



PFNDAI

Bulletin
MAY 2020

FOOD, NUTRITION & SAFETY MAGAZINE

BREAKFAST ON-THE-GO!

Dr Meeta Raheja

NUTRACEUTICALS INDUSTRY:

AN INDIAN PERSPECTIVE

Prof. Jagadish Pai

IMMUNITY & AYURVEDA:

THE SCIENCE BEHIND
THE TRADITIONAL WISDOM
Dr. Bhavna Sharma & Dr. Ganesh Gopal

SOCIAL MEDIA:

THE SAVIOUR IN THIS PANDEMIC
Ms. Dolly Soni

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EDITORIAL

The present situation has given many new opportunities and as I had said earlier digitisation has been a big opportunity which is going to be even more important in our lives than ever before.

People have been using digital material for quite some time. Paying online, having meetings through internet, ordering online, getting cab services, internet banking and many other things. Earlier it was a convenience but today it has become a necessity.

There are many webinars organised so participants and speakers can sit in their homes and take part in the web-based seminar or conference. Several courses are being conducted online where students or participants can join even from different countries without having to incur expenses such as travel, stay and food etc.

Hotels and travel industry like airlines and trains are going to be hit as people try to participate virtually and not physically. They may have to use innovative means to encourage people to use their services.

There have been many competitions including Recipe Competitions that were conducted by digital means. Schools have been experimenting with virtual classes so students sitting at home will be able to attend the classes and teachers can teach from their homes. Text books will now become e-books.

We have already seen e-newspapers which are going to be very common. However, the large paper on a small screen presents a problem of navigation so they may evolve into something different like a book. Of course there will be repercussions of these changes as printing hard copies is going to lessen and employment and business in that sector is going to be affected.

As phones are becoming such an integral part of our life, it is difficult to imagine functioning without it. We may probably need some changes in that itself since we are using it not just for calling, chatting and playing games on it. We are using phones for emails, reading newspapers and other articles and many other functions which were previously the domain of a PC and later the laptop.

We probably need a little bigger size for phone as the keyboard is so small we make so many mistakes by pressing wrong keys. Alternatively we can have a virtual keyboard when we need to use it outside the phone.

There are many things that could be done to enter the post-Covid 19 life with newer digital and virtual tools. When automation is brought into industry by digitisation, there will be another big problem and that is employment. We will need fewer persons as most work will be done by machines and robots. So what will people do when they are replaced by computers? It is difficult to imagine the future and even a crystal ball will turn foggy right now. We need to be prepared for many changes that will alter our lifestyle drastically.

Do you think we will have Usain Bolt competing in international event from home against other competitors who are also in their homes, using some virtual or robotic track? Is it impossible to imagine Roger Federer playing against Rafael Nadal using virtual game app standing in front of their own TV at their homes and referee watching from his home?

It would be interesting indeed!

Prof Jagadish Pai,
Executive Director,
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BREAKFAST ON-THE-GO!

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We all have heard- "Eat breakfast like a king, lunch like a prince and dinner like a pauper."

Breakfast is often called 'the most important meal of the day', and for good reason. As the name suggests, breakfast breaks the overnight fasting period. It replenishes your supply of glucose to boost your energy levels and alertness, thus enhancing your ability to concentrate in the short term. It also provides other essential nutrients required for good health, reduces risk of type 2 diabetes and heart disease in the long term. Another appealing benefit is that breakfast helps with better weight management. It jumpstarts your metabolism, and helps you burn more calories throughout the day. When you eat breakfast, you are telling your body that there are plenty of calories to be had for the day. However, when you skip breakfast, the message your body gets is that it needs to conserve rather than burn any incoming calories.

The importance of breakfast is mostly well known. In India, traditional breakfast options like poha, upma, idli, dosa, roti, paratha have been the most popular choices in most households since many years.

However, a recent survey conducted on breakfast habits in four cities of India found that of all the meals in a day, the breakfast is the most frequently skipped meal. Also, a trend for a nutritionally inadequate breakfast rather than no breakfast was seen across all age groups studied.

The major reason seems to be lack of time! The pressures of increasingly hectic lifestyles, fragmented eating, early starts, long commutes and busy morning schedules mean many of us don't get time to sit for breakfast before heading out for the day.

Given the current fast-paced life, especially in urban India, consumers are increasingly shifting preference from edible breakfast products to

drinkable breakfast products, so that they are able to have a convenient and nutritious breakfast on the way to work or while working at their desks.

In addition, younger consumers are shifting their preference towards healthy alternative drinks. Instead of having coffee or tea, many consumers prefer healthy alternatives such as soy drinks or other dairy-based drinks. This in turn is fueling demand for on-the-go breakfast drinks among this consumer segment. Thus, the market players are coming with innovative solutions and new product variants in the on-the-go market.

What are breakfast drinks?

Breakfast drinks are defined as food products that are formulated through processing cereals with milk or other liquid ingredient. It is mostly marketed as a supplementary food and positioned as a healthy, fast and convenient option for breakfast. These must be shelf stable, and packed in on-the-go format.

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Key concepts of Breakfast drinks

High in Fiber

Almost every breakfast drink claims to be a “good source of dietary fiber” or “high in dietary fiber”.

As consumers become more aware of the beneficial effects of higher fibre intake, solutions bridging the ‘fibre gap’ are bringing new opportunities to the manufacturers. The sources used for fiber enrichment could be soluble or insoluble. Soluble dietary fibers are easy to use, because there is no need for additional stabilization, as in case of insoluble fibers. On the other hand, insoluble dietary fibers contribute to the healthy perception of the breakfast drink by providing a fibrous appearance to the drink. Also, bulking effect of insoluble dietary fibers increases the feeling of satiety for a longer time. A combination of soluble and insoluble fibers is a good way to achieve the high fiber claim.

High in Protein

Proteins play an important conceptual role in our daily nutrition. The main protein source in a traditional breakfast comes

from milk. However, today, other vegan sources like soy, almond etc. are also becoming popular for breakfast drinks.

Cereal components

Thinking about a healthy breakfast, natural oats combined with milk or yoghurt and some pieces of fruit is gaining popularity. Following this idea, most of the breakfast drinks in the

markets have cereal components. The classic cereal components are oats, mostly added as partly or fully hydrolyzed flours. Other cereals like corn, barley, amaranth or quinoa also can be used.

Added values

Minerals, vitamins, anti-oxidants or trace elements can be added in breakfast drinks. Marketing slogans like “strengthening the heart” or “boosting the immune system” can be used to highlight further possible health benefits of breakfast drinks.

Energy

Energy content of the breakfast drink can be designed according to the needs of a specific market segment. A low energy density variant would suit the customers looking for a meal replacement while on a diet; while a high energy density variant would appeal to the elderly or extremely physically active customers.

Stabilizing a Breakfast Drink

The insoluble parts of the breakfast drinks (cereals, fibers, insoluble salts...) need to be stabilized to avoid sedimentation during the shelf life. Variations in protein type, protein concentration and protein

quality should be considered when selecting a suitable stabilizing system.

