their health benefits, add ingredients that provide additional micro and phytonutrients and do efficacy studies on some of the most popular chutney recipes. Commercial chutney preparations, ready kits that consumer can prepare chutney in 10 min will boost their consumption and ability to compete with the popularity of Ketchup and Mayonnaise. There is a need to promote Chutney as a health supplement, increase consumer awareness about their benefits not only in India but globally. Hopefully, few years later a google search for globally popular condiments will show Chutney on top of the list, but more importantly promoting chutney consumption will help us towards achieving the goal of nutritional security for all.

COMING EVENTS

32nd Annual Congress on Nutrition & Food Sciences
Jan 25-26, 2021
Contact:
https://foodscience.nutritionalconference.com/registration.php

3rd Global Summit on Food Science, Nutrition and Technology
Feb 24-25, 2021
Contact:
https://foodsummit.foodtechconferences.org/registration.php

7th International Conference on Food Science and Food Safety
March 16-17, 2021
Contact:
https://foodsafetycongress.foodtechconferences.com/registration.php

10th International Conference on Nutrition and Food Sciences (ICNFS 2021)
April 20-22, 2021
Univ of Barcelona, Barcelona, Spain
E-mail: icnfs@cbees.org
Contact: +852-3500-0137

Eat Right Academy of Nutrition and Dietetics FNCE 2021 Food & Nutrition Conference & Expo
October 16-19, 2021
New Orleans, LA
Contact: fnce@eatright.org

UNDERSTANDING IRON AND ACHIEVING ANEMIA MUKT BHARAT (AMB)

AUTHOR

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In the human body, iron is present in hemoglobin within erythrocytes (RBC), in myoglobin within muscle cells, and several key enzymes involved with cellular metabolism, Iron is a trace mineral that is necessary for producing red blood cells, redox processes and required for numerous cellular metabolic functions. Iron is toxic to humans when present in abundance, so tight regulation is necessary to avoid iron deficiency or iron overload.

Iron plays an essential role in oxygen binding, transport, and storage, enzymatic reactions, immune function, cognitive function, cellular growth and differentiation, mental and physical growth. So, deficiency of iron due to either physiological or pathological reasons can affect psychological and physical development resulting in decreased learning capacity and work productivity.

The human diet contains two forms of iron: heme iron and non-heme iron. Heme iron is derived from meat or animal food sources and is well absorbed. Plants and iron-fortified foods contain non-heme iron only, whereas meat, seafood, and poultry contain both heme and non-heme iron. Iron deficiency and anemia among Indians is due to inadequate dietary intake of iron, the poor bioavailability of non-heme iron present in local diets that are largely plant-based, and are high in phytic acid and fibre which inhibits iron absorption, is an important factor in the development of anemia and iron deficiency. Also, the iron uptake is regulated by plasma iron levels. An inadequate intake of dietary iron, its poor bioavailability, and concurrent inadequate intake of dietary micronutrients appear to be the primary factors responsible for the high prevalence of anemia and iron deficiency in this population.

The primary causes of iron deficiency include low intake of bioavailable iron (heme form of iron), increased iron requirements as a result of rapid growth, pregnancy, menstruation, and excess blood loss caused by pathologic infections, such as hookworm and whipworm causing gastrointestinal blood loss and impaired absorption of iron. The frequency of iron deficiency rises in female adolescents because menstrual iron losses are superimposed with needs for rapid growth. Other risk factors for iron deficiency in young women are high parity, use of an intrauterine device, and vegetarian diets.

There are many causes of anemia, out of which iron deficiency accounts for about 50 percent of anemia in school children and among women of reproductive age-group, and 80 percent in children 2–5 years of age. Other nutritional deficiencies besides iron, such as vitamin B12, folate and vitamin A, can cause anemia although the magnitude of their contribution is unclear. Infectious diseases - in particular malaria, helminth infections, tuberculosis and haemoglobinopathies - are other important contributory causes to the high prevalence of anemia.

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Next to young children, young women are most vulnerable to iron-deficiency anemia in developing countries. In India, a recent national survey showed mean reported iron density (amount of iron per 1000 kcal) in Indian diets is -25% lower than the recommended adequate dietary iron density of 14.2 mg/1000 kcal.

Iron deficiency is considered the most common worldwide nutritional deficiency and affects approximately 20% of the world population. Until today, iron deficiency Anemia (IDA) is still the most prevalent and common type of micronutrient deficiency in developing countries, which results from long-term negative iron imbalance. Usually, a lack of iron develops gradually and does not have clinically apparent symptoms until Anemia becomes severe.

Most symptoms of iron deficiency are due to Anemia. Such symptoms include fatigue, loss of stamina, shortness of breath, weakness, dizziness, and pallor. Another common symptom is restless leg syndrome (RLS), which is an unpleasant urge to move the legs during periods of inactivity. Anemia is defined as a haemoglobin concentration below established cut-off levels in the blood (12-14 g%). The haemoglobin cut-offs which are used for diagnosing Anemia across ages are described below.

Iron deficiency results from depletion of iron stores; when iron stores are depleted and insufficient iron is available for erythropoiesis, hemoglobin synthesis in erythrocyte becomes impaired, and hematologic signs of iron deficiency anemia appear. Anemia is a sign of a disease process rather than a disease itself. Anemia describes how the number of RBCs in the blood is low, or the blood cells have less than the average amount of hemoglobin. A person who has Anemia is called anemic.

Iron deficiency results from depletion of iron stores and occur when iron absorption cannot keep pace over an extended period with the metabolic demands for iron to sustain growth and to replenish iron loss, which is primarily related to blood loss. A nutritional iron deficiency arises when physiological requirements cannot be met by iron absorption from the diet.

The adverse consequences of iron deficiency include increased risk of low birth weight and other pregnancy-related complications, poor growth during infancy and early childhood, impaired cognition and behaviour in children, reduced work capacity and reduced productivity.

The manifestations of Anemia vary by its severity and range from fatigue, weakness, dizziness, and drowsiness to the impaired cognitive development of children and increased morbidity.

Anemia in pregnancy is associated with postpartum haemorrhage, neural tube defects, low birth weight, premature births, stillbirths and maternal deaths. In malaria endemic regions, anemia is one of the most common preventable causes of maternal and child deaths. In its most severe form, anemia can also lead to death.

Frequently used forms of iron in supplements include ferrous and ferric iron salts, such as ferrous sulphate, ferrous gluconate, ferric citrate, and ferric sulphate. Because of its higher solubility, ferrous iron in dietary supplements is more bioavailable than ferric iron . High doses of supplemental iron (45 mg/day or more) may cause gastrointestinal side effects, such as nausea and constipation. Other forms of supplemental iron, such as heme iron polypeptides, carbonyl iron, iron amino-acid chelates, and polysaccharide-iron complexes, might have fewer gastrointestinal side effects than ferrous or ferric salts.

The NIN committee recommended that the density of ascorbic acid in the daily diet should be at least 20 mg/ 1000 kcal for improved iron absorption. (RDA 2020 https://www.nin.res.in/nutrition2020/RDA_short_report.pdf) The present committee considered 8% absorption for men, women and adolescents, and 6% for children. The distribution of iron requirements was obtained by convolution of the probability distribution of daily basal and menstrual iron losses. And based on the available data, increased absorption of 12% was considered for

Population	Anemia		
	Mild	Moderate	Severe
Children 6–59 months of age	10–10.9	7–9.9	<7
Children 5–11 years of age	11–11.4	8–10.9	<8
Children 12–14 years of age	11–11.9	8–10.9	<8
Non-pregnant women (15 years of age and above)	11–11.9	8–10.9	<8
Pregnant women	10–10.9	7–9.9	<7
Men (15 years of age and above)	11–12.9	8–10.9	<8

Source: WHO- Nutritional Anemia: Tools for Effective Prevention and Control, 2017

calculating EAR and RDA for pregnant women, which is in conformity with the absorption data generated in India using stable isotopes.

The RDA 2020 recommends 19 mg of iron per day for sedentary adult man . For the sedentary woman it is 29 mg /day. The requirements are high for pregnant and is 40 mg /day. There is also a higher amount of iron requirement for adolescent girls and varies from 28-42 mg/ day according to age.

Dietary improvement/ food-based approaches represent the most desirable and sustainable method of preventing micronutrient malnutrition. Such approaches are designed to increase micronutrient intake through the diet.

Food-based approaches should therefore include strategies to: improve the year-round availability of micronutrient-rich foods; ensure the access of households, especially those at risk, to these foods; and change feeding practices with respect to these foods, examples include meat and organ meat, fowl, fish, and poultry; and non-animal foods such as legumes and green leafy vegetables. Similarly, focus should be upon foods which enhance the absorption or utilization of iron. Examples include those of animal origin, and non-animal foods - such as some fruits, vegetables, and tubers - that are good sources of vitamins A and C, and folic acid.

Often, there is considerable loss of nutrients during the processing of food. One of the strategies to address this problem is fortification of food. This method complements other ways to improve nutrition such as diversification of diet and supplementation of food. Iron compounds recommended for food fortification include ferrous sulfate, ferrous fumarate, ferric pyrophosphate, and electrolytic iron powder. The different forms of iron in supplements contain varying amounts of elemental iron. For example, ferrous fumarate is 33% elemental iron by weight, whereas ferrous sulfate is 20% and ferrous gluconate is 12% elemental iron.

Finally, effective nutrition education - and information on health and nutrition for both supply and demand aspects of programmes - may be needed to increase the demand for and consumption of such foods.

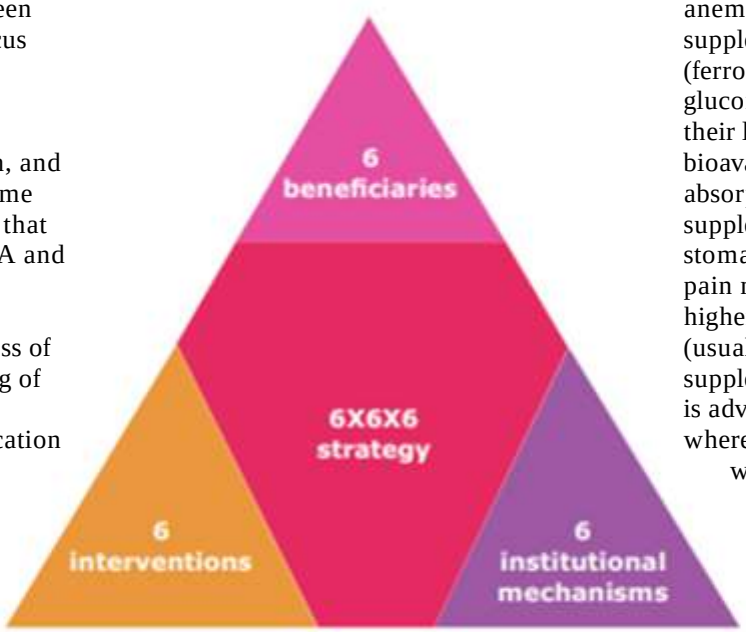
The reduction of anemia is one of the important objectives of the POSHAN Abhiyaan launched in March 2018. To tackle anemia in India the Anemia Mukt Bharat (AMB) program was launched by the Government of India under the Prime Minister's overarching scheme for Holistic Nourishment (POSHAN) Abhiyaan. One of its targets is to reduce anemia by 3% per year among children, adolescents and women in the reproductive age group (15–49 years), to support the end goal of attaining a malnutrition free India by 2022.

The program uses the 6x6x6 strategy - which implies six age groups, six interventions and six institutional mechanisms.

The program uses the 6x6x6 strategy - which implies six age groups, six interventions and six institutional mechanisms.

The Anemia Mukt Bharat- intensified Iron-plus Initiative aims to strengthen the existing mechanisms and foster newer strategies for tackling anemia. It focuses on six target beneficiary groups, through six interventions and six institutional mechanisms to achieve the envisaged target under the POSHAN Abhiyan.

This time around (under the IFA supplementation program) there is a strong supply-chain mechanism to ensure that there is an IFA tablet for each child, pregnant women and adolescent girl irrespective of the anemia level. For oral iron supplementation, ferrous iron salts (ferrous sulfate and ferrous gluconate) are preferred because of their low cost and high bioavailability. Although iron absorption is higher when iron supplements are given on an empty stomach, nausea, and epigastric pain might develop due to the higher iron doses administered (usually 60 mg Fe/day).] Iron supplementation during pregnancy is advisable in developing countries, where women often enter pregnancy with low iron stores.



Approximately 450 million beneficiaries – nearly 50% of the country's population – will be reached

All this can be made possible by addressing the following-

- Intra-ministerial coordination
- National Anemia Mukt Bharat Unit
- National Centre of Excellence and
- Advanced Research on Anemia Control
- Convergence with other ministries
- Strengthening supply chain and logistics
- Anemia Mukt Bharat Dashboard and Digital
- Portal - one-stop shop for Anemia

Prophylactic Iron and Folic Acid (IFA) supplementation Prophylactic Iron Folic Acid supplementation given to children, adolescents, women of reproductive age and pregnant women, irrespective of anemia is a key continued intervention under Anemia Mukt Bharat. For women of reproductive age- Weekly, 1 Iron and Folic Acid tablet Each tablet containing 60 mg elemental Iron + 500 mcg Folic Acid, sugar-coated, red colour is given . For pregnant women Daily, 1 Iron and Folic Acid tablet starting from the fourth month of pregnancy (that is from the second trimester), continued throughout pregnancy (minimum 180 days during pregnancy) and to be continued for 180 days, post-partum Each tablet containing 60 mg elemental Iron + 500 mcg Folic Acid, sugar-coated, red colour is given.

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REGULATORY ROUND UP

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Dear Readers

At last, the much awaited big ticket regulation "Labelling and Display" is notified after much debate and discussion. The front of the pack HFSS traffic light display has been dispensed with. With this, all the major regulations are in place. Please find a summary of the regulation and others below.

Final Gazette Notifications

FSSAI finally notifies Labelling and Display Regulation. Some highlights are given below but the readers are requested to go through the document thoroughly.

• The regulation is made effective from 17th November 2020 and all FBOs to comply with the provision by 01.01.2022
• New definitions like assorted pack, front of the pack, multi piece pack, non-retail containers, etc have been introduced.
• E commerce has been addressed.
• Additives introduced into the product at a level that can perform a technological function need to be declared under the list of ingredients.
• Total sugars, Added Sugars and Dietary Fibre have been defined
• Energy, Protein, Carbohydrate, Total Sugars, Added Sugars, Total Fat, Saturated Fat, Trans fat, Cholesterol, Sodium to be declared per 100 g or 100 ml.
• In addition to the above, levels of energy, total fat, saturated fat, trans fat, added sugar and sodium as a percentage of RDA (quantified in the regulation) per serve to be declared. Serving size is not defined and hence it is left to the manufacturer.
• Few products and product categories are exempted from nutritional labelling under certain conditions.
• The shape of non-vegetarian logo has been changed to a circle within a triangle in brown colour
• No need for separate declaration of flavours
• Declarations related to Net Quantity, MRP and customer care details to comply with Packaged Commodity Rules.
• Height of numerals and letters is related to principal display panel area.
• Expiry date declaration is mandatory
• Allergen declaration has been introduced.
• A separate chapter has been devoted to display in food service establishments
• Non Retail container has been given many labelling exemptions.
• Declarations with respect to different ingredients like high intense sweeteners, MSG have been specified.

Final notification of regulation on Infant Nutrition is published. The regulation sets standards for Infant Formula, Follow up Formula, Cereal and Milk based complementary infant foods, food for special medical purpose for infants and food for infants with inborn error of metabolism.

Draft Gazette Notifications

Draft notification making it mandatory to fortify milk and edible vegetable oil with vitamins as prescribed by the fortification regulation.

Amendments are proposed in Licensing and Registration regulation. The amendments include defining relabeller and brand owner, new conditions to be complied with at the time of application, food safety audits, replacement of Good Manufacturing Practice Schedules for different food processing categories, changes in forms to be submitted, etc.

A draft notification prohibiting the admixture of mustard oil with other edible oils was issued on 18.11.2020. However, through an order dated 04.12.2020, the draft amendment has been withdrawn. The order states that the draft has been withdrawn after due representations made by the stakeholders. The reason for both introduction and withdrawal is unclear.

Draft notification on the changes in labelling of multi sourced or blended vegetable oil.

A major change of far reaching consequence has been proposed in Import Regulation. The draft regulation, if it comes through in the present form, will place greater restriction on import food products and food categories which are considered to be "High Risk", which is not presently defined but will be specified from time to time. Manufacturing units situated outside India and wishes to export such "High Risk" foods must get their manufacturing unit registered with FSSAI. Audit of the manufacturing unit by FSSAI or its authorized representatives is a pre requisite to grant of registration. The application can be made online. Timelines for audit is not specified. No indication with regard as to who will bear the cost of the audit, etc. As "High Risk" is not defined, any product or product category may be included at a later date. In my opinion, FSSAI must restrict itself to the registration of such facilities.

Draft notification proposes amendments in Fortification Regulation It introduces fortification requirements for milk powder, amends the requirement of iodine in salt.

Advisories and Orders, Guidance Notes and Others

An order operationalizing the use of additional colours in alcoholic beverages.

FSSAI vide its order dated 04.12.2020 has extended the tenure of Hygiene Rating Agencies of food establishment.

Revised manual for the estimation of Mycotoxins.

FSSAI extends the validity of the operationalized regulation on the incidental presence of khesari dal in food grains up to 2%, till the publication of final regulation.

In June 2020, FSSAI issued an order that consignment of certain categories of foods (Cereals, Pulses, Oilseeds, etc) to be accompanied by a GM or GMO free certificate from January 2021. This deadline has now been extended to 31 March 2020.

Draft Regulation setting limits for formaldehyde, etc has been operationalized.

REGULATORY AFFAIRS COMMITTEE MEETING REPORT

AUTHOR
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PFNDAI

Protein Foods & Nutrition Development Association of India organised an online regulatory affairs committee meeting on 10 November 2020. The invitations were sent to all the PFNDAI members and nominees.

The objective of this meeting was to discuss the Food Safety & Standards (Amendment) Bill 2020, to gain an understanding of its purpose and provisions, and to gather inputs for improvements in the drafted bill. On the panel, we had Mr Bhupinder Singh (Chairman, PFNDAI), Dr Shatadru Sengupta (Vice Chairman, PFNDAI), Dr Joseph Lewis (Vice Chairman, Regulatory Affairs Committee, PFNDAI), Dr Jasvir Singh (Regulatory, Scientific & Government Affairs Leader – South Asia DuPont), Dr Prabodh Halde (Head Regulatory- Marico Ltd.), Mr K.K. Joshi (Head Regulatory Affairs, Policy & Advocacy, ITC Food Division), Dr KD Yadav (Sr Vice President (Technical) - AAK Kamani), Ms. Rini Sanyal (Director Regulatory & Government Affairs, Herbalife), Ms Meenu Yadav (Manager, Scientific and Regulatory Affairs, Mondelez India),

Mr. Rajendra Dobriyal (Director, Scientific & Regulatory Affairs, Coca Cola India) & Mr. Abhinav Srivastava (Head of Regulatory Policy & Intelligence, Amway India).

The meeting included an introduction of all the speakers and panellists by Ms SwechhaSoni (Manager- Food & Nutrition, PFNDAI), opening remarks by Dr Jagadish Pai (Executive Director, PFNDAI), welcome address by Mr Bhupinder Singh, presentation on "FSSA Amendment Bill 2020) by Dr Shatadru Sengupta, remarks on the bill by Dr Lewis, a panel discussion moderated by Dr Lewis, Q & A round and feedback collection through Google forms.

Dr Shatadru Sengupta opened the discussion on the FSSA Amendment Bill 2020 by providing an overview of significant changes that have been introduced in the act. Few of the important proposed changes that were discussed and analysed are as follows:

I. In the preamble, on page 2, it is written "An act to consolidate the laws relating to food and feed to establish the Food Safety & Standards Authority of India" and "to ensure availability of safe and wholesome food for human consumption and animal feed".
Analysis- With the inclusion of words - animal feed and export, we can now expect FSSAI to regulate animal feed and food exports. If FSSAI intends to regulate animal feed, regulations regarding irrigation water, irrigation soil and fertilisers may also need to be drafted and included. When it comes to regulating exports, the implementation of regulations might be challenging as the foreign countries already have their regulations in place and these regulations might not align with Indian regulations.

II. In section 3 (1) (oa) on page 3, the term "food contact material" has been included and it has been defined as "any material in contact with food or intended or reasonably expected to come in contact with food".
Analysis- This is vague and wide in scope and could include any packaging, tiffin box, toys and cooking equipment. It needs more clarification.

III. In section 3 (1) (r), the definition of "food safety audit" has been amended and it states that "food safety audit means a systematic and independent examination of food safety measures adopted by food business".
Analysis- In this new definition, the term "manufacturing units" has been replaced by "food business". It seems that food safety audit could go beyond manufacturing operations and now, other departments like administration, marketing, etc could be subjected to the audit. This needs to be clarified and amended, and only activities directly related to food manufacturing should be audited.

IV. Under section 3 (1) (zd), the definition of "manufacturer" now, also includes brand owner.
Analysis- The brand owner may be a franchisor or owner of a trade mark which he has licensed out to an FBO. This new regulation will also make brand owners liable; this seems unreasonable as in some cases, brand owners may not have any control over the manufacturing process.

V. Section 18 (2) (d) gives FSSAI powers to make regulations in case of emergencies.
Analysis- Currently, when it comes to drafting new regulations, FSSAI is under the supervision of the central government. With the proposed regulation, the power will transfer to FSSAI in emergencies. It is recommended that in case of emergencies if there is no prior approval, there should be a provision for a post facto approval.

Currently, FSSAI may only make regulations with previous approval of the Central Government and after previous publication by notification. Section 18(2)(d) ensures that there is an open and transparent public consultation during the preparation, evaluation and revision of regulations except where there is an urgency concerning food safety or public health. Through the amendment the Food Authority seeks to bypass the requirement of previous approval of the CG and previous publication by notification. The original text should be retained.

VI. Under section 22 (4), the definition of "proprietary food" has been amended. Earlier in the ingredients & additives that are not prohibited were allowed (i.e. not on a negative list). But with the amendment, only the ingredients and additives that are permitted will be allowed (i.e. are on a positive list).
Analysis- The shift from being not on a negative list to being on a positive list can stifle innovation in the food industry. Hence, this change should not be made.

VII. According to section 38 (1) (d), the food safety officer can seize any vehicle, equipment, packaging, labelling or advertising material linked with the food article which may be required as evidence in proceedings under the act. Further, this section states that the items that are seized will be kept in the custody of FBO or in custody of the authority.

Analysis- In case the items are kept in the custody of the authority, it can hamper the business of an FBO. More clarity on this part is needed in the bill, explaining how FBO should work to resolve the problem. Also, transport companies may not always be part of the FBO that is under proceedings. Even though it is the FBO that violates a rule, transport companies too may end up getting dragged in this problem and as a result, this will hinder their operations as well.

VIII. Section 40 (3) states that food testing should be carried out in labs that are recognised by food authority and that the information so collected shall be shared with food authority before releasing the same to the general public.

Analysis- This needs to be amended as the collected information should be shared with the FBO as well. This will allow the FBO to respond to the test results. Also, the test results and the data generated should be barred from being untruthful, disparaging, distorted or misleading.

IX. In Section 92 (2) (e), the deletion of word "guidelines" is proposed.

Analysis- With this change, FSSAI will be empowered to freely issue "guidelines" without any involvement of parliamentary procedures or any oversight from safeguards of the law-making process.

X. In Section 92A (2)(g), FSSAI is being empowered to make regulations about making regulations.

Analysis- This is excessive delegation of powers and it can result in usurping the powers of parliament as well as of central government.

Dr Shatadru also discussed how under various provisions, excessive delegation to FSSAI or to a Ministry is a breach of the Allocation of Business Rules, 1961, framed under the article 77 (3) of the Constitution of India. Then, he talked about the implications of using the word "fine" in various provisions in the act and suggested that it should be replaced with the word "penalty".

Next, Dr Joseph Lewis presented his remarks on the amendments to FSSA. He discussed the transition from PFA to FSSA 2006. He explained how, earlier, we were working towards protecting human life, ensuring food safety and encouraging innovation in the Indian food industry, and that the section 18 in FSSA 2006 guaranteed businesses equal participation. But the amendment of section 18 (2) (d), doesn't provide stakeholders with the opportunity to participate.

He talked about how the amendment does not balance consumer protection with fairness to trade. Also, with the amendment of the "proprietary foods" category, we may end up creating unnecessary hurdles and stifling innovation. He insisted that when we want industry to grow, we need to work towards making regulations that are fair to all the stakeholders. Then, he concluded by emphasizing on the importance of consulting all stakeholders during preparation, examination and revision of regulations.

Dr Lewis' presentation was followed by a panel discussion where each panellist was invited to engage in the discussion and share three sections they feel are most important and should be reviewed critically. The discussion was moderated by Dr Lewis. Some of the key takeaways from the discussion were:

Dr Jasvir Singh talked about how we should take this opportunity to recommend changes in areas which already have been pain points for FBOs. He suggested that prescriptive limitations on RDA levels for products, in section 22, in existing act and prescriptions for solvents that one can use for making plant extracts (section 2 in the existing act has listed only 3 solvents) should be removed. He also discussed how the definitions of GMO, novel foods and proprietary foods need to be amended and improved.

- Dr K D Yadav discussed the need for change in section 18 (2) (d) in the amendment bill. He talked about how the proposed changes are less about science and more about giving powers to FSSAI. He insisted on the importance of having more transparency when it comes to making regulations.

- Mr Rajendra Dobriyal expanded on the inclusion of the word "export" in the preamble and discussed how other countries have the power to regulate what comes in their country. Hence, regulating exports may not be practical.

- Ms Meenu Yadav discussed how removing imprisonment in case of unsafe food, when it is not injurious to health, is a step in the right direction. She, then, talked about how risk assessment should be emphasized more in the FSSAI act. She also pointed out how the term "brand owner" is not defined in the act and it should not be included in the bill if the definition is not clear.

- Mr Abhinav Srivastva emphasized how regulations should be facilitating exports and not just regulating it. He also recommended changes to definitions of GMO and proprietary foods in the bill.

- Dr K.K. Joshi suggested that cause and effect analysis and cost and benefit analysis should be done before revising or introducing any regulations. He also talked about how before adding new elements in the act, we should analyse if we have the infrastructure to implement new regulations.

- Dr Prabodh Halde discussed how section 34 is an area of concern for it may lead to corruption within the system. He also suggested that when we talk about unsafe food causing injury, we need to define the term "injury".