Hydrocolloids were the initially used common stabilizers in Breakfast Drink like beverages. With further development, colloidal MCC started being used very successfully in this segment. Colloidal MCC edges over hydrocolloids, since the stabilizing function of colloidal MCC is completely independent from the type, quantity and quality of the protein used, thus making colloidal MCC the perfect stabilizer for breakfast drinks. The fluctuations in raw material quality, recipe and processing parameters are compensated by this unique stabilizing system. Depending on type and dosage of colloidal MCC, viscosity and suspending properties can be adjusted. The drink can be designed to have a low viscosity if a straw is to be used for drinking, or it may have a high viscosity and rich and creamy mouthfeel if it is positioned as a meal replacement with high satiety.

It can be summarized that convenience of breakfast drink is about quick and easy options for nutrient density and energy. Ready to consume, portioned and on-the-go breakfast drink options are proliferating in response to the morning needs of adults and kids. Growing number of single individuals, rising number of working women across the globe, changing lifestyle, improving living standards and increasing urbanization are some of the factors which can be expected to drive the market of breakfast drinks in years to come!



NUTRACEUTICALS INDUSTRY: AN INDIAN PERSPECTIVE

AUTHOR
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PFNDIA



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What are Nutraceuticals

Nutraceuticals are substances that when consumed in adequate amounts may reduce the risk of some disease. Some of them may be nutrients but their function as nutraceuticals is different than that of nutrients. Nutrients are required by the body for maintaining health and their deficiency causes deficiency diseases which are different from the diseases whose risks are reduced by nutraceuticals.

Many nutraceuticals are present in food ingredients but only some contain adequate amounts to provide health benefits for example omega 3 fatty acids present in marine fish and oils. Dietary fibre is present in oats and flax seeds. There are many botanicals such as herbs that contain substances that provide health benefits.

As people have started to realise that it is better to prevent the diseases such as heart attacks, strokes, diabetes, joint & bone diseases, age-related diseases and many others than to cure them which may be very expensive too. Thus the market for nutraceuticals is rapidly increasing globally.

Global Market

Global food market is worth over \$8

trillion
for all
foods.

Of this the health food industry is worth over \$500 billion. This includes all kinds of foods with health and nutrition claims. These are usually foods with added vitamins and minerals or foods with high protein, fibre, etc. The range of products in the healthy foods category includes bars and drink mixes and some others.

There is a smaller category of health foods which is called Nutraceuticals and Functional Foods etc. which will have besides some nutrients, the nutraceuticals that reduce the risk of diseases. These help control cholesterol or may prevent hypertension or control rapid rise of blood glucose etc. Some of these are also helpful in proper cognition and prevention of such diseases as Parkinson's disease and Alzheimer disease.

Global market of nutraceuticals is estimated at around \$250 to 300 billion and is growing extremely rapidly. It is expected to reach over \$570 billion by 2025.

Indian Market

Although botanicals have been used in India for centuries through

Ayurveda, the organised nutraceuticals market is a little recent and small but is very rapidly growing. Currently estimated at a little over \$4 billion, it is expected to be around \$10 billion by 2022. The Indian market is growing much more rapidly than western market. The total market is actually much larger as there is a large unorganised sector.

Indians more readily open to nutraceuticals for several reasons. They have used similar ingredients through spices and as Ayurvedic ingredients. They are quite familiar with many of them. Also since most of these are from medicinal plants and being natural, Indians accept them. These are also expected by the lay people to be safer than the allopathic ingredients which at times have very strong reactions. Thus nutraceutical products are quite acceptable in India.

Benefits of Nutraceuticals

As was mentioned earlier, prevention is better than cure of any of the disease especially the modern lifestyle diseases. Such diseases like cardiovascular diseases, cancer, diabetes, bone & joint diseases and many old age diseases such as Parkinson's and Alzheimer's diseases not only have expensive



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Thus nutraceuticals would be useful to all ages, although not necessarily the same ones for all ages. Newer information is

traditional medicine in many countries and later many of these were converted to extracts and finally some isolates have been prepared. For example, earlier turmeric was used for anti-inflammatory and antimicrobial properties but later on only extracts were prepared and further purified to curcumin and these were used for many other applications as well such as joint health, heart diseases, memory and mood etc.

treatments, their cure and care take a long time and at times some consequences remain lifelong with a lot of suffering and pain. Thus the prevention certainly is extremely attractive and is being realised as many see the others undergoing through the diseases and suffering which they now aim to avoid.

Although it looks like many diseases listed above are mostly afflicting older people, some of the diseases are now being suffered by younger persons too. Heart disease was at one time thought to be an old age disease but now many young people, including teens, have been afflicted with it.

Cognition is another area which concerns all ages. In infants and foetuses omega 3 fatty acids have been shown to have a great impact on the development of brain and cognition. Even the memory retention is affected and the age-related diseases affecting the cognition have been shown to be related.

Many carotenoids have shown the usefulness in preventing some age-related degeneration of eye. Lutein and zeaxanthine have shown benefits in prevention. Also omega 3 and antioxidants have been useful in eye health.

Antioxidants have been extensively researched for their ability to prevent or slow down cancer. Some of the nutraceuticals substances like curcumin and omega 3 fatty acids have several benefits covering many diseases.

coming about newer applications and newer substances.

Nutraceuticals may be used in food products or they may be used in supplements. There are many health foods such as yogurt, breakfast cereals, or nutritional bars containing DHA, probiotic, lutein or curcumin etc. These substances also could be given in a tablet or capsule as health supplements with optional vitamins and minerals.

Nutraceuticals Regulation

In 2018, the new regulation in India namely FSS Health Supplement, Nutraceuticals, Food for Special Dietary Use, Food for Special Medical Purpose, Functional Food and Novel Food Regulation became operational. In this schedules are given from which ingredients could be used in nutraceuticals products and also gives how claims could be made for these products and how these claims need to be substantiated by scientific evidence.

This regulation allows manufacture of many new products as well as old ones with added substances or extracts to give some health benefits. This opens new opportunities to industry and growth of such products would be very rapid.

Applications & Products

Some of the diseases whose risk could be lowered include cardiovascular diseases, diseases affecting cognition, diabetes, age-related macular diseases, bone related diseases including osteoporosis and osteoarthritis, cancer and many more. Originally botanicals were used from

Cardiovascular diseases have rapidly increased with lifestyle changes with increase in weight and hypertension. Various causes including diet and lack of physical activity have contributed to these problems. Many substances have been shown to have benefits in reducing the risk factors. Some of these are omega 3 fatty acids, soluble fibre, soy isoflavones, resveratrol, curcumin, capcaisin and oryzanol.

Diabetes is another problem that became more severe in recent times attributed to lifestyle changes and again aggravated by dietary changes as well as lack of physical activity. Besides the regulation of amount and type of carbohydrates, some of the substances found to be beneficial in reducing the risk of this disease are beta glucans from oats, dietary fibre from legumes and whole grains.

Cognition has also become a critical problem lately as many seniors have been experiencing loss of memory and related issues. More recently omega 3 fatty acids are becoming important in cognition. Brain development in foetus and in infants depends on intake of DHA and EPA in pregnancy and lactating mothers as well as in infant nutrition. Besides omega 3, magnesium and some botanicals like Bacopa monnieri (Brahmi) have also usefulness in enhancing cognition. There have been efforts to find out if omega 3 may also be effective in combating Parkinson's and Alzheimer's diseases.