- Ms Rini Sanyal pointed out that the definition of the term "consumer" in amendment is a little confusing and it either needs improvement or it should be taken from the Consumer Protection Act. She also suggested that if an FBO makes an error that is not jeopardizing the consumers' health and if these errors can be rectified or controlled, the term "withdrawal" should be used instead of "recall".

The panel discussion was followed by a Q & A session that was moderated by Swechha. Here are few of the questions that were raised:

Q1. Who is giving the powers to FSSAI? Should we not be going to that Authority rather than to FSSAI regarding this issue?
A- (by Dr Shatadru) The amendment has been issued by the Ministry of Health & Family Welfare. So yes, we can compile all these suggestions and we should approach the Ministry.

Q2. From when will the new RDA become effective and will it be implemented by FSSAI?
A- (by Dr Jasvir) ICMR has already released their RDA values. When it comes to implementation, we need clarity on the timeline. Also, since these new RDA values will affect labelling of nutrition information and claims, FSSAI ought to settle this matter at the earliest.

Q3. Stevia is mentioned as an artificial sweetener. But it is plant based. So shouldn't it be under the category of natural sweeteners?
A- (By Mr Rajendra) FSSAI is currently working on this and now, we might have only two categories- caloric and non-caloric sweeteners. So instead of categorising sweeteners into natural and artificial, they will be categorised based on if they contribute to any calories or not.

The meeting concluded with a vote of thanks to all the participants by Ms Swechha.

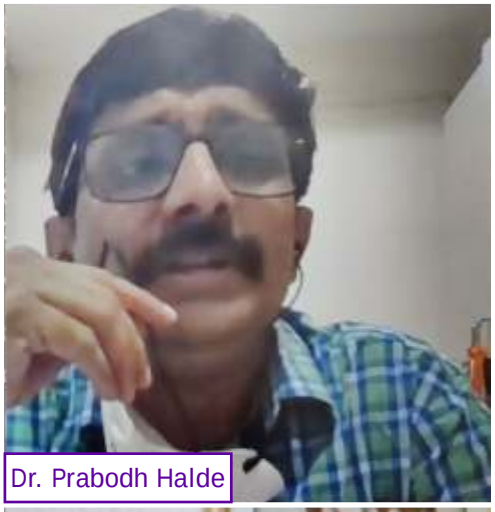

Dr. Pai


Dr. Jasvir Singh


Dr. KD Yadav


Mr. Abhinav Srivastava


Dr. Lewis


Dr. Prabodh Halde


Mr. Rajendra Dobriyal


Ms. Meenu Yadav


Ms. Rini Sanyal


Dr. Shatadru Sengupta


Dr. Krishnakumar Joshi

WEBINAR REPORT

DIABETES: THE MENACE OF TODAY AND HOW TO TACKLE IT

AUTHOR
Seles Gupta,
Food Technologist,
PFNDAI

As part of the campaign against diabetes, Protein Foods & Nutrition Development Association of India in collaboration with ITC's Aashirvaad organised and hosted a webinar on "Diabetes: The Menace of Today & How to Tackle it" on 22 October 2020. The objective of the webinar was to spread awareness and disseminate information about diabetes, how to detect it and the role of diet in managing diabetes.

The webinar was attended by professionals working in the food industry, nutritionists/ dietitians, research scholars, college professors and students. The webinar included an introduction by Ms. Swechha Soni (Manager-Food & Nutrition, PFNDAI), welcome address by Dr. Jagadish Pai (Executive Director, PFNDAI) , presentations by Dr B Sesikeran (Former Director of National Institution of Nutrition, Hyderabad), Dr Shashank Joshi (Senior Consultant, Joshi Clinic), Dr Anoop Misra (Chairman at Fortis CDOC Hospital for Diabetes and Allied Sciences) and Dr Bhavna Sharma (Head Nutrition Science at ITC Foods), Q & A sessions moderated by Dr Sesikeran, announcement of winners of Defeat Diabetes Ad Video Making Contest, and vote of thanks by Ms. Swechha

Event Summary

Presentation I: RDA 2020 for (leaner, active and healthier) Indians

By Dr B Sesikeran

Dr Sesikeran opened the webinar by providing the keynote address highlighting the new RDA (recommended dietary allowance) guidelines that have been issued by NIN (ICMR) and how this will influence the health of the citizens, especially when it comes to managing diabetes. He discussed different factors that have contributed to the rise in numbers of diabetes patients in India in the last few decades. He talked about how urbanization has led to our energy intake being more than the energy expenditure, how this results in energy retention and in turn, in higher body fat and obesity. Next, he discussed the various parameters that have been taken into consideration while drafting the new RDA document. He concluded the address by walking us through key messages from the RDA 2020 and how it is different from the earlier guidelines.

Presentation II: Diabetes 2020

By Dr Shashank Joshi

Dr Joshi provided an overview of diabetes, its diagnosis and symptoms, role of dietary carbohydrates as well as the challenges faced in management and prevention of diabetes. He explained the basic definition of diabetes, different types of diabetes and briefed the audience about the first report on diabetes, found in India around 400-500 BC. He talked about the discovery of insulin, the important events that followed it and how all of these helped the treatment practices to evolve. Next, he explained how carbohydrates are digested in our body, what happens in the case of diabetes, and how a trans-cultural approach can be used to manage patients with diabetes. He helped the audience in getting the basic concept clear on diabetes, setting the platform for understanding how to deal with the condition.

Presentation III:Diabetes- Detection & Management

By Dr Anoop Misra

Dr Misra, in his presentation, talked about the diagnostic criteria for diabetes, whom to screen for diabetes and why it is important to get screened. Then, he explained how Indian phenotypes require us to take a different approach when it comes to maintaining a healthy lifestyle. He talked about the simple phenotypic markers like buffalo hump, double chin, truncal skinfold, and hepatomegaly, that can be helpful in prediction of metabolic syndrome & diabetes in Asian Indians. Next, he explained the characteristics of diabetes in Indians, and the sensitive tests that can help with early detection of the

complications. He insisted on having healthy dietary habits and exercising for managing diabetes. He also discussed how important it is for diabetes patients to control blood sugar levels, especially in these times of Covid.

Q & A Session I

The Q & A session was moderated by Dr Sesikeran. The audience was invited to ask questions and all the questions were jointly answered by all the panellists. Here are few of the questions that were asked:

Ques- What is the role of intermittent fasting?

Ans- Few studies do show that intermittent fasting may lead to weight loss, but it is usually muscle loss that happens during weight loss. In Indian patients, muscle weight is already low. So in this case, intermittent fasting may not be the right way to go. We need more scientific data before we can come to any conclusion.

Ques- Is diet high in protein and low in carbohydrates recommended for diabetes management?

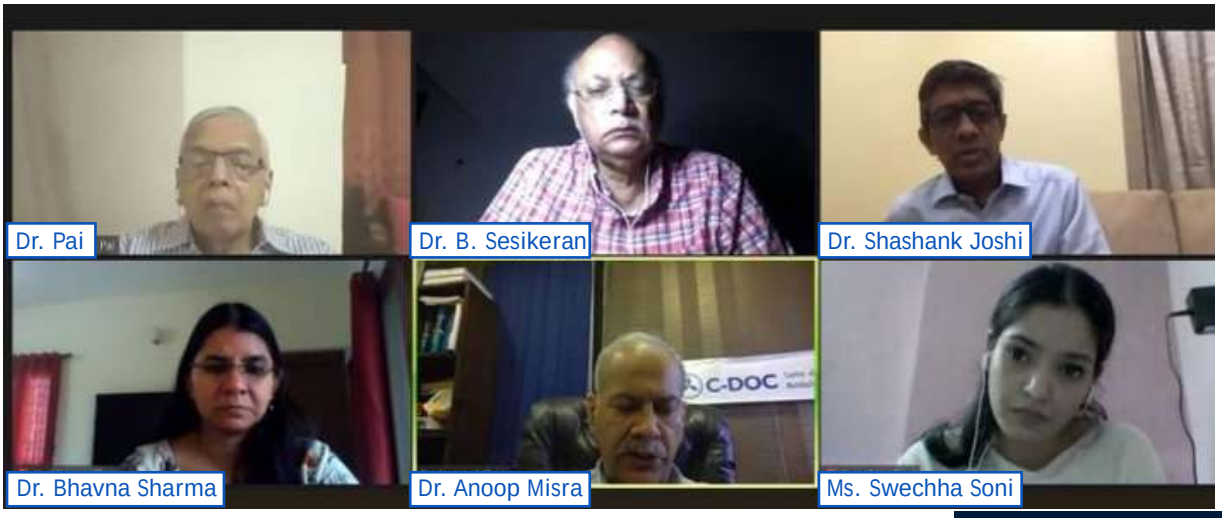
Ans- It is a fad. Complex carbohydrates, if taken in restricted amount, will be good for the heart. If people increase the amount of protein and decrease the amount of carbohydrates drastically, they may face health problems. It is important to consult doctors before making any drastic changes to diet.

Ques- What's the role of non caloric sweeteners in diabetes management?

Ans- Non caloric sweeteners are recognised as safe for consumption. However, they don't provide satiety. This lack of satiety can lead patients to eating more than required, which in turn might lead them to weight gain and obesity. Blending sugar with non caloric sweeteners may be a better approach.

Ques- A lot of early researchers and recently published data are reporting that the people, who have tested positive for COVID-19, will become diabetic. Is that true?

Ans- Not all patients are same. For e.g., there are people who already have diabetes and get COVID-19; another section would comprise of people who are not diagnosed with diabetes but when they do get Covid-19, they are showing symptoms for diabetes and then, there would be people who were completely healthy before getting covid-19 but later, they suddenly get diagnosed with diabetes. When you study all these different scenarios, the results will be different for each case. But it is not necessary that every COVID-19 patient will get diabetes.



Presentation IV: Managing Diabetes through Diet

By Dr Bhavna Sharma

Dr Sharma started her presentation with the misconceptions people in India have about treating and managing diabetes. She discussed how important it is for food formulators to understand diabetes and their consumers' needs when they are developing products to cater to such niche markets.

Next, she covered basic concepts like glycemic index, glycemic load and glycemic response and how these values play a role in creating diet charts for diabetes patients. She also talked about how GI/ GL and glycemic response, alone, are not enough and that there are other factors which need to be taken into consideration too before any significant health claims can be made on any food label. She concluded the presentation by summarizing the dietary guidelines for different types of diabetes.

Q&A Session II

The presentation was followed by a Q & A session where Dr Sesikeran moderated and all the panellists jointly answered all the queries. Here are few of the questions that were answered:

Ques- View of speakers on in-vitro determination of GI as part of development?

Ans- We need to see what are the intent & the purpose of this study. For the research purpose, it is an important milestone and this needs to be understood. But if the results are going to be used in product formulation and development, we need to have human clinical trials.

Ques- Which is worse for diabetes patients- rice or wheat?

Ans- Wheat is a primary source of protein in Indian diet and removing wheat from the diet might lead to removing protein from the diet. So it might be necessary to include wheat in diet, depending on the diet chart of the patient. However, not all wheat products are good option; white flour may not be healthy as dietary fibre and few micronutrients get removed from its composition during its processing. When it comes to deciding which wheat products to add in the diet, whole wheat flour products would be a better option than refined flour products with low bran. In the case of rice, again, some rice products will be better than others. For example, parboiled or brown rice is a better choice when compared to highly polished rice because parboiled rice has lower GI. Now, when it comes to comparing rice and wheat, we need to be specifying which wheat and rice products we are taking into consideration before we come to any conclusion.

The day ended with a vote of thanks to the attendees, panellists, and everyone on the organising team.

Webinar Flyer

RESEARCH IN HEALTH & NUTRITION

Dietary folate, magnesium, and dairy products may all help stave off bowel cancer, study finds

But no evidence for protective effect of garlic and onions, tea, coffee, or fish

Science Daily September 28, 2020

Folate, magnesium, and dairy products may all help stave off bowel cancer, but there's no evidence that garlic or onions, fish, tea or coffee protect against the disease, finds an overarching analysis of published pooled data analyses in the journal Gut.

In the US alone around 1 in every 20 people is likely to develop bowel cancer at some point during their lifetime. And worldwide, more than 2.2 million new cases and 1.1 million deaths from the disease are predicted every year by 2030. While deaths from the disease have been falling in most developed countries, the numbers of new cases have been rising in some, including in Canada, the UK, and the Netherlands. Screening for the disease can pick up the disease at an early treatable stage, but take-up varies considerably from country to country. And as it takes more than 15 years for bowel cancer to develop, a healthy lifestyle likely has a key role in helping to halt or stop its progress altogether, say the researchers. They therefore trawled relevant research databases for published systematic reviews and meta-analyses (pooled data analyses) of clinical trials and observational studies assessing the impact of dietary and medicinal factors on bowel cancer risk. The medicinal factors included: aspirin; non-steroidal anti-inflammatory drugs (NSAIDs), such as paracetamol; and statins. The dietary factors included: vitamins or supplements (magnesium, calcium, folic acid, vitamin A, B, C, E, D, β-carotene and selenium); coffee; tea; fish and omega 3 fatty acids; dairy products; fibre; fruit and vegetables; meat; and alcohol. They included relevant studies published in French or English between September 1980 and June 2019, but excluded those involving people at high risk of developing bowel cancer. Some 80 articles out of a total of 343 were included in the overarching (umbrella) analysis of pooled data analyses.