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There are many other old-age diseases, an important being AMD (age-related macular degeneration). Here small central portion of retina called macula wears down leading to vision loss in seniors. There is no cure but some substances can delay the onset of the disease. Many antioxidants prominently carotenoids including lutein and zeaxanthine have shown effectiveness. Even omega 3 fatty acids have shown delaying effect on its onset.

Bone health is another problem of old age. Osteoporosis affects many women and a large number of elders have joint problems especially osteoarthritis. Soy isoflavones have shown effectiveness against osteoporosis especially in women in menopausal state. Many substances have shown effectiveness for osteoarthritis including collagen, glucosamine, chondroitin, hyaluronic acid and many botanicals like curcumin, extracts of Boswellia and ginger, black pepper oil and others.

Cancer has been affecting a large number of seniors but younger people are also affected. Soy isoflavones have shown effect in preventing breast cancer in post-menopausal women. Many antioxidants are being recommended for reducing risk of various cancers.

Some Nutraceuticals & Their Health Benefits

Dietary Fibre

These are substances not digested by human enzymes but some could be digested by microflora in guts. They include celluloses, hemicelluloses, gums, pectins, lignin, resistant

starches etc. Insoluble fibres like celluloses are not much fermented by microbes and help in bowel movement. Soluble fibre like beta glucan, pectins, gums, hemicelluloses etc. are fermented in the gut.

Soluble fibres increase the viscosity and bulk and retard emptying of stomach. They also increase the feeling of satiety. They reduce the rate of uptake of glucose into blood so sharp spikes of blood sugar levels are avoided. They also lower serum LDL cholesterol level. They improve glycemic response. Fibre promotes growth of many useful bacteria in the gut. So they are also called prebiotics. People consuming generous amounts of dietary fibre in diet have lower risk of cardiovascular diseases, diabetes, obesity, hypertension, and many gastrointestinal disorders.

Omega 3 fatty acids

Major omega 3 fatty acids are alpha linoleic acid (ALA), eicosapentaenoic acid (EPA), and docosahexaenoic acid (DHA). ALA can convert to DHA & EPA in our body. EPA and DHA are found in fatty fish like mackerel, salmon, tuna etc and in fish oils. ALA is found in flaxseed, soybeans, walnut etc. Omega 3 fatty acids have benefits in cardiovascular diseases preventing irregularity in heart rhythm, lowers triglyceride concentration, can raise HDL cholesterol, reduces inflammation, improves bone and joint health, helps in development of brain in infants, and more recently it has been shown to delay age related diseases like Parkinson's and Alzheimer's diseases, improves cognition, fights depression and anxiety, improves eye health, reduces symptoms of ADHD in

children, reduce asthma in children, reduces risk of certain cancers and many others.

Probiotics

For centuries people have been consuming fermented milk and deriving health benefits. They contain live microbes that provide microbial balance in the gut and thereby give the beneficial effects to the host. These useful microbes generally are lactic acid bacteria such as Lactobacillus, Lactococcus and Bifidobacter. They are generally useful in treatment of gastric conditions like lactose intolerance, diarrhea, and antibiotic associated gastric side effects but also have beneficial effects such as immunity, reduction of risk of allergy, asthma, cancer and infections of ear and urinary tract. For a microbe to be called a probiotic it must be shown to have a beneficial effect, must resist gastric acid condition, must be able to lodge in the gut and be safe to host.

Polyphenols

This is a group of phytochemicals of which flavonols, flavones, anthocyanins, etc. are important. They can affect numerous cellular processes making them anti-carcinogenic and anti-atherogenic making them useful in reducing risk of cancer and heart diseases. Polyphenols also have antioxidant, anti-inflammatory, anti-microbial activities and also play a role in diabetes. Some of the polyphenols that have found use in many applications are resveratrol from grapes, catechins from tea, and soy isoflavones.

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Spices

These have been used for thousands of years to enhance the taste of foods. They impart flavour and colour to foods and more recently spices and their components have been used for health benefits due to their antioxidant, chemo-preventive, anti-mutagenic, anti-inflammatory effects on cells providing gastrointestinal, cardiovascular, respiratory, metabolic, reproductive, neural and many other effects.

Some of these spices have been used in Ayurvedic preparations and are being investigated for the mode of action and active substances in them. Some of the spices already being used as whole, extracts or isolated substances include turmeric, garlic, cinnamon, holy basil, pepper, ginger, and fenugreek.

There are many other nutraceuticals which have shown benefits in reducing risk of various diseases and

some more are being investigated.

Substantiation of Claims

Any product in the category of nutraceuticals will be consumed for its health benefits in the form of reduction of risk of a disease. So consumers would be looking for product claims. How much of this product would have to be consumed for how long in order to get that benefit. There are already many scientific studies done on the nutraceutical substances such as curcumin or resveratrol or DHA. If manufacturers have to use these studies then they can only make a general structure function claims like DHA lowers risk of heart disease or helps develop brain function.

In order to make a claim such as "one serving of this product consumed every day reduces the risk of osteoarthritis" the manufacturers will need a study done with their

products with human subjects. This needs additional work in order to put their product ahead of the competition. The study could be carried out with the help of a doctor or a university or using the services of Contract Research Organisation (CRO). A good experienced CRO with some knowledge of food regulation can help plan and conduct the study in order to defend the claims in the event of a challenge.

Finally, the opportunities are many as lifestyle diseases are increasing rapidly and government has allowed manufacturing of many new products in this category so there will be many who will try to take advantage of these to get ahead of competition and make successful products that would prevent the onset of some of the diseases that would take a long time, a lot of expenditure and suffering before curing the diseases.

COMING EVENTS

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May 28-29, 2020
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SOCIAL MEDIA- THE SAVIOUR IN THIS PANDEMIC

By
Ms. Dolly Soni,
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PFNDAI



Just a few weeks ago everything was normal and people were engaged in their work as usual but due to the outbreak of the pandemic (Covid 19), people are locked in their homes and no doubt that these people sitting back at their homes would not stop thanking the people who invented the various modes of entertainment like mobile phones and television.

Now that people are maintaining social distancing, it is applicable only outside of the house, whereas they are getting close to people through social media. During the lockdown, social media has played a very important role in almost every individual's life for connecting with people and spending their days doing something productive. Well this not limited to only the people but also to the brands as they are keeping up their engagement with the people. There has been a drastic rise in the usage of internet and people spending time online. Since people are not able to hangout with their friends, they are now using social media platforms to connect with their friends. The use of

Internet and apps like Instagram, Zoom, Twitter, YouTube, WhatsApp, Facebook & Messenger, etc. has seen a rise up to 70% during the lockdown.

How funny it is to imagine that being surrounded by technology and apps, people still used to travel for an hour or two to attend a meeting and now during the lockdown they are attending all the meetings and participating in webinars right from their homes with ease and their convenience. There are so many webinars and meetings happening around the globe using advanced apps like Skype, Zoom and other similar apps.

Now talking about the brands and the companies who are into producing Goods and Services for the consumer do you think this pandemic is affecting your company? Well not exactly if you use a right platform to promote your product. The power of social media has taken a long jump during this crisis. In the research conducted by Kantar it was found that majority of the population (92%) did not think that brands should stop advertising during the crisis. During this crisis companies should show their support to their consumer. How can you do that? People are not

expecting classy sets to shoot an ad, so be real in creating content, it's

very important to understand what they want to see from your branded content. Create a content using different filters and IG stories on Instagram (as most of the youth are spending more time on it), using Gifs and etc. The people will get engaged and entertained by the creativity you show on your company's/ brand's social media handle and who knows your gifs and content get viral and reach to most of the people on social media? Keep posting daily, connect with your followers by responding to their queries instantly, since people are spending most of the time on social media as soon you post a content you will notice a rise in the likes and comments on your post, try to answer if there are any queries and stay connected.

As eateries, Cafes and malls are shut; restaurants are now depending on social media to keep their brands alive. If you are in the food industry, try to make some trend on your social media pages to keep your brand/product / service alive. As we all must be aware of the recent trend on social media that reached to each and every people using social media i.e. Dalgona Coffee, Banana bread, Cakes, Pani Puris and etc.

52%
DHAAKAD
PROTEIN

SOYA DAHI VADA



SOYA PASTA



SOYA FRIED RICE



SOYA NOODLES



SOYA CURRY



SOYA KAJU MUTTER



DELICIOUS SOYA CUISINES TO DEFEAT PROTEIN DEFICIENCY

A recent survey* suggests that 73% of the Indian diets are protein-deficient. Part of the reason lies in the insufficiency of protein content in conventional protein sources like eggs, lentils, milk, etc. We at Ruchi Soya, the makers of Nutrela Soya Chunks, Mini Chunks, and Soya Granules help consumers bridge this gap by providing '52% Dhaakad Protein', that can be used to cook delicious cuisines to tickle everyone's taste buds, from breakfast to dinner, at the most affordable price.

Let's join hands to include soya enriched dishes in our daily meals, and help India register a delicious victory over protein deficiency.

 200 gm NUTRELA SOYA	15 BOWLS OF COOKED DAAL	OR	
	16 BOILED EGGS	OR	
	17 GLASSES OF COW'S MILK	OR	



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(@parleproducts)

The best use of this is made by Amul (India's Largest Dairy Company) after the lockdown they have started hosting live cookery sessions on their Facebook page (#SimpleHomemadeRecipes). Food Industry and other brands are using this opportunity to come closer to people by posting a great content and ad on social media.

Another example is that Parle's have revised its Kismi logo to spread a message to people regarding social distancing.

The Kellogg's UK employees raise their cereal bowls to thank the National Health Service staffs who are playing a very important role in this crisis.

But the most important thing while posting content on social media is to try to create #Hashtag related to

your brand/company and product. Mother dairy has promoted Mother Dairy milk with the hashtag i.e. #DoodhPiyoStrongBano on various social media platforms.

Social media is a very powerful medium to promote your brand or product to every corner of the world in just a few clicks. No crisis or pandemic can stop you to be in touch with your consumers, followers, etc. with the help of social media. The only important thing is to understand your audience very well and what do they want from you; you must be able to deliver that to your audience. You should also be aware of the type of audience you want to target.

There are varied industries around the globe with innumerable types of products/ services. In order to be visible and connecting with your

target audience it is very essential that you first identify the best platform suitable for the type of content you plan to deliver. Once you see that people are engaging with your contents and you start building trust with them, gradually jump on the other platforms too to have a wider reach. Remember, you are not going to be in frame for best engagement just by landing on the social media platforms, but this requires consistent efforts in creating and regular posting.



(@kellogg's)

Reference:
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IMMUNITY AND AYURVEDA

THE SCIENCE BEHIND THE TRADITIONAL WISDOM



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Immunity can be called as the capacity or the ability of the human body to resist some of the organisms or toxins that tend to cause damage to tissues or organs.

The body's immune system is responsible for immunity. It enables us to defend the body against foreign objects. The body, through a complex network, defends itself continuously. As long as it is running smoothly we do not notice it. A weakened immune system or impaired immunity where the body's natural defenses deteriorate, leaves it vulnerable to illnesses and infections.

The immune response is activated by a number of substances that the body does not recognize as its own. They are called pathogens and they could be viruses, bacteria, fungi or allergens. When microbes penetrate the epithelial surfaces for the first time (for example bacteria), the

body mounts an immune response. The microbe's molecules bind to receptors and trigger macrophages to engulf the organism. In addition, this process involves secretion of many active molecules (cytokines, chemokines and adhesion molecules). These active molecules, in turn, trigger other cell types for reactions known as inflammation.

Due to inflammation, there may be increased permeability of the blood vessels, redness, leakage of fluid etc. during this cascades. This also involves players like neutrophils and monocytes. Monocytes which migrate from the bloodstream to other tissues differentiate into tissue-resident macrophages or dendritic cells. In subsequent stages, lymphocytes (T and B cells) are also involved in the cascade. T cells

stimulate B cells. B cells produce antibody that can recognize antigen, attach themselves to them fight off bacteria, viruses including non-self-substances that have entered the body.

Recently we are hearing the term 'herd immunity'. This refers to a reduction in the likelihood of someone catching the infection because a major proportion of the people in the community are resistant to the infection.

The immune response of the body falls into two categories i.e. innate and adaptive immunity. Innate immunity consists of physical, chemical and cellular defenses against pathogens. Innate immunity refers to the generalized, nonspecific responses that are triggered immediately (within hours) of an antigen's appearance in the body. Adaptive immunity is very specialized. It starts its work when the innate component is not sufficient to control the infection.



Recent evidence indicates that they form an important link between innate immunity and inflammation. Naturally, they are found in enhanced levels in many

antioxidants. Vitamin E serves as the primary defense against potentially harmful oxidation reactions; Vitamin C is needed for protection against harmful lipid peroxidation; Vitamin A has anti-inflammatory properties and is helps enhance immune functions as it is involved in the development of the immune system and plays regulatory roles in cellular immune responses and humoral immune processes. Vitamin D also contributes to normal functioning of immune system.

Adaptive immunity refers to antigen-specific immune response. It can be subdivided into cell mediated response and humoral immune response. The former is carried out by the T cells and later by B cells and antibodies. It should be noted that T cells and B cells are very specific to the molecular structure of the pathogens. Also, since the body puts much effort into this process, these cells have memory that makes future responses against a specific antigen more efficient.

The salient markers of immune system are provided below.

Natural Killer cell (NK cells) -

They are a type of lymphocyte and form a part of the innate immunity. Their role is essential in viral infections and tumors.

CD4 and CD8 - The CD4/CD8 ratio is a reflection of immune health. As people get older their CD4/CD8 ratio tends to decrease. In autoimmune disorders, people tend to have increased CD4/CD8 ratio. These cells help suppress or regulate immune responses.

Immunoglobulins - These are commonly called antibodies and part of the adaptive immunity. They bind to specific antigens. Antibody isotopes in mammals include IgA, IgG, IgE, IgM etc. Among them, IgG provides the maximum antibody based immunity against pathogens. IgA is found in mucosal areas like respiratory tract, gut etc. IgE binds to allergens and IgM eliminates pathogens in the early stages.

C-reactive proteins (CRP) - This marker indicates inflammation.

disorders.