The results showed that aspirin is likely protective against bowel cancer, lowering the risk by between 14% and 29% at doses as low as 75 mg/day, with a dose-response effect reported up to 325 mg/day. NSAID use for up to 5 years was associated with a significant (26% to 43%) fall in the incidence of bowel cancer. Magnesium intake of at least 255 mg/day was associated with a 23% lower risk compared with the lowest intake, and high intake of folic acid was associated with a 12-15% lower risk, although it wasn't possible to pinpoint a threshold dose from the available data. Similarly, eating dairy products was associated with 13% to 19% lower risk of the disease. But the small number of available meta-analyses, and the many different research outcomes and variety of dairy products included make it difficult to draw firm conclusions about the quantities required to ward off the disease, caution the researchers.

Fibre intake was associated with a 22%-43% lower risk, while fruit/vegetable intake was associated with up to a 52% lower risk, with added benefit for every additional 100 g/day increase in intake. Dietary soy intake was associated with a modest, but significant, fall (8-15%) in risk. But there was no evidence that vitamins E, C, or multivitamins were protective. Similarly, there was no evidence that β-carotene or selenium helped stave off the disease.

The data were weak or equivocal on the impact of tea; garlic or onions; vitamin D either alone or combined with calcium; coffee and caffeine; fish and omega 3; and inconsistent on the protective effect of vitamin A and the B vitamins. A modest protective effect was found in observational studies for high calcium intake, but a meta-analysis of clinical trial data found no protective effect, and even an increased risk.

Similarly, although meta-analyses of observational studies suggest that statins may lower cancer risk, no positive effect was noted in meta-analyses of clinical trial data. Most of the available meta-analyses of observational studies reported an increased risk of between 12% and 21% for meat, particularly red and processed meat. Dose-effect studies reported a 10-30% increased risk for each additional 100 g/day of red meat eaten.

Alcohol was associated with a significantly increased risk. The higher the intake, the greater the risk. This was evident even at the lowest level of consumption studied: 1-2 drinks/day. The researchers caution that the level of evidence is low or very low in most cases, mainly due to wide differences in study design, end points, numbers of participants, etc.

And they were unable to define "an optimal dose and duration of exposure/intake for any of the products, even in the case of low dose aspirin and other compounds that have been extensively assessed," they point out. Nevertheless, they suggest that their findings could help clinicians advise patients on the best diet to lower bowel cancer risk and guide the direction of future research.

Authoritative new analysis links increased omega-3 intake to cardio-protection and improved cardiovascular outcomes

Science Daily
September 17, 2020

Study indicates that EPA and DHA supplementation reduces multiple types of cardiovascular risk

A new study published in Mayo Clinic Proceedings provides the most comprehensive analysis of the role of omega-3 dosage on cardiovascular prevention to date. The meta-analysis, which is an in-depth review of 40 clinical trials, provides authoritative evidence for consuming more EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid) omega-3 fats.

The research concludes that EPA and DHA omega-3 intake is associated with reduced risk of coronary heart disease (CHD) events, the cause of 7.4 million deaths globally each year, and reduced risk of myocardial infarction (heart attack), including fatal heart attack. Specifically, the study found that EPA+DHA supplementation is associated with a statistically significant reduced risk of:

- Fatal myocardial infarction (35 percent)
- Myocardial infarction (13 percent)
- CHD events (10 percent)
- CHD mortality (9 percent)

"The study supports the notion that EPA and DHA intake contributes to cardio-protection, and that whatever patients are getting through the diet, they likely need more," said Carl "Chip" Lavie, MD, a cardiologist at Ochsner Health in New Orleans, LA, USA, and one of the study authors. Cardiovascular benefits appear to increase with dosage. The researchers found that adding an extra 1000 mg of EPA and DHA per day decreased the risk of cardiovascular disease and heart attack even more: risk of cardiovascular disease events decreased by 5.8 percent and risk for heart attack decreased by 9.0 percent. The study looked at dosages of up to 5500 mg/day. This research corroborates the results of an earlier meta-analysis from Harvard School of Public Health, published in fall 2019, that looked at EPA and DHA dosage using the 13 largest clinical studies. This new paper encompasses more than triple the number of studies, which represents the totality of the evidence to date and includes more than 135,000 study participants. "When separate analyses arrive at similar results, that's not only validating; it also underscores the science base needed to inform future intake recommendations," said co-author Aldo Bernasconi, PhD, Vice President of Data Science for the Global Organization for EPA and DHA Omega-3s (GOED), Salt Lake City, UT, USA, which commissioned this study. "Because this paper included more studies and all dosages, the estimates for a dose-response are more precise and the conclusions stronger."

EPA and DHA omega-3s are long-chain, marine-based fatty acids. Eating fish, particularly fatty fish such as salmon, anchovies and sardines, is the optimal way to get EPA and DHA omega-3s, since fish also provides other beneficial nutrients. However, most people around the world eat much less than the amount of fish recommended, so supplementing with omega-3s helps close the gap. "People should consider the benefits of omega-3 supplements, at doses of 1000 to 2000 mg per day -- far higher than what is typical, even among people who regularly eat fish," added Dr. Lavie. "Given the safety and diminished potential for interaction with other medications, the positive results of this study strongly suggest omega-3 supplements are a relatively low-cost, high impact way to improve heart health with few associated risks and should be considered as part of a standard preventive treatment for most patients with cardiovascular diseases and those recovering from myocardial infarction."

HMB paired with vitamin D3 improves muscle function in older adults without exercise

14 Sep 2020
Nutrition Insight

Muscle loss in older adults can be minimized by combining beta-hydroxy beta-methyl butyrate (HMB) and vitamin D, according to a new study supported by supplement supplier TSI. The key finding was that adults over 60 can improve and sustain muscle strength – without physical exercise.

"For the past two decades, HMB has evolved from a sports nutrition product to a more universal muscle health ingredient for medical and adult nutrition. This study is further validation of the value and benefits of HMB on muscle health, from athletes to the aging adult," Larry Kolb, president of TSI, tells NutritionInsight.

Preventing muscle loss with HMB and vitamin D

Published in The Journals of Gerontology, the 12-month long study assigned 117 healthy elderly adults to four groups: control group without exercise; control group with exercise; HMB with vitamin D and without exercise; and HMB with vitamin D and with exercise. The exercise consisted of 60-minute supervised progressive resistance training sessions three days a week. Researchers measured physical function, muscle strength and body composition at three-month intervals. In the non-exercising group, participants taking HMB and vitamin D experienced more significant improvements in physical function and tended to have greater increases in strength than participants did taking the placebo supplement. They were also able to sustain this improvement throughout the year. Moreover, the moderate resistance training did not provide any further benefit over either exercise or HMB+D alone. The results are indicative of HMB's dual mechanism of action, namely stimulating muscle protein synthesis and lessening muscle protein breakdown. "Together, these two actions help regulate muscle protein balance to improve the overall quality and function of the muscle," Kolb explains.

Strengthening the scientific backing

This investigation was preceded by a year-long, placebo-controlled study of HMB. It had found that HMB increased lean body mass in adults over age 65 but didn't appear to improve strength. "A retrospective analysis of that data revealed that those individuals with sufficient vitamin D status experienced robust strength improvements, while those with insufficient vitamin D did not," Kolb underscores. This observation suggests that HMB and vitamin D may have a synergistic effect when supplemented together. This latest study has "reconfirmed" the synergistic benefit between the two nutrients, adds Kolb. In June, TSI acquired Metabolic Technologies (MTI), a research-driven company responsible for the discovery of HMB, which is naturally produced during leucine metabolism. "The acquisition strategically aligns TSI's HMB manufacturing and business development capabilities with MTI's HMB patent portfolio and clinical research. It supports capabilities into one integrated company that is poised to expand HMB distribution and market awareness through our key brand partners globally," Kolb notes.

Physical exercise still encouraged

TSI's HMB-vitamin D supplement is designed to aid seniors who are unable or unwilling to exercise. This may include people who are frail or have age-related muscle loss, the company states. "Our aspiration is to establish the category of muscle health within the industry. Simultaneously, we will be actively working to generate awareness for consumers on the value of HMB and vitamin D as the primary nutrient combination for optimal muscle health," Kolb details. However, he stresses that the study's findings "definitely do not" encourage older adults to skip out on exercise. "In addition to its importance for muscle health, exercise has a multitude of benefits for older adults. This study indicates HMB supplementation may be a very valuable tool for people who can't or won't exercise. It might even help people get back to where they can start to exercise," he emphasizes. Ultimately, exercise is "always the most powerful activity" to fight muscle loss, Kolb concludes.

By Anni Schleicher

Inner well-being as "symbiotic relationship" of gut, brain and beauty-from-within spaces

01 Sep 2020 Nutrition Insight

Inner well-being is a multifaceted sector in the nutrition industry, encompassing topics from gut and brain health to beauty-from-within.

This blend of major industry trends makes it more challenging to pinpoint the market applicability. A coherent definition of "well-being" would also facilitate making its relevance much clearer to consumers. NutritionInsight speaks with experts from NZMP, Sensus and SternLife to unveil the most influential trends in the inner well-being space and how it could transform in the future. "Feeling good on the inside leads to feeling good on the outside as well. This goal is reached by taking care of your inside – meditation, cognitive training, positive thinking – through the right nutrition, behaviour and mindset," says Lüder Holsten, Product Manager at SternLife. This is what he calls a "symbiotic relationship." Similarly, inner well-being varies from person to person, according to Rob Lilly, Head of Global Marketing & Communications, Sport & Active Lifestyles from NZMP. "What one person thinks is their perfect state of well-being may be completely different from another person."

NZMP understands the primary barriers consumers face to finding inner well-being as falling into the emotional, intellectual and physical health categories. Emotional health comprises the ability to stay positive amid the obstacles life and work bring. While intellectual health means maintaining an optimal cognition to process learning and decision making, keeping up physical health impacts sleep, immunity and mobility.

At Sensus, the Netherlands-headquartered company mainly defines inner well-being as having a healthy digestive system. "Key to the gut system is the gut microbiome. A central approach to maintaining inner well-being is to ensure the number of beneficial bacteria in the gut is in sufficient abundance," says Dr. Veerle Dam, the company's Science and Regulatory Affairs Specialist.

Quantifying inner well-being

Measuring "inner well-being" may not be as straightforward as heart health or weight loss. "It's difficult to quantify the success of inner well-being strategies. It's more about the general feeling and health perception of the consumer, rather than any measurable number. In general, 'holistic health' concepts, as well as natural and organic ingredients, are promising approaches," says Astrid Pomrehn, R&D at SternLife.

Meanwhile, Lilly affirms that measuring inner well-being is determined by the aspect being investigated. "When we conduct clinical studies into areas such as cognitive performance, we typically take a range of measures such as mood, anxiety and depression measures. These are determined by observing what measures are typically used in existing research." Here, he highlights that aspects of inner health are not independent of physical health. "Often, these are related. For example, stress can affect sleep, which can impact weight change, which can influence emotion."

Taking this quantitative approach in the gut health space, Sensus calculates inner well-being by the number of bifidobacteria or improved outcomes related to a healthy gut, such as stool frequency and stool consistency. "The number of bifidobacteria can be measured using different methodological approaches, from traditional plate counting of bifidobacteria colonies to more novel high throughput 16S rRNA-based approaches," Dr. Dam maintains. Lilly adds that the communication of such scientific results is critical to improving consumer education. "When it comes to communicating results, it is about translating scientific findings into something meaningful to a consumer and their quality of life. Trying to say that X ingredient changes Y hormone doesn't mean anything to most people. But if you can say 'X ingredient helped everyday people like you to achieve ABC,' then it becomes a more compelling story."

Gut health and immunity booming in inner well-being

Within the inner well-being space, gut health is top of mind for Jolanda Vermulst, Manager Marketing Intelligence at Sensus. "The gut microbiome has become a touchpoint for all aspects of health and wellness. Over the last decade, it has become clear that the health of our digestive system plays a role in overall health." Besides the gut health trend, Holsten also sees the beauty-from-within sector as increasingly associated with inner well-being.

"Creams and lotions will never go away, but more consumers are looking for foods that improve their skin, hair, nails and appearance from the inside through targeted nutrition," he details. Moreover, interest in brain health is bringing mood enhancers and cognitive function boosters to the fore. "Formerly assumed to be purely psychological or emotion-driven, moods and feelings are now seen as also being linked to nutrition," Holsten adds. Within these two subsectors, there appear to be no signs of decelerating consumer interest in natural solutions.

"Antioxidants and superfoods have been in the public eye for many years now," adds Pomrehn of SternLife. "Together with plant extracts, adaptogens, new plant-based proteins and more, these are ingredients that consumers look for on labels and will [be rewarded] by purchasing those products."

Spotting future trends

The future of the inner well-being trend is bound to continue to branch out in different directions. According to Vermulst at Sensus, the naturality trend is maturing consumer preferences for clean label products and macronutrient reductions. "Sugar, fat, calories and the total number of ingredients in food applications must be reduced. Consumer demands have assured this," she says. "The clean label movement helped lead us to this place, where featuring simpler and more wholesome ingredient statements is the primary touchpoint of the entire product development process. This could lead indirectly to nutritional product reformulations with less calories," Vermulst predicts.