Cytokines - These are small proteins and are involved in cell signaling. They are made by a wide range of cells and are important in both health and disease. Examples include interleukin - 1, tumor necrosis factor, gamma - interferon etc.

Factors Affecting the Human Immunity:

The immune system of any individual keeps changing (to a certain extent) and or is significantly impacted by certain parameters like:

- Age.
 - Pre-existing disease conditions.
 - Our skin and mucous membranes that line our nasal cavities, digestive system etc. provide physical barriers. Their integrity is important for providing the first line of support.
 - Exercise in moderation is important for activation of immune system.
 - A balanced diet promotes the maintenance of the immunity army and the body as a whole.
 - Presence of immuno-modulators (Vitamin A, Vitamin C, Zinc, Selenium, specific Probiotics, Iron etc.) is critical for maintaining a healthy immune system.
- O Zinc is important for the immunity system, as it functions as an antioxidant and its deficiency adversely affects the secretion and functions of cytokines - the basic messengers of the immune system. O Selenium is an important micronutrient needed for optimal immune response. It is a potent nutritional antioxidant and reduces oxidative stress and enhances body's immune responses.
- O Vitamin A, C and E are essential

History of Ayurveda in India and its relation to Immunity

Ayurveda is one of the prominent traditional systems of medicine that has subsisted and flourished for ages. Being developed in India over 5000 years ago, this system of medicine has been regarded as one of the oldest medicinal systems of mankind. It will continue to grow with the knowledge on function of nature, human body and the elements of universe which acts in coordination and affect the living beings.

Vyadhikshamatva is a term in ayurveda that defines the resistance power of the body. This is of two kinds: by attenuating the manifested disease; preventing the manifestation of diseases. This correlates well with innate and adaptive immunity terms. Factors like sahabala (natural strength), swabhasamsiddhi (natural factors), bijakshetragnasampacca (inherent qualities) decide on the nature of innate immunity (Byadgi DOI: 10.4172/2167-1206.1000153). There are many methods to enhance immunity via ayurveda. These include seasonal and time considerations (kalabala), diet (aharasampacca), state of mind (samharsha) etc. It is also interesting to note that ayurveda explains about exposure to dhooma (smoke), ati vyayama (excessive exercise), ruksha-vishamashana (not wholesome/dry food). So this is an interesting merge between the ancient science and the modern one.



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Formulations based on ayurveda like chyawanprasha, amrita prasa, dasamoola rasayana are widely used by Indians to build immunity.

Ayurvedic herbs used for immunity

There are several common herbs/plants that help boost immunity according to the science of ayurveda. Somewell-known examples are ginger, garlic, turmeric, tulsi, amla, pepper, ashwagandha and mulethi.

1. Ginger- It is the most commonly consumed dietary condiment in India. It is a rhizome that contains several bioactive compounds such as gingerol that has remarkable effects on human health. Due to its anti-oxidative and anti-inflammatory effects, it plays a major role in boosting the immunity. Common ways of consuming ginger either directly or in dried form are: as an ingredient in tea or as a condiment in Indian recipes.

2. Garlic: Garlic is also one of the most widely used spices. It has many beneficial properties including anti-inflammation, and since long, has been used in the treatment of many infections. It is known to have potential antioxidant & anti-microbial properties. It can be used in many forms such as fresh, oil, or dried powder.

3. Turmeric: Turmeric contains an essential component known as 'curcumin' which is said to have anti-inflammatory effects. Curcumin is known to be a potent immuno-modulatory agent. At low doses it also enhances antibody responses. It can be used in powdered form



Image iStock.com/bdspn

along with milk or water. It is best known to be soluble in fat medium and is hence preferred dissolved with milk.

4. Tulsi: The benefits of tulsi can be attributed to its ability to assist with the body's internal housekeeping and detoxification. Ways to include tulsi in diet can be in the form of tea or herbal concoctions.

5. Amla- One of the richest natural sources of vitamin C, that acts as an antioxidant protecting the body against damaging oxidizing agents. Regular intake of amla either in the form of juice, as a fresh or preserved fruit or



Image iStock.com/ajaykampani

in any other form such as pickle or powder is known to strengthen the immune system.

6. Ashwagandha: Ashwagandha is commonly known as "Indian Winter cherry" or "Indian Ginseng". Ashwagandha improves the body's defense against disease by improving the cell-mediated immunity. It also possesses potent antioxidant properties that help protect



Image iStock.com/CLFortin

against cellular damage caused by free radicals.



7. Mulethi: The dry roots of licorice also called as mulethi is considered to be anti-viral and anti-microbial in nature. It is one of the oldest and the most used herbal drugs around the world. It has been traditionally used for respiratory, gastrointestinal, cardiovascular and skin disorders.

Prevention is better than cure. Undoubtedly, ayurvedic herbs help to strengthen the immunity by boosting the immune system and also help the body to fight against diseases; the best part of it being their availability and accessibility. According to the World Health Organization, about 70–80% of the world population relies on nonconventional medicines, mainly of herbal sources, for healthcare.

Many ayurvedic herbs are commonly used in Indian households. The use and benefits of these herbs have been set in the minds of people and thus their acceptance is strong. In the past decade many scientific reviews and studies have been conducted on these herbs to give them a support from a scientific angle. It is heartening to know that in the current situation (COVID-19 pandemic) many scientists are conducting clinical trials to understand the efficacy of many of these herbs. It would give Indian traditional knowledge and science a big boost.

NUTRITION AWARENESS AT LADY IRWIN COLLEGE, DELHI ACTIVITY



AUTHOR
Ms. Swechha G. Soni,
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Image © iStock.com/Deepak Sethi

Protein Foods and Nutrition Development Association of India (PFNDAI) and the Department of Food and Nutrition, Lady Irwin College jointly organised a Nutrition Awareness Programme for UG students of Food & Nutrition at Lady Irwin College, on 28th of Feb 2020. The theme of the event was "Food System & Dietary Diversity - Facing the challenges of 21st century". The sponsors were Marico, Hexagon Nutrition, Ruchi Soya, Mother dairy and Kellogg India. Recipe competition was supported by Mother Dairy by providing ingredients for the competition. Students from four different colleges had participated namely- Lady Irwin College, Vivekananda College, Lady Shri Ram College for Women.

The morning session started with the intercollegiate competitions among students.

Two competitions were organised for the students

1. Recipe competition – Protein Rich Recipes
2. Poster Competition – Kuposhan Mukh Bharat

For the recipe competition Mother Dairy had provided the following ingredients to the participants for their recipe making:

1. Mother dairy paneer
2. Safal whole Green Gram

There were in total 24 teams for the recipe competition. The recipes were evaluated by Ms Aparna Tandon, Nutritionist – Lead & NPd, Signutra; Ms. Shilpa Thakur, General Secretary, IDA Delhi Chapter and Ms. Latika Bhandari, Senior Executive, Corporate R&D, Mother Dairy. The evaluation criteria were innovation/ creativity, taste, presentation & Nutritive Value.

For the poster making competition, 15 teams had participated in all and conveyed thoughtful messages highlighting the concern of malnourishment and measures for eradicating it. The posters were evaluated by Mr. Abhinav Srivastava, Head- Regulatory Policy & Intelligence, Amway India and Ms. Sonika Sharma, Nutrition Health & Wellness Associate, Nestle, India.

Three teams from each competition were selected and were awarded by PFNDAI. All the winners received gift hampers from Ruchi Soya. Hexagon Nutrition presented gift hampers to all the poster winners.

TECHNICAL SESSION
Seminar on Food System & Dietary Diversity-Facing the challenges of 21st century

In the afternoon, the seminar was inaugurated by Dr. Anupa Siddhu with an inaugural speech where she highlighted a figure with markers which showed that almost all the states in India are deficient in some of the important nutrients like vitamin B, vitamin B12, Iron, etc. She also mentioned that modern lifestyles have made it difficult for all to acquire these nutrients through natural sources, which rather must be focused on by having more healthy and diverse diets.

Ms. Nidhi Agarwal, Technical and Regulatory Associate, Marico Ltd talked on Scaling up of Nutrition through edible oil where she emphasized more on fats.

She talked about two of the biggest challenges in today's time that is Obesity and Underweight. Most people blame fats for obesity which is not true if consumed in right combination (vegetable oils) and amounts. She also talked about oil blending and oil fortification mentioning numerous benefits.

Ms. Deepti Gulati, Head of Programs, GAIN gave an insightful presentation on Food Fortification in India. She gave a brief description of the scenario of Nutrition in Indian Constitution. With this she gave statistics of various challenges India faces today such as consuming less than minimum energy requirements, malnutrition, and hunger which is affecting India severely. She shared factsheet Data from Nation Family Health Survey (NFHS-4) pointing these Nutrition & Health indicators in children and adults which indicated that under nutrition is not really a poverty issue & that poor consumption of

micronutrient-rich foods and anaemia affect all. The three measures to control these issues are supplementation, Dietary Diversification & Staple food fortification and the advantages are many on being filling the gap between "intake from regular dietary sources and daily needs"

Ms. Mani Misra, Corporate Nutritionist, R&D, Mother Dairy talked on Dairy: Evolution to Personalised Nutrition. She principally talked about dairy products which are sources of wide range of micronutrients including vitamins, minerals & trace elements. Moreover, there are plenty of fortified dairy products available so that the nutrients reaches to all as dairy is consumed by most of the Indian population.

Ms. Swechha Soni, Nutritionist, PFNDAI talked on Food Psychology & Consumer Preferences. Through her

presentation she talked on how the eating behaviour of an individual is linked with several concepts and thought processes, which vary among individuals and become the basis of their food preferences. She defined Food psychology and various concepts associated with it like psychological perception, psychological beliefs, psychological factors affecting food choice and also some insights from the food psychology. She concluding by stating that having a control how the mind thinks is one of the biggest challenges in today's time as the food preferences of consumers are influenced by many factors.

The seminar was followed by prize distribution to all the winners. Ms. Manisha Sabharwal, In-charge, Department of Food and Nutrition, Lady Irwin College closed the seminar by delivering a vote of Thanks to all the Sponsors, Speakers, Judges, Organizers, participants and the audience.



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Speaker



Ms. Deepthi Gulati-
Speaker



Ms. Mani Misra-
Speaker



Judges & Co-ordinators



Nutrela Stall & Representatives



Ms. Swechha Soni

Hexagon
Stall
Standee



Hexagon Stall & Representatives



Audience



Kababecious Idli- 3rd Prize



Day & Night Pudding-
1st Prize



Proteicuts- 2nd Prize



Poster signifying Kuposhan Mukta Bharat

Poster Making



Ms Sonika & Mr Abhinav
judging the Poster
Competition





Organisers & the Judge



Organisers with the Judge



Audience



Felicitation



Felicitation of the Winners

Ms. Deepti Gulati
& Ms. Manisha
Sabharwal



Felicitation of the Winners



Winners being awarded with PFNDAl certificates
& Nutrela hampers





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memoangeles

REGULATORY ROUND UP



By
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Image © iStock.com/sirawit99

Dear Readers

Hope you and your family is safe and busy reading, attending webinars, etc. Hope things will be back to normal sooner than later.

FSSAI has been quite proactive in disseminating information on food safety and bursting myths in the present Covid 19 situation.

In the meanwhile, please find below a few notifications put out by FSSAI including a FAQs.

[The latest list of FSSAI approved laboratories along with their scope and validity.](#)

[FSSAI has issued a format and guideline for the submission of scientific substantiation during the claim approval process.](#) It gives you a good idea as to what the Food Authority looks for in case of in vitro, in vivo, human clinical studies date.

[A timely notice by FSSAI reiterating the fact that Food is not a carrier of Sars-cov-2](#) and bursting myths like frozen and meat products are affected.

[FSSAI measures to prevent the spread of Sars-cov-2.](#)

FAQs on four regulations have been published. The readers are requested

to go through the Q and A carefully. A few answers are in contradiction with the regulation. It should be noted that it is the Regulations that are to be complied with. FAQs are supposed to explain the regulations.

- [FAQ on Health Supplement, Nutraceutical, FSDU, FSMP, Regulation, 2016.](#) Clarifies many aspects of botanicals, their usage levels, use of additives and their limits in different categories, etc.
- [FAQ on Approval of Non-Specified Food, Regulation.](#) This is an elaborate one and is likely to answer many of your queries.
- [FAQ on Advertising and Claims Regulation](#)
- [FAQ on Organic Food Regulation](#)

RESEARCH IN HEALTH & NUTRITION

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marekuliasz

Rice bran helps reduce malnutrition in infants

IFTNEXT FEBRUARY 28, 2020

Researchers at Colorado State University wondered whether supplementing weaning foods with rice bran would improve the outcomes of malnourished infants.

Even though the supply of food has reached new heights in global distribution, forms of malnutrition remain stubbornly prevalent in children: Around the world, more than 150 million children around are stunted (low height for age), and more than 50 million are wasted (low weight for height). Researchers at Colorado State University (CSU) recently completed a study in which they identified a way to help curb malnutrition in weaning infants.

In low- and middle-income countries, malnourished infants frequently have environmental enteric dysfunction (EED), which is a small intestine disorder that is likely caused by exposure to enteric pathogens. EED causes poor absorption of nutrients and increases intestinal permeability due to chronic diarrhea. CSU scientists wondered whether supplementing weaning foods with rice bran would improve the outcomes of malnourished infants.

Composed of fatty acids, phytochemicals, vitamin B, and other bioactive molecules, rice bran is a nutrient-dense food. Moreover, rice bran has been shown to benefit

the gut microbiome and fight chronic diseases. In the CSU study, infants whose weaning foods were supplemented with rice bran exhibited less gut permeability and greater nutrient absorption, which had a direct effect on infant growth.

Because of the widespread availability of rice bran, the study's researchers believe that rice bran can have a significant impact on reducing malnourishment among children. The scientists are collaborating with rice experts and toxicologists to develop a rice bran product for infants and to establish a consistent supply of rice bran in low- and developing-income countries.

Full-fat dairy products may not increase heart disease or obesity risk in children

DAILY NEWS March 3, 2020

A review published in *Advances in Nutrition* suggests that children who consume full-fat dairy products may not have an increased risk of obesity or heart disease.