NZMP expects to see more products targeting stress management in the coming few years. Moreover, the company is observing how NPD isn't always about new ingredients per se. "Sometimes, it is about repositioning familiar foods and ingredients as new research comes to light. As the market around mental health products explodes, we expect to see increasing scrutiny from consumers." Also, Lilly observes two contrasting behaviours from consumers. "Some fall back to ensuring their basic nutrition is sound, so are seeking out foods with high-quality proteins and all-natural ingredients. Others look for sophisticated and specialized ingredients like nutraceuticals, probiotics and prebiotics."

Ultimately, both Holsten and Pomrehn at SternLife predict immunity, gut health and adaptogens will continue to boom. Beauty-from-within and brain health are expected to follow as "still popular" trends.

By Anni Schleicher

BMI bigger risk factor than genetics for Type 2 diabetes, research finds

01 Sep 2020 Nutrition Insight

Weight loss could prevent or even reverse Type 2 diabetes, according to research presented at the European Society of Cardiology (ESC) Congress 2020.

In its analysis of 445,765 participants of the UK Biobank, the researchers found that people in the group with the highest body mass index (BMI) had a greater likelihood of developing Type 2 diabetes than all other BMI groups, regardless of genetic risk. The researchers now flag that it may also be possible to reverse diabetes by losing weight in the early stages before permanent damage occurs. "Weight should now become the focus of both screening for and preventing diabetes. Public health policies can encourage people to monitor their BMI and HbA1c over time to identify if they have exceeded their personal BMI threshold for insulin resistance," principal investigator Professor Brian Ference of the University of Cambridge, UK, and University of Milan, Italy, tells NutritionInsight. He stresses that each person is likely to have a different threshold, which is defined as the BMI at which they start to develop abnormal blood sugar levels. If they have exceeded this, a healthy diet can help them reduce their weight to below their BMI threshold for insulin resistance, he continues. "A healthy diet then becomes the best way a person can maintain that weight loss to stay below their BMI threshold for insulin resistance, thus preventing the development of diabetes."

Additionally, study findings indicate that most diabetes cases could be avoided by keeping BMI below the cut-off that triggers abnormal blood sugar. This means that both BMI and blood sugar should be assessed regularly to prevent diabetes, Ference highlights. The next step for the researchers is to identify a genetic test that can predict each person's BMI threshold for insulin resistance. Such a test could alert people to when they are close to their BMI threshold for insulin resistance and motivate them to maintain a healthy diet that keeps their weight below this threshold, thus preventing their risk of developing diabetes. "It could also help people with diabetes know how much weight they have to lose in order to reverse diabetes by reducing their BMI below their personal threshold for insulin. Researchers are currently working on this genetic test, and it may be available very soon," Ference further explains.

An 11-fold increased risk for highest BMI group

The study specifically evaluated Type 2 diabetes in the UK Biobank group. The average age of participants was 57.2 years old, and they were followed-up until an average age of 65.2 years. During that period, 31,298 developed Type 2 diabetes. Inherited risk of diabetes was assessed using 6.9 million genes and used to divide participants into five groups. They were also divided into five groups according to BMI. It was revealed that participants in the highest BMI group had an 11-fold increased risk of diabetes compared to participants in the lowest BMI group. Ference notes that the study findings indicated that BMI is a much more powerful risk factor for diabetes than genetic predisposition. However, the duration of elevated BMI did not have an impact on the risk of diabetes. This suggests that when people cross a certain BMI threshold, their chances of diabetes go up and stay at that same high-risk level, regardless of how long they are overweight. "The finding that increased BMI is a much stronger risk factor for diabetes than polygenic predisposition was not that surprising. The most surprising finding was that the effect of increased weight appears to have a threshold effect rather than a cumulative effect," explains Ference. "This finding implies that increased weight does not cause insulin resistance slowly over time by 'wearing out' the beta cells in the pancreas. Remaining above the BMI threshold, or gaining more weight, will increase insulin resistance and eventually lead to diabetes," he continues.

The results of this study suggest that the treatment of diabetes should refocus on having dual primary goals, Ference argues. Firstly, as is currently the case, plasma glucose should be controlled to prevent the micro- and macrovascular complications caused by elevated plasma glucose levels. Secondly, greater emphasis should now be placed on aggressive weight loss as a strategy to lower BMI below a person's threshold for insulin resistance in an explicit attempt to reverse diabetes. Newer agents such as GLP-1 receptor agonists or SGLT2 inhibitors can both control glucose and lead to substantial weight loss – and could become first-line therapy to reverse diabetes by reducing BMI below a person's insulin resistance threshold, he concludes. Industry has been addressing specific concerns in the diabetes space, with medical probiotic Pendulum Glucose Control recently demonstrating improvements to A1C (a form of hemoglobin often indicative of diabetes) and blood glucose spikes in people with Type 2 diabetes. Meanwhile, Euromed's ABAlife fig extract has been found to promote insulin sensitivity.

Edited by Katherine Durrell

Indian botanical shown to strengthen adaptive immunity in 30 days trial

By Tingmin Koe 02-Sep-2020 - NutraIngredients Asia

Green chiretta, otherwise known as andrographis paniculate, a plant native to India and Sri Lanka, has shown to strengthen the body's adaptive immunity against pathogens in a 30-day clinical trial.

Test subjects supplemented with the plant extract had seen an increase in their immune cells count, especially T-cells, T helper cells, and IFN-γ. Researchers said this study showed that the botanical was able to balance the effects of immunity and inflammation. The open-label, single centre trial was conducted in May and June this year. Thirty healthy subjects, aged 18 to 60, were recruited. All were required to take in a capsule containing 100g standardized extract of andrographis paniculate leaves twice per day. The capsule contains seven bioactives, namely andrographolide, isoandrographolide, neoandrographolide, 14-deoxy-11, 12-didehydroandrographolide, andrograpanin, skullcap flavone-I, and 7-O-methylwogonin. The formulation is developed by Indian ayurvedic botanical ingredient firm Natural Remedies – also the funder of this study. The ingredient is registered as Ap-Bio or KalmCold in the European markets. As part of this study, the subjects' immune cell count, in particular, NK cell, T cells, T helper cells, as well as blood serum cytokines were measured at the baseline, 3 , 7 , and final day of the trial.

Results showed that the supplementation had increased immune cells count, such as lymphocytes, T cells(CD3+) and T helper cells (CD4+) by the end of the study. These are white blood cells key in building up adaptive immunity. The increase was especially significant in individuals with lymphocytes count ranging from 1,000 to 3,000 per μL of blood. The normal lymphocyte range is between 1,000 and 4,800 per μL of blood. In this group of subjects, their number of T cells CD3+ and CD4+ increased from the baseline of 912.9 ± 217.7 cells/μL to 1185 ± 345.8 cells/μL of blood. This was a significant increase as the p-value was lower than 0.05 at 0.001. The increase in white blood cells has in turn led to the production of more cytokines IFN-γ and IL-4, the study has showed. With IFN-γ as an example, it increased from the baseline of 5.5 ± 8.7 pg/mL to 20.8 ± 14.4 pg/mL of blood. While there is an increase in T-cells, there was no significant increase in other cells important for building the immunity, such as NK cell, cytotoxic T lymphocytes, IL-12, and TNF-α cell count. The supplement was also found to be well-tolerated by the body. The latest and earlier findings have showed that the ingredient works by strengthening both innate and adaptive immunity. Innate immunity is activated when the body detects a threat and mounts a general response to stop its spread. Adaptive immunity, on the other hand, is acquired through exposure to microbes over the lifetime. It is activated when the body recognises a threat it has previously encountered.

The company said previous preclinical research has found that the ingredient modulates innate immunity by enhancing natural killer (NK) cell activity and the process in which macrophages engulf and kill invading pathogens. A human clinical study published in Phytomedicine showed that it was effective for reducing symptoms of common cold. "An interesting aspect of AP-Bio is that it seems to have balancing effects on immunity and inflammation, particularly in the context of respiratory health," said Dr Deepak Mundkinajeddu, head of research and development at Natural Remedies. The ingredient has been certified non-GMO, kosher, halal, vegan, and non-dairy. "Consumers are serious about defending their immunity, and increasingly, they are looking for natural solutions that have the science to prove they work," Abey Thomas, assistant GM of global marketing added.

FOOD SCIENCE & INDUSTRY NEWS

Rapeseed instead of soy burgers: Researchers identify a new source of protein for humans

Science Daily September 30, 2020

Rapeseed has the potential to replace soy as the best plant-based source of protein for humans. In a current study, nutrition scientists at the Martin Luther University Halle-Wittenberg (MLU), found that rapeseed protein consumption has comparable beneficial effects on human metabolism as soy protein.

The glucose metabolism and satiety were even better. Another advantage: The proteins can be obtained from the by-products of rapeseed oil production. The study was published in the journal Nutrients. For a balanced and healthy diet, humans need protein. "It contains essential amino acids which cannot be synthesized in the body," says Professor Gabriele Stangl from the Institute of Agricultural and Nutritional Sciences at MLU. Meat and fish are important sources of high-quality proteins. However, certain plants can also provide valuable proteins. "Soy is generally considered the best source of plant protein as it contains a particularly beneficial composition of amino acids," says Stangl. Her team investigated whether rapeseed, which has a comparably beneficial composition of amino acids, could be an alternative to soy. Rapeseed also contains phytochemicals -- chemical compounds produced by plants -- which could have beneficial effects on health, says Stangl. "So far, only a few data on the effect of rapeseed protein intake in humans had been available," adds the scientist. In comparison to soy rapeseed has several other advantages: It is already being cultivated in Europe and the protein-rich by-products of the rapeseed oil production could be used as ingredients for new food products. These by-products are currently used exclusively for animal feed.

In a study with 20 participants, the team investigated the effect of ingested rapeseed and soy proteins on human metabolism. Before the interventions the participants were asked to document their diets for a few days. Then they were invited to eat a specifically prepared meal on three separate days: noodles with tomato sauce, that either contained no additional protein, or was enriched with soy or rapeseed protein. After the meal, blood was regularly drawn from the participants over a six-hour period. "By using this study design, we were able to assess the acute metabolic response of each study participants to the dietary treatments." says Stangl. The study showed: "The rapeseed protein induced comparable effects on metabolic parameters and cardiovascular risk factors as soy protein. Rapeseed even produced a slightly more beneficial insulin response in the body," says nutritionist Christin Volk from MLU. Another benefit was that the participants had a longer feeling of satiety after eating the rapeseed protein. "To conclude, rapeseed appears to be a valuable alternative to soy in the human diet," says Volk. The only drawback: "Rapeseed protein, in contrast to soy protein, has a mustard flavour," says Volk. Therefore, rapeseed is more suitable for the production of savoury foods rather than sweet foods, explains the researcher. The work was supported by the Union for Oil and Plant Technology e.V. (UFOP, grant number: 528/181).

Future Food-Tech sees personalized technology address COVID-19, gut health and mood

17 Sep 2020 Nutrition Insight

Kicking off today, Future Food-Tech's online summit is focalizing how technology can be harnessed to drive personalized nutrition.

Positioned as a platform for disruptive F&B start-ups, this year's summit is home to a range of fledgling businesses who speak to NutritionInsight about how their innovations can address everything from COVID-19 to gut health. Despite the number of companies looking to the personalization space, Philipp Merk, founder and managing director of blood-testing company Loewi, is not yet concerned about oversaturation.

The company helps consumers recognize nutrient deficiencies and then provides personalized supplements. “The personalization market is still in its infancy. We differentiate ourselves by the level of personalization. Our engine considers interactions with diseases, medications and allergies and is based on our science database of more than 15,000 scientific studies,” he explains. The company has just announced that it is conducting an EU-funded study with TU Munich to find out whether deficiencies in micronutrients reveal a correlation with the severity of disease in COVID-19 patients. The researchers will also examine whether personalized supplementation can improve COVID-19 patient outcomes.

Real-time gut insights

Meanwhile, Atmo Bioscience offers ingestible gas-sensing capsules that provide real-time insights into gut health and microbiome function. The capsule and platform are now available to customers for research purposes. “Understanding microbiome function and its role in individual gastrointestinal physiology are crucial for a personalized approach to therapy – and for gut health and wellness more generally. Atmo enables an understanding of an individual’s physiology so that a tailored approach to therapy can be adopted, whether in the form of dietary or pharmacological intervention,” explains CEO Malcolm Hebblewhite. He continues that the potential extends to consumer health applications. “You can imagine a customer using the Atmo capsule and digital platform to create a gut health profile by establishing a baseline. Then they ingest capsules at regular intervals or in conjunction with personalized diets or therapies to monitor and manage their ongoing gut health and wellness.”

Mood health reigns

MyAir is showcasing its stress-relief superfood bars, which are tailored to its customers’ needs. Another company active in the nascent personalization space is MyAir, which is showcasing its stress-relief customized superfood bars. The infused botanical extract formulations are designed to reduce stress and are tailored to personal stress levels. The products are available on a subscription service basis and delivered monthly to consumers’ doorstep. Deep profiling machine learning technology enables personalization. “The next generation of the food industry is ‘food that works for me,’ personal and functional nutrition. Luckily, we live in the age of big data. Consumer segmentation is driven by the affordability of psychological and physiological markers,” says Rachel Yarcony, founder and CEO of MyAir. She adds that another important trend is “food for mood.” “Super-plants are nature’s best technology, and our innovative ability to combine body and mind creates food with a purpose.” Stress and sleep have been major factors in recent industry innovations as COVID-19 heightens pressure in many people’s lives. PepsiCo is the latest company to reveal NPD in this arena following the launch of an enhanced water called Driftwell that uses L-Theanine and magnesium to help consumers relax, de-stress and sleep better.