Researchers from Edith Cowan University in Australia, the

University of Washington, and the Fred Hutchinson Cancer Center, reviewed 29 studies from around the world that examined the consumption of full-fat dairy products in children. Most of the included studies were conducted in the United States and were prospective or cross-sectional observational studies, with only one randomized controlled trial.

From the limited literature, the researchers found there was no clear link between the consumption of whole-fat dairy products and weight gain, high cholesterol, or high blood pressure in children. Some observational studies identified a significant inverse relation that was not similarly seen for reduced-fat dairy intake. The researchers hypothesized that "consumption of whole-fat dairy products rather than reduced-fat varieties could result in increased feelings of satiety."



Image © iStock.com/
Deepak Sethi

Eating one egg a day may not be linked to higher cardiovascular disease risk

DAILY NEWS March 5, 2020

A study published in the BMJ suggests that consuming up to one egg per day is not associated with cardiovascular disease (CVD) risk.

The relationship between egg consumption and CVD risk has been a topic of intense debate in the scientific community in recent decades.

"Recent studies reignited the debate on this controversial topic, but our study provides compelling evidence supporting the lack of an appreciable association between moderate egg consumption and cardiovascular disease," said first author Jean-Philippe Drouin-Chartier, visiting scientist in the Department of Nutrition at the Harvard T.H. Chan School of Public Health, in a university press release.

The new findings update a 1999 study—the first significant analysis of eggs and cardiovascular disease—that found no association between eggs and CVD risk. That study was led by Frank Hu, Fredrick J. Stare, professor of nutrition and epidemiology and chair of the Department of Nutrition at the Harvard T.H. Chan School of Public Health. Hu is also a co-author of the current study.

For this study, researchers analyzed health data from 173,563 women and 90,214 men participating in the Nurses' Health Study (NHS) I and II and the Health Professionals Follow-Up Study (HPFS) who were free of CVD, type 2 diabetes, and cancer at baseline.



They used repeated measures of diet during up to 32 years of follow-up to gain a detailed picture of lifestyle factors such as high body mass index and red meat consumption.

The researchers also conducted a meta-analysis of this topic, including 28 prospective cohort studies with up to 1.7 million participants.

The analysis of NHS and HPFS participants found no association between moderate egg consumption and risk of CVD. Results from the meta-analysis supported this finding in U.S. and European populations; however, some evidence suggested that moderate egg consumption may be associated with lower CVD risk in Asian populations, although this may be confounded by the overall dietary pattern.

Isoflavones, in tofu and plant proteins, associated with lower heart disease risk

Science Daily March 23, 2020

Eating tofu and foods that contain higher amounts of isoflavones was associated with a moderately lower risk of heart disease, especially for younger women and postmenopausal women not taking hormones, according to observational research published today in *Circulation*, the flagship journal of the American Heart Association.

Researchers at Harvard Medical School and Brigham and Women's

Hospital analyzed data from more than 200,000 people who participated in three prospective health and nutrition studies; all participants were free of cancer and heart disease when the studies began.

After eliminating a number of other factors known to increase heart risk, investigators found:

Consuming tofu, which is high in isoflavones, more than once a week was associated with a 18% lower risk of heart disease, compared to a 12% lower risk for those who ate tofu less than once a month; and

The favourable association with eating tofu regularly was found primarily in young women before menopause or postmenopausal women who were not taking hormones.

"Despite these findings, I don't think tofu is by any means a magic bullet," said lead study author Qi Sun, M.D., Sc.D., a researcher at Harvard's T.H. Chan School of Public Health in Boston. "Overall diet quality is still critical to consider, and tofu can be a very healthy component."

Sun noted that populations that traditionally consume isoflavone-rich diets including tofu, such as in China and Japan, have lower heart disease risk compared to populations that follow a largely meat-rich and vegetable-poor diet.

However, the potential benefits of tofu and isoflavones as they relate to heart disease needs more research.



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Diane Labombarbe

Tofu, which is soybean curd, and whole soybeans such as edamame are rich sources of isoflavones. Chickpeas, fava beans, pistachios, peanuts and other fruits and nuts are also high in isoflavones. Soymilk, on the other hand, tends to be highly processed and is often sweetened with sugar, Sun noted. This study found no significant association between soymilk consumption and lower heart disease risk.

"Other human trials and animal studies of isoflavones, tofu and cardiovascular risk markers have also indicated positive effects, so people with an elevated risk of developing heart disease should evaluate their diets," he said.

"If their diet is packed with unhealthy foods, such as red meat, sugary beverages and refined carbohydrates, they should switch to healthier alternatives. Tofu and other isoflavone-rich, plant-based foods are excellent protein sources and alternatives to animal proteins."

In the study, researchers analyzed health data of more than 74,000 women from the Nurses' Health Study (NHS) from 1984 to 2012; approximately 94,000 women in the NHSII study between 1991 and 2013; and more than 42,000 men who participated in the Health Professionals Follow-Up Study from 1986 to 2012.

All participants were free of cardiovascular disease and cancer at the beginning of each study. Dietary data was updated using patient surveys, conducted every two to four years. Data on heart disease was collected from medical records and other documents, while heart disease fatalities were identified from death certificates.

A total of 8,359 cases of heart disease were identified during 4,826,122 person-years of follow-up, which is the total number of years that study participants were free of heart disease and helps to measure

how fast it occurs in a population. Sun emphasized that the study should be interpreted with caution because their observations found a relationship but did not prove causality.

Many other factors can influence the development of heart disease, including physical exercise, family history and a person's lifestyle habits.

"For example, younger women who are more physically active and get more exercise tend to follow healthier, plant-based diets that may include more isoflavone-rich foods like tofu. Although we have controlled for these factors, caution is recommended when interpreting these results," said Sun.

In 2000, the U.S. Food and Drug Administration approved health claims that soy edibles protect against cardiovascular disease. However, since then, clinical trials and epidemiological studies have been inconclusive, and the agency is reconsidering its now twenty-year-old decision.

The American Heart Association's 2006 Diet and Lifestyle Recommendations and a 2006 science advisory on soy protein, isoflavones and cardiovascular health found minimal evidence that isoflavones convey any cardiovascular benefits and any protections provided by higher soy intake was likely due to higher levels of polyunsaturated fats, fiber, vitamins and minerals, and lower levels of saturated fat.

Habitual tea drinkers live longer and healthier, Chinese study highlights

09 Jan 2020 Nutrition Insight

Drinking tea at least three times a week can improve life expectancy and health, a new Chinese study has revealed.

Two surveys found that habitual tea

drinkers who maintained their habit had a lower risk of incident heart disease, stroke and all-cause death compared to people who do not regularly consume tea. This research comes as adults' concerns surrounding heart health continue to rise, alongside a booming consumer demand for natural, clean label health solutions.

"Tea has attracted great interest from both the public and scientific researchers due to its potential benefits for the cardiovascular system and people's general health. According to our results, habitual tea consumption could reduce the risks of cardiovascular diseases (CVD) and all-cause mortality," senior author Dr. Dongfeng Gu of the Chinese Academy of Medical Sciences in Beijing, tells NutritionInsight.