Embracing technology

Spoonshot leverages AI and ingredient nutrition data sets to help companies increase the nutritional value of their products. Another theme prevalent among the start-ups showcasing at Future Food-Tech is the importance of technology. Hebblewhite details how Atmo leverages the ubiquitous nature of smart phones and the cloud, and the growing use of artificial intelligence (AI) in digital health applications. Also embracing AI is Spoonshot, which leverages AI and ingredient nutrition data sets to help companies identify opportunities to increase the nutritional value of their products while retaining the essence of the flavour. Kishan Vasani, co-founder and CEO, explains that AI and a data-led approach can help address some of the prevalence of obesity and other chronic diseases around the world. “There are many tools that are now looking at a person’s gut microbiome to recommend diet changes and genetic marker-based diets. Nutrition AI bots look at logging a person’s lifestyle to recommend changes to help with the objectives they want to achieve. These could range from weight loss and reduced blood sugar levels to increased health and wellness,” he explains. Also in attendance is NutriLeads, which recently launched its first health ingredient based on a carrot-derived fibre. Xtramune addresses immunity, and the company is set to continue the development of its portfolio of ingredients focused on gut health and metabolic health following a Series B financing round. Finally, Biosyntia uses technology to create fermented vitamins and other nutraceuticals. Earlier this week, it launched what is touted as “the world’s first” natural, fermented biotin, called BIO-B7.

By Katherine Durrell

Ready meals industry addresses personalization, weight loss and senior nutrition demands

17 Sep 2020 Nutrition Insight

The ready meals industry segment is seeing a boom in demand for nutritious options that also cater to specific health needs. In this space, companies like Golo, Silver Kitchen, Territory Foods, Mighty Macros and Sprinly are enjoying increased popularity.

With personalized nutrition on the fast track of industry trends, ready meals are also entering the arena, especially as COVID-19 lockdowns reduce consumers' mobility. Weight loss, senior nutrition and plant-based are also proliferating themes in these convenient options. According to Innova Market Insights, value and volume growth for meal kits averaged at 3.5 percent and 3.7 percent, respectively over the last five years. In 2019,

Unilever, driven by its Knorr brand, was the leading company for meal kits launches. Personalization comes into play with diet-specific meals (lentil-based protein, low fat/high protein, Keto, Atkins), gourmet and organic options, vegan ingredients and a variety of international flavors (Caribbean, Asam Laksa, Hawaiian, Vietnamese). "Personalized nutrition is making a comeback. Today's consumers recognize the benefit of these practices and at Golo we make an effort to teach consumers how to prepare these foods. This is while maintaining the nutrient content and combining foods for balance, which are essential," a Golo spokesperson tells NutritionInsight.

Boosting metabolic health

US-based Golo's Metabolic Plan is based on eating real, whole foods while avoiding processed and packaged foods. "It's not a 'conventional diet' but rather a healthy eating plan. The plan shows you how to put your meals together to sustainably lose weight. We do not tell you specific things that you have to eat but simply give you a guideline to follow," the company notes. Since consumers choose the foods they eat, they can personalize the plan to their own individual tastes and preferences. This significantly increases the chances of customer success as it puts consumers in control, the company says.

Introducing Golo's Release

Golo has also launched Release, which is a patented formulation containing seven plant-based ingredients and three minerals that have been clinically shown to improve metabolic health which is key to sustainable weight loss. The natural ingredients in Release work together to address the underlying cause of weight gain and help to repair the metabolism. "Dietary supplements are either designed for functional purposes or for nutrient supplementation when one is deficient or lacking a nutrient. Supplementation should not be used in place of whole foods to provide nutrition as the benefit of protein, fats, carbohydrates, vitamins and minerals cannot be ignored," the Golo spokesperson affirms. They go on to explain that consumers are unaware of the distinction between terms like "fortified" or "functional" when making dietary food choices. Often, poor eating habits are justified with the option to "take a supplement," hoping to make up the nutritional difference. "It is important for Golo consumers to become part of the process of making quality food choices to address both present and future health demands that can be related to micronutrient deficiencies. Golo supports this effort through social networks, internal coaching resources, and educational materials," the spokesperson says.

Nutrition at your doorstep

Silver Cuisine is addressing the nutrition demands of the elderly by making eating healthy easy. The company says it gives consumers the flexibility that they need, the variety they crave and the convenience of home delivery. "Our rotating menu includes over 150 alternating meal options. With no contracts or minimum orders, Silver Cuisine fits any lifestyle. Ordering is easy – simply select the meals you wish to have delivered, and we'll take care of the planning, shopping, cooking and delivery," the company notes. In the same space Territory Foods, a chef-crafted, nutritionist-designed healthy meal delivery service allows consumers access to an ever-rotating menu of over 30 meals per week. These are prepared by the company's multi-local network of professional chefs and can be personalized according to appetite, lifestyle and taste. In addition to premade meals, family-style sides and mains, desserts and snacks, Territory offers Market Boxes featuring a rotating assortment of chef-sourced farm-fresh fruits and vegetables, as well as dry goods such as grains, legumes, spice packs and sauce kits.

Plant-based and counting macros

Mighty Macros is another healthy meal delivery service, designed by dietitians to support consumers' weight loss goals. The company says its mission is to make clean and healthy meals accessible to all. Sprinly is a fast-growing, organic, plant-based meal delivery e-commerce brand. Designed for quick results, Mighty Macros' dietitians have cut down the calories for each dish to 350 or less, but have not forfeited the nutrition needed to live a healthy life. "Fad diets can gain popularity fast but are not always safe," says James Hughes, Mighty Macros' in-house dietitian. "Our weight loss plan gives consumers a healthy way to reach their goal weight without sacrificing their well-being.

Our dietitian-designed, chef-created menu is updated weekly to provide variability and well-rounded meals. Customers can eat worry-free knowing they are getting clean, sustainable nutrition." Lastly, tapping into plant-based trends, Sprinly is a US-based, organic, plant-based meal delivery e-commerce brand, which has been pegged as one of the fastest-growing private companies across the country. "Nine out of ten Americans don't eat enough vegetables, and our meals help solve this big issue in a convenient way," says Mary McCann, co-founder and COO.

By Kristiana Lalou

Process boosts omega 3 content and shelf life without changing sensory properties

11 Sep 2020 Nutrition Insight

A new processing technique can enrich the omega 3 fatty acid content in a range of foods, without changing important sensory values. It works by boosting the quality of active ingredients of the polyunsaturated fatty acids (PUFAs) in fish oil, which is then used in fortification.

"The process uses continuous flow processing so that it can be scaled up for commercial considerations. The price is very competitive relative to conventional homogenization, for which the quality of the product is limited," Colin Raston, professor of clean technology at Flinders University in Australia, tells NutritionInsight. The scientists are now in the process of securing industry partnerships. The other researchers involved are from Guangzhou University, the University of Cincinnati and the Australian Nuclear Science and Technology Organisation (ANSTO). They developed a continuous thin film vortex fluidic device (VFD). In comparison to standard homogenization processing, the encapsulation (using Sigma's Tween 20 detergent) results in smaller fish oil particles. Additionally, the content of the valuable omega 3 fatty acids is higher.

Wide-ranging applications for food and supplements

VFD could now be used to produce better omega 3 dietary supplements. Raston adds that it has the potential to enhance the omega 3 content in a very wide range of applications. In their Science of Food publication, the researchers applied the VFD mediated encapsulated fish oil to enrich the omega 3 fatty acid content of apple juice. This was used as a model for water-based food products and notably had no change in sensory values. Natural bioactive molecules were used in processing, showing that the fish oil medium can take up flavonoids and other health supplements. VFD allowed the formation of homogeneous suspensions of fish oil containing curcumin and quercetin, which are water-insoluble bioactive molecules. The VFD generates emulsions. The jet feed delivers water, fish oil and Tween 20 to the rapidly rotating tube, tilted at 45° (Source: Science of Food).

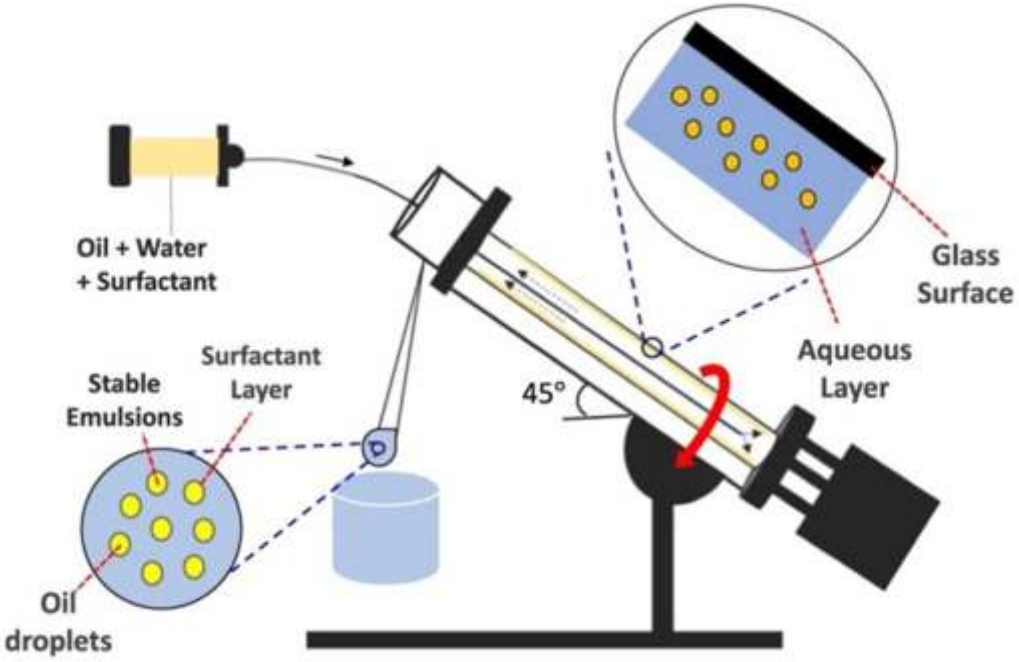
Improved shelf life

The scientists discovered that there was less oxidization, and omega 3 fatty acid content remained higher after 14 days of storage than the homogenized ingredient. In comparison to 31 percent fatty acid content for raw fish oil, the freeze-dried encapsulated fish oil had a content of 62 percent. They also captured real-time structural changes in nano-encapsulation by installing a VFD with in situ small-angle neutron scattering. This provides valuable insights about self-assembly in solution. Raston flags that VFD also has the capability to scientifically measure and control the requirements for better outcomes in food processing. Overall, the development of VFD took eight years.

Fish oil is on the rise

These findings come as marine oils are increasingly used in food and beverage launches. According to Innova Market Insights, global launches featuring these oils rose by 41 percent from 2018 to 2019. Notably, fish oil is the leading ingredient, being featured in 87 percent of 2019 launches. Over a quarter of the global launches featuring marine oils in 2019 feature an omega 3 positioning, with brain health being a key concern. Meanwhile, Baby and Toddlers was the top category, with 65 percent of 2019 launches with marine oil being in this space. Supplements come in second place, being home to 28 percent of the marine oil launches. Last month, NutritionInsight reported that while omega 3 supplements are widely taken, consumers still lack sufficient knowledge to get the right dose and form for optimal health. Addressing specific consumer needs, Evonik has now expanded its AvailOm high-load omega 3 powder platform for algal and fish oil-based formulations. Meanwhile, a Pfizer study revealed that a combination of probiotics and omega 3 fatty acids could help fight chronic low-grade inflammation.

By Katherine Durrell



Affordability key in Asia: Thai plant-based meat firm pitches price point at half of Beyond Burger

By Pearly Neo 14-Sep-2020 – Food Navigator Asia

Thai plant-based meat firm Let's Plant Meat jumped from conceptualisation to commercialisation in just 12 months for its plant-based burger patty – and is now determined to make the product 'affordable for the masses' in Asia.

Let's Plant Meat is a spin-off company from local food technology firm Nithi Foods , which specialises in food and flavour research under its Flavours Research Institute (FRI). Nithi Foods Managing Director and Let's Plant Meat CEO Smith Taweelerdniti said that this enabled the team to very quickly enter the prototype phase after he thought of the concept, which then also very quickly moved to commercialisation.m"I first brought the idea of creating a plant-based burger patty to the Nithi Foods R&D team in March 2019, and although we had no background on this, because we normally specialise in deconstructing and reconstructing food flavours, by July 2019 we already had our first prototype based on the Beyond burger patty, and it was very similar already," he told FoodNavigator-Asia. "We then entered local food tech accelerator SPACE-F and did another four to five months of work there, and by March 2020 we had moved into commercialisation and were retailing in Tesco Lotus in Thailand, so from conception to commercialisation, it was just within a year."

The firm centred its tech on protein concentrate and delved deep into how it could control the processing of this to get the desired chemical reactions (such as Maillard reaction) which would produce aromas and flavours similar to that of animal-based meat. "We work with soy protein as a base, which comes with its own challenges such as a soybean aroma which needs to be masked and making sure the texture must bind properly and loosely but does not collapse – this is where we looked for natural food ingredients that could recombine to create the texture, flavour and taste of meat such as yeast or other plant extracts, as we did not want to rely on MSG," said Taweelerdniti. "We've sort of reached the peak of this area now and hit a plateau for this, so from now we will be looking more closely at manipulating the deeper functions of proteins, such as connective tissue to give different mouthfeels for, say, plant-based meat and fish.b"The other area we're looking at is how to make this an ambient product, as currently it is still frozen. We want to expand further in Asia, where cold chain is a luxury in many countries, so if we want to reach our target audience, we need to make this shelf-stable."

Let's Plant Meat's burger patties are currently in various supermarkets across Thailand such as Tesco Lotus, Max Valu and Gourmet Market. The burger patties currently retail at THB75 (US$2.40) per patty – which is less than half the price of the Beyond burger patty in Thailand, which goes for THB340 (US$10.87) for two patties, or THB170 (US$5.44) per patty. The much-cheaper pricing was a conscious and purposeful decision, said Taweelerdniti. "Because we're based here in Asia, the cost is not so high and we did not want it to be high either as we want it to be affordable to the masses," he said. "The local cuisine is very meat-dominated, where nine out of 10 main dishes are made from meat. Plant-based options are extremely limited, and attempts to ask for such dishes in restaurants would usually end up with situations like 'curry with the meat removed, but at the same price' – which means basically paying more for something that is 'inferior', per se. No restaurant will want to purchase or stock a product that is perishable and at such a high price, and it is unlikely that local consumers would accept the product so quickly if it were expensive too."

The firm also has its eye on exports, with South East Asia as a major target owing to similar palates and tastes. "Thailand has a good reputation here as a high-quality food producer with reasonable prices, and we want to ride on this," he said. "Our main target markets will be Singapore, Philippines, Indonesia then also Japan, India and China – Singapore in particular will be our first target, as it's very much a ready market in terms of acceptability, plus I've heard feedback that other novel plant-based meat alternatives there are priced very high." He added that Let's Plant Meat also opted to stick with soy as its main ingredient because of its Asian focus. "Many consumers in Western countries do not want soy in their food as it is seen as an allergen – but here in Asia we consume soy all the time, plus it has a cost advantage over other alternatives like pea, so we started with it," he said. "The focus is very much on the Asian consumer first."

Moving forward, Let's Plant Meat will also be launching its minced meat, along with a recipe book that Taweelerdniti said would help consumers convert this into products such as sausages and dumplings. "We're also looking at more B2B collaborations with local eateries – my personal wish is to team up with Japanese tonkatsu chain KATSUYA to make plant-based tonkatsu," he said.

Want to stay competitive in the growing protein space? Look no further than consumer preferences.

07-Sep-2020 Food Navigator Asia

The ever-increasing amount of protein options available makes it more imperative than ever to stand out. Here, we'll share a few ways you can become more competitive.

In a category once driven primarily by meat, consumers gave little thought to where their protein came from. Their choices were simple: beef, poultry, pork or seafood. But now, with the multitude of choices available, the category has become increasingly competitive, giving today's shoppers the opportunity to seek specific qualities in the protein they choose.

From dedicating more consideration to where the protein comes from and the manner in which it was raised and processed, to placing emphasis on quality and taste factors, consumer habits and preferences provide valuable insights into how existing products can evolve—and new ones can be created—successfully.

Now, more than ever, consumers are looking into the source of animal-based proteins. From how the animal was raised to where it came from, meat-based proteins are more appealing to consumers when they provide specific claims. In a study conducted by Kalsec , 60 percent of global consumers surveyed said they expected a clean label in meat and poultry applications.

This leads over dairy, cereals, baked goods, sauces and dressings. What matters most on a label? The same study found that "no artificial ingredients" and "fresh ingredients" led the way. The opportunity for food manufacturers is to find natural alternatives to the synthetic ingredients they once relied on for maintaining freshness, preserving colour and enhancing flavour.
his leads over dairy, cereals, baked goods, sauces and dressings. What matters most on a label? The same study found that "no artificial ingredients" and "fresh ingredients" led the way. The opportunity for food manufacturers is to find natural alternatives to the synthetic ingredients they once relied on for maintaining freshness, preserving colour and enhancing flavour.

Consumer curiosity has fuelled increased interest in plant-based proteins, and many manufacturers have responded to consumer demands. Even with the number of plant-based meat alternatives available, opportunity still remains for product innovation. For consumers moving toward a flexitarian diet, there is curiosity about plant-based products because of the perceived health benefits.

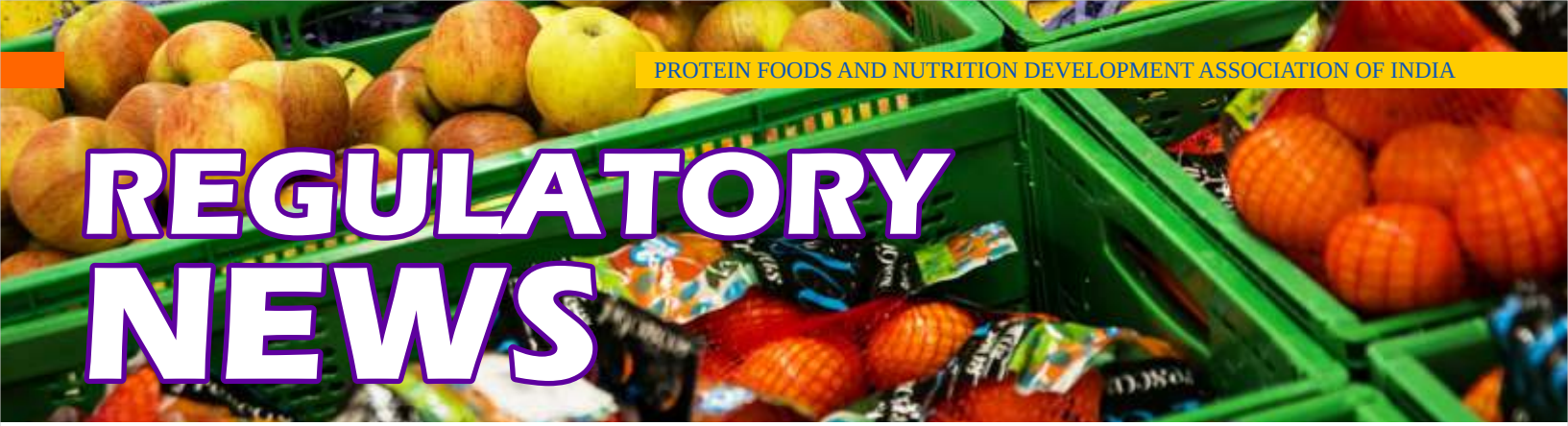
But, because they remain meat eaters, they want their plant-based alternatives to be precise analogs—in other words, they want alternatives that look, taste and perform like their animal-based counterparts. Colour, taste and texture are vital considerations. Improvement on these attributes is critical to the success of new and existing competitors.

The possibilities for innovation go beyond plant-based proteins. Animal-based protein is by no means out of the picture. Within traditional animal-based protein applications, flavour innovation can help pique consumer curiosity. Kalsec reports that 79 percent of global consumers are willing to try most new flavours. Herbs and spices lead the way, followed by spicy and ethnic flavours. Many consumers are looking for pre-seasoned or marinated meats that help them create quality meals, quickly and conveniently to fit into their busy lifestyles.

No matter what is driving consumers to make their protein decisions, the product must taste good in order to achieve repeat purchase. Paying attention to freshness in animal proteins and discovering the right profiles for marinades and other flavourings will help set your products apart.

When it comes to plant-based proteins, the same considerations must be made, including appearance. As with all foods, we eat with our eyes first, and colour and stability—especially in clear packaging—is an important element of shelf appeal. Proteins must take the care to incorporate the right colour and antioxidant solutions to ensure the correct hue on the shelf as well as during cooking.

The reasons behind consumer choice are forever changing, but they offer us keen insight into how to develop products that can stand out in a competitive marketplace. As diets and lifestyles continue to create higher demand for protein—both animal and plant-based—paying attention to these preferences is a key factor in creating products that earn both trial and repeat purchase.



REGULATORY NEWS

Consumer Survey: Trends, Habits and Attitudes Related to Food Safety

Food Insight SEPTEMBER 2, 2020

Food safety is an issue that never seems too far from our minds—whether it's hearing about a new food recall, trying to keep our kitchens and food prep spaces clean, or learning how to shop and keep food safe during a pandemic, this important topic is something each of us is engaged with every day.

To find out more about current attitudes and habits related to the safety of the food we eat, IFIC recently conducted a consumer survey of 1,000 U.S. adults. Here are some key takeaways:
Nearly half are concerned about food safety when preparing food at home; corona virus exposure and food contamination are among the most common food safety worries. Forty-nine percent of survey takers said they were at least somewhat concerned about the safety of their food when preparing food at home (24% were very concerned; 25% were somewhat concerned), while 27% said they were not that concerned and 23% said they were not concerned at all. Men, African–American people and people under the age of 45 were more likely to be very concerned; while women, white people and people older than 65 were less likely to share that level of concern. Of those who indicated concern about food safety, corona virus-related issues (such as exposure to the corona virus, risk of COVID-19 infection and risk of transmission from food workers) and food contamination rose to the top. Other common concerns included those related to personal or family health, bacteria, and sanitation; as well as other factors like expiration dates, cooking food to "doneness," cost, and the national food supply.

There is widespread concern about specific food–safety issues like contamination, safe cooking techniques and allergens. Nearly half of survey takers were very concerned about food becoming contaminated (46%), food poisoning or food-borne illness (45%), and meat being cooked to a safe internal temperature (45%). Thirty-nine percent said they were very concerned about the presence of allergens. Washing hands and cleaning cutting boards are the top food–safety actions taken when making food. Nearly three in four (73%) said they wash their hands and 65% said they wash cutting boards when cooking or preparing food. However, only 49% said they use a different or freshly cleaned cutting board for each product (such as raw meat and produce).
Fewer than one in three (32%) said they use a food thermometer to check the doneness of meat and poultry. There were widespread differences between gender, race and age in this question: men, African–American people and those under 45—the same groups that were more likely to be very concerned about food safety—were less likely to follow most of the food safety risk-minimizing actions.

There is a greater sense of control over food safety when eating food made at home compared with food made outside the home. Sixty-six percent said that they feel they can always control the safety of their food when eating food made at home. Just 17% said the same about foods prepared outside the home. Twenty-eight percent felt they could never control the safety of food made outside their home. Nearly one in four tries to avoid certain ingredients in foods and beverages; sugar, salt, fat, meat and food additives are the most commonly avoided categories. Twenty-three percent of survey takers said they tried to avoid at least one ingredient when deciding what to eat and drink. When asked to elaborate on which ingredients they avoid, common answers included sugar, salt, fat (most often, saturated or trans fats), GMO foods and food additives like preservatives and artificial colours.

Concern over safety/long-term health effects is the primary reason why people avoid certain food ingredients; food allergies in the household is second-most common motive for ingredient avoidance. Over four in ten people (43%) who avoid at least one ingredient said they do so because of concerns about safety and/or long-term health effects. Twenty-three percent said they avoid ingredients because someone in their household has allergies and 21% are worried about the quality or purity of the ingredient, while 20% said they avoid certain ingredients due to being on a restrictive diet for medical reasons. One less common response: Just 7% said they avoid an ingredient because they don't know why it's used or aren't familiar with its function. Nearly one in four think that meat has become less safe since the COVID-19 pandemic began, although half report no change. Most survey takers believe that the food options provided in the survey have either become safer or

that their safety has not changed. However, 24% said they believe that meat has become less safe, the only food category with a net loss in perceptions of safety compared with perceptions before the pandemic. There seems to be more scepticism of food safety related to COVID-19 in younger people: Those under 45 were more likely to think that many food categories—packaged fruits and vegetables, frozen foods, dairy products, and plant protein sources, for example—had become less safe. Most consumers agree that the food industry prioritizes many aspects of food safety. More than half of all survey takers agreed that food safety is a top priority for the food industry (60% at least somewhat agreed), that food companies clearly communicate information on the presence of allergens (58%), and that they're transparent in communicating potential risks and/or sensitive ingredients to consumers (51%). By way of comparison, far fewer disagreed with these statements (ranging from 11–18% of survey takers).

'Front of package' nutrition labels improved nutrition quality

Science Daily September 21, 2020

A new study analyzing 16 years of data on tens of thousands of products finds that the adoption of nutrition data on "front of package" (FOP) labels is associated with improved nutritional content of those foods and their competitors.

"We wanted to know whether food companies were responding to increased public interest in healthier food," says Rishika Rishika, co-author of the study and an associate professor of marketing in North Carolina State University's Poole College of Management. "In other words, is the market driving change in the nutrition of food products? And the evidence suggests that this is exactly what's happening." For this study, the researchers evaluated nutritional data on 44 categories of food products from 1996 through 2011. Altogether, the researchers looked at data on 21,096 products, representing 9,083 brands, covering everything from energy bars to soup.

Specifically, the researchers evaluated whether there was any impact when products adopted the "Facts Up Front" style FOP nutrition labels. Facts Up Front is a voluntary nutrition labelling program adopted by the food industry. Manufacturers participating in the program list the calories, saturated fat, sugar and sodium per serving size of their food products on relatively large FOP labels. The products still carry the mandated nutritional information panels on the back of the packages. To determine whether the voluntary FOP program had influenced the nutritional content of food products, the researchers looked specifically at two things. For food categories in which at least one product had adopted the FOP labelling, the researchers evaluated differences in the nutritional quality of all products in the category both before and after any products adopted the FOP labels. These differences were also compared with food categories in which no products adopted labelling and that served as control groups. The researchers calculated a product's nutritional content using the Nutrient Profiling model, which includes a host of nutrients, such as sugar, fat, sodium, protein and fibre. The results showed a clear association between FOP labelling and changes in the nutritional content of food products. And there were five factors that were associated with the presence of FOP labels having a greater impact on nutrition:

• Premium brands improved nutritional quality more than non-premium brands in the same category;
• Brands that had narrower product lines, meaning they produced fewer products than their peers, improved nutritional quality more;
• Products in categories that are broadly unhealthy, such as snack foods, showed a more pronounced response;
• Foods in "more competitive" categories, meaning those in which there were many competitors at different price points, showed a more pronounced response; and
• Products that had adopted FOP labelling showed more improved nutritional quality.

The researchers also found that there were pronounced changes in the content of nutrients that were singled out by the "Facts Up Front" FOP program. Across all of the food categories in which at least some products adopted the FOP labels, there was a 12.5% reduction in calories; 12.97% reduction in saturated fat; 12.62% reduction in sugar; and 3.74% reduction in sodium. "We had hypothesized that when nutritional information is clearly marked on the front of the package, that consumers would be more likely to consider it when deciding what to buy," Rishika says. "This would, in turn, cause competitive pressure on other brands in that category to innovate and improve the nutritional quality of their products. "The fact that the effect of FOP labelling was most pronounced for the nutritional variables on the FOP labels supports our theory," Rishika says. "And the fact that the effect was stronger for brands that adopted FOP labelling also supports the hypothesis."

The researchers had a few takeaway messages.
"For consumers, we found that the presence of a Facts Up Front FOP label on a package generally meant that the product had a better

nutritional profile than competing products that didn't have an FOP label," Rishika says. More broadly, the findings suggest that voluntary, highly visible nutritional labelling can be an effective tool for encouraging change on an industry level. "However, it remains unclear which aspect of the program is more important," Rishika says. "Is the fact that the program is voluntary more important, since it helps consumers identify brands that are choosing to share nutritional information on the front of package? Or is the fact that the FOP labelling is prominent more important, simply because the information is more clearly noticeable? Those are questions for future research."

Front-of-pack labelling under controversy as experts spot shortcomings

By Katherine Durrell 16 Sep 2020
Nutrition Insight

Colour-coded front-of-pack labelling (FOPL) is the subject of controversy, with Copa and Cogeca – which represents European farmers and agri-cooperatives – arguing that the system "stigmatizes" highly nutritious products and often promotes unhealthy options.

Meanwhile, Action on Sugar (AoS) is firmly in favour of colour-coded traffic light labelling, but is calling for the UK government to include free sugars on FOPL. This follows the discovery that 65 percent of children's fruit snacks contain the equivalent of at least two teaspoons of sugar per portion. "The ideal FOPL system would be colour-coded traffic light labelling being mandatory across all products. Research shows that colour-coding is beneficial in altering behaviour resulting in consumers purchasing healthier options," Holly Gabriel, nutritionist at AoS, tells NutritionInsight. She explains that a colour-coded system can show, at a glance, whether a product is high (red) medium (amber) or low

(green) in fat, saturated fat, salt and sugars. Additionally, this labelling encourages companies to reformulate their products. Reformulation is a major area of discussion for the F&B industry. Yesterday, Food and Drink Federation Scotland highlighted how it could be used as a tool to promote healthier lifestyles and habits. Systems like Nutri-score rely on colour to help consumers make purchasing decisions.

Points of contention

However, Copa and Cogeca flags a number of "concerns" about colour-coded FOPL. It argues that the colour system presents an over-simplistic classification of food products. The organization also makes the point that the labels are not portion-based. It argues that olive oil receiving a low status based on 100 g is misleading as people are unlikely to consume this amount. However, Gabriel of AoS notes that consumers do still use quantities of olive oil in foods like dressings and marinades, so the labels are a "good reminder." Finally, Copa and Cogeca notes that many geographic indication (GI) and traditional specialty guaranteed (TSG) products have a low score and cannot be reformulated. It states that these offerings are an important part of European cultural and culinary heritage, and represent 7 percent of the total sales value of EU F&B products. Weighing in, Gabriel comments: "FOPL should apply to all food and drinks. GI and TSG products are very niche products that can't be reformulated, but they are a small number of products and should not be excluded."

Broadening the system

One area that has been flagged by both Copa and Cogenca and AoSis the need for more nutrients being taken into account. Copa and Cogenca note that the labels focus on a "very limited" number of nutrients, while AoSr specifically flags the need for more nuances around sugar. In its survey of 56 coated, flavoured, processed or extruded fruit-based products sold across leading UK grocery retailers, AoS found that all products would receive a red traffic light label for high sugars. These are also categorized as "free sugars," which the action group says should be reflected in mandatory FOPL instead of total sugars. Gabriel states that fibre should also be highlighted as many UK consumers are not eating enough. "Public polling has shown us that people want these nutrients to be front-of-pack," she says. Action on Sugar revealed that all surveyed fruit snacks would receive a red traffic light label for high sugars.

Product Name & Pack Size	Sugars (g) per 100g	Sugars (g) per serving	Equivalent teaspoons* of sugar per serving**
Kiddylicious Apple Fruit Wriggles 12g	70	8.3	2.1
Tesco Apple & Sultana Bars 5 x 30g	61.2	18.4	4.6
Organix Blackcurrant & Apple Stars 12g	65	7.7	1.9
The Fruit Factory Strawberry, Apple, Orange Fruit Stars 5 x 20g	61.8	12.4	3.1
Fruit Bowl Strawberry Peelers 5 x 16g	58	9.3	2.3

* 4 grams of sugar (granulated) is equal to 1 teaspoon of sugar.
** serving size as stated on product packaging

On-pack claims

AoS also argues that the fruit snacks feature "misleading" claims, with examples including "1 of your 5 a day," "Naturally occurring sugars" or "Made from real fruit." "There should be no claims on products high in salt, fat and sugar (HFSS). Claims differ greatly and it may be beneficial to allow nutrition claims such as 'high fibre,' which is factual. However, these should never be allowed on products with added sugar such as breakfast cereal. This requires further research by those implementing this policy," explains Gabriel. Looking ahead to when the UK leaves the EU, she spots an opportunity to make positive changes that will boost UK consumers' health. "Trade deals could impact labelling changes, and we need to ensure that those negotiating trade deals are putting health first and prioritizing nutrition labelling. It took a long time to get traffic light labels implemented originally. To scrap it now to allow HFSS food to be imported would be really irresponsible," concludes Gabriel.

UK introduces voluntary guidelines to slash calories by 20%

Salt reduction targets have also been proposed, with Action on Salt backing the move

By Kristiana Lalou 08 Sep 2020
Nutrition Insight

The UK government is urging the food industry to reduce excessive calories in everyday foods by up to 20 percent by 2024 to help tackle obesity. The new voluntary guidelines build on the UK's COVID-19 and obesity measures. They include suggestions for a 10 percent calorie reduction for children's meal bundles and for retailers making ready meals. The guidelines also propose salt reduction targets, a move supported by lobby group Action on Salt, which flags that further measures are needed.

"Consuming food and drinks that are higher in calories than people realize is one of the reasons why many of us are either overweight or obese. This is about broadening choices for consumers, as well as making the healthier choice the easy choice. Progress to date on sugar and salt reduction has shown that this can happen without compromising on taste and quality," notes Dr. Alison Tedstone, Chief Nutritionist at PHE.

The food industry's efforts are crucial to providing healthier food and drink choices for consumers, and calorie reduction forms part of this, PHE says. It is recommended that the following calorie reductions be made voluntarily:

- A 20 percent calorie reduction for most meal categories in the eating out of home, takeaway and delivery sector, alongside a maximum calorie guideline for all categories.
- For children's meal bundles, a 10 percent calorie reduction ambition has been set to reflect progress already made.
- 10 percent calorie reduction ambition for retailers making ready meals, chips and garlic bread, alongside a maximum calorie guideline for all categories.
- For crisps and savory snacks, a 5 percent ambition.
- Combined guidelines for both sectors have been set for sandwiches (5 percent ambition) and pizza and pastry products (20 percent ambition).

UK lobby group Action on Salt has welcomed the move but says that it is long overdue and the targets "could go further." Reformulation targets are a vital part of the government's obesity strategy, which includes restrictions on promotions and advertising high salt, fat and sugar F&B.
"Reformulation targets are a vital part of the government's new obesity strategy. Less salty and calorific foods will make it easier for parents to make healthier choices for their families, and they will make it easier for manufacturers to be able to continue to promote their products. However, it's imperative that the entire industry plays its part in this, not just the responsible few," Sonia Pombo, Nutritionist and Campaign Manager at Action on Salt, tells NutritionInsight.

A national effort

The government is encouraging the food industry to support its effort against COVID-19 and obesity, explaining that the voluntary calorie reduction guidelines can make it easier for the nation to choose healthier options in everyday meals and foods. High calories in a broad range of everyday meals and foods are one of the reasons why many consumers are eating more calories than they need, the PHE says. Calories can be particularly high in takeaway and restaurant food, now a regular part of UK diets. For example, a pizza for one sold at a restaurant or takeaway can have as many as 2,320 calories compared to 1,368 calories when purchased from shops or supermarkets. Research suggests that when someone eats out or has a takeaway meal they consume on average 200 more calories per day.

Reducing salt

New goals have also been published to encourage businesses to further reduce salt levels in the foods that contribute most to salt intakes. Consuming too much salt is a major cause of high blood pressure which can lead to heart attacks and strokes, notes PHE. Despite good progress in some categories, more

needs to be done to help reduce salt intake from the current average of 8.4 g per day toward the recommended 6 g – a reduction of around a third of a teaspoon, which would help to prevent heart attacks and strokes. A second progress report on salt reduction, which shows good progress in some categories, such as bread and breakfast cereals, has also been published. "We can all do our bit to stay healthy to help protect us from corona virus and take pressure off the NHS. The food industry can play their part by making it as easy as possible for everyone to eat more healthily. These guidelines will help them take positive action," says Public Health Minister Jo Churchill. However Action on Salt says that so far, progress has been "weak" on salt reduction targets. This is due to a lack of will by the industry and a lack of pressure from the government, according to Pombo. "With PHE soon to be restructured, it's crucial that these targets are not neglected by whichever organisation is tasked with the successful implementation.

Our hope is for a new food watchdog, independent of the government, to be set up to impose sanctions and levies for retailers and manufacturers who don't comply as well as enforcing mandated targets for key contributors of salt in the UK's diet," she adds. Industry's progress against the program's ambitions will be monitored with reports on calorie and salt reduction expected in 2022. The government says it remains committed to further action if results are not seen.

Processed foods ban: India bars sales and marketing of 'unhealthy' foods in and around schools

By Pearly Neo 28-Sep-2020 – Food Navigator Asia

India has introduced a ban on the sales, advertisement and promotion of all foods high in saturated fat or trans-fat or added sugar or sodium (HFSS) in school grounds as well as within 50 metres from the premises.

According to the Food Safety and Standards Authority of India (FSSAI), the HFSS foods as mentioned in this charter will cover all foods; both prepared meals and processed food products that are being sold within Indian school walls. "Whether it's beverages high in sugar, potato chips, cookies, noodles – any type of food that is potentially HFSS, the points in this charter apply to it," FSSAI Director for the Food Fortification Resource Centre (FFRC), who is also in charge of the school food programme, told FoodNavigator-Asia. This charter is essentially already a regulation and will be formally enforced in three to four months. This will be just right, as schools are now closed due to the lockdown anyway, so these few months will give the school authorities sufficient time to make preparations."

One of the main points highlighted within the 10-point charter include the banning of sales of any HFSS food products to school children in school canteens/ mess premises/ hostel kitchens or 'in an area within fifty meters from the school gate in any direction'. The school authorities have also been mandated to put up a board with the warning 'Do not sell (including free sale or market or advertise) the food products high in saturated fat or trans-fat or added sugar or sodium within school premises or campus' in English or one Indian language as applicable, and to ensure this is 'displayed prominently' at the school gate.

Based on this warning, all food companies that manufacture HFSS foods will no longer be allowed to advertise or market such foods to children in school premises, including via logos, brand names, posters, textbook covers etc. or in an area within fifty meters from the school gate in any direction. Other directives in the charter include for the school to ensure safe and balanced diets are provided for schoolchildren, to take heed of guidelines issued by the National Institute of Nutrition (NIN), and the creation of committees to monitor these. "We have found it very important to target schoolchildren, as they form their opinions and eating habits when young," said Sharma. "It's why we want to create that Eat Right environment in schools, so not just teaching them about eating right via the curriculum, but also making sure the food choices we provide for them are healthy and not in contrast with what they learn."

Sharma also added that FSSAI is working on regulations to govern all processed foods, especially HFSS processed foods, in the open market, although this is taking some time due to the relative complexity of the industry. "We are in the process of setting up regulations for processed foods, covering everything from noodles to bakery to cereals – but we still need a method to accurately identify what HFSS products are, so this is still in progress," she told us. "We're working towards mandatory fortification of staple foods in India, and it is important that these fortified foods are not HFSS too – it would be misleading to consumers who think a product is healthy when they see the +F logo, when it is actually high in sugar or salt." In addition, FSSAI has also initiated a process to study television advertisements to analyse how HFSS food marketing targets children via this platform, as well as other platforms, so there is also a chance it might look at governance similar to that implemented by the UK on junk food ads before 9pm.

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