Habitual tea drinkers who maintained their habit in both surveys found that people who drank tea more than three times a week had a 39 percent lower risk of incident heart disease and stroke, 56 percent lower risk of fatal heart disease and stroke and 29 percent decreased risk of all-cause death compared to consistent never or non-habitual tea drinkers.

Tea is one of the most popular beverages globally, Dr. Gu affirms. The inverse association between tea and health outcomes might originate from the effects of cardio-protective compounds in tea, Dr. Gu's research discovered.



“Tea, especially green tea, is a rich source of flavonoids, including mainly epicatechin, catechin, and epigallocatechin-3-gallate (EGCG). Previous mechanism studies have revealed that these bioactive compounds can attenuate oxidative stress, relieve inflammation, enhance endothelial and cardiomyocyte function.”

Earlier observational studies and random controlled trials have also explored using tea as a dietary supplement, which found that the bioactive compounds in tea could ameliorate CVD risk factors including hypertension and dyslipidemia. However, these studies were limited in evidence and further studies are still warranted, Dr. Gu affirms.

Research parameters

The first analysis included 100,902 participants with no history of heart attack, stroke or cancer. Participants were grouped into a set of habitual tea drinkers (three or more times a week) and those who drank less than three cups a week.

After an average period of around seven years, the researchers followed up on the health of the participants. In the subsequent survey, 14,081 participants were assessed under the same groupings at two time points. The average duration between the two surveys was 8.2 years and the median follow-up after the second survey was 5.3 years.

The study's findings hint at a

differential effect between tea types, Dr. Gu states. Green tea is a rich source of polyphenols, which protect against CVD and its risk factors, including high blood pressure and dyslipidaemia.

Black tea, however, is fully fermented and during this process polyphenols are oxidized into pigments and may lose their antioxidant effects. Black tea is often served with milk, which previous research has shown may counteract the favourable health effects of tea on vascular function.

The regional differences in tea consumption make researching tea's health benefits difficult. Milk and sugar?

Although the researchers took milk and sugar added to tea into consideration, they were unable to produce coherent results on these ingredients due to regional differences in their usage.

In addition, when milk or sugar are added into tea, extra calories are also added, which may have adverse health effects. Thus, people would get the most benefit when drinking tea plain, Dr. Gu maintains.

“We could not provide evidence on the influence of adding milk or sugar in the current study population because the Chinese tea drinkers seldom added other ingredients in tea.

Previous studies from Western

countries could provide a hint,” he continues. For example, black tea was associated with lower risk of heart disease and stroke in the Netherlands, Finland and Sweden, where less milk was added into tea.

“While there were no associations observed for black tea in the UK, where tea is often served with milk and/or sugar, scientists from Germany published their results in European Heart Journal in 2007 and found that milk counteracted the favourable health effects of tea on vascular function, in both human and animal studies,” he elaborates.

Commenting on the study's results, Registered Dietitian and spokesperson for the British Dietetic Association Jodie Relf states that “we need to be mindful of is that drinking tea alone is not going to improve our health. It is merely another tool to add to our belts. We cannot continue to eat high fat foods, live a sedentary lifestyle and expect tea to solve all our problems.”

In the future, the researchers aim to investigate the health benefits of tea drinking on other outcomes, such as cancer by following up on the current study populations.

They also endeavour to discover the reasons for the gender differences in the link between tea drinking and CVD, as well as refine the health effects of different types and amounts of tea.

By Anni Schleicher

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Vitamin D boosts chances of walking after hip fracture

Scientists studied the impact of vitamin D on post-surgery mobility

Science Daily March 17, 2020

Senior citizens who are not vitamin D deficient have a better chance of walking after hip fracture surgery, according to a Rutgers-led study.

The findings in The American Journal of Clinical Nutrition suggest that vitamin D deficiency could limit mobility in older adults, said senior author Sue Shapses, a professor in the Department of Nutritional Sciences at the School of Environmental and Biological Sciences at Rutgers University-New Brunswick.

Shapses suggests that older adults take 800 international units (IU), equivalent to 20 micrograms, of vitamin D daily to prevent deficiency. Vitamin D is important for bone health, and people get it through some foods, exposure to the sun and vitamin pills.

"An important next step is learning how vitamin D affects mobility," said Shapses, who is also an adjunct professor in the Department of Medicine at Rutgers Robert Wood Johnson Medical School and director of the Center for Human Nutrition, Exercise and Metabolism at Rutgers' New Jersey Institute for Food, Nutrition, and Health.

"For example, it is not clear if severe

vitamin D deficiency is associated with direct effects on muscle, cognition and/or other organ systems."

A broken hip -- among the most serious fall injuries -- is hard to recover from, with many people unable to live on their own afterward. In the United States, more than 300,000 people 65 or older are hospitalized for hip fractures annually and falling causes more than 95 percent of these type of fractures.

Women fall more frequently than men, experiencing three-quarters of hip fractures, and the number of fractures is likely to rise as the population ages, according to the U.S. Centers for Disease Control and Prevention.

Regaining mobility after a hip fracture is important for full recovery and to reduce the risk of death. But vitamin D deficiency is associated with reduced mobility after surgery to repair a hip fracture. The multi-site study of patients 65 or older in the United States and Canada examined the influence of vitamin D levels in blood serum and nutrition on mobility.

The study focused on death rate or inability to walk 10 feet (or across a room) without someone's help after surgery. The findings showed that vitamin D levels greater than 12 nanograms per milliliter (12 parts per billion) in blood serum are associated with a higher rate of walking at 30 and 60 days after hip

fracture surgery.

While poor nutrition is associated with reduced mobility 30 days after surgery, that factor was not statistically significant.

Still, in patients with high levels of parathyroid hormone, which leads to high levels of calcium in blood, mobility was reduced if their nutritional status was poor.

"This matters because vitamin D deficiency and malnutrition are common disorders in elderly patients with hip fractures and often occur together since both are complications of poor nutrition," Shapses said.

Previous studies have shown that taking 800 IU of vitamin D a day can prevent falling and fractures.

A Rutgers-led study published last year indicated that high vitamin D intake (4,000 IU a day) compared with 600 IU a day may reduce reaction time, potentially boosting the risk of falling and fractures.

The recommended dietary allowance for vitamin D is 600 IU daily for people from 1 to 70 years old and 800 for people over 70. "These studies suggest that too much or too little vitamin D will affect mobility and falls in the elderly," Shapses said.

The lead author is Lihong Hao, a post-doctoral associate in the Department of Nutritional Sciences. Co-authors include Jeffrey L. Carson, provost, New Brunswick at Rutgers Biomedical and Health Sciences and Distinguished Professor of Medicine and Richard C. Reynolds M.D. chair in General Internal Medicine at Rutgers Robert Wood Johnson Medical School; Yvette Schluskel, research scientist and statistician in the Department of Nutritional Sciences; and Helaine Noveck at Rutgers Robert Wood Johnson Medical School.

Benefits of fish in moderation while pregnant outweigh risks for child

Science Daily March 16, 2020

To eat or not to eat fish is a question that has long concerned pregnant women.

Now, a new USC study shows that children whose mothers ate fish from one to three times a week during pregnancy were more likely to have a better metabolic profile -- despite the risk of exposure to mercury -- than children whose mothers ate fish rarely (less than once a week).

The findings appear today in JAMA Network Open.

"Fish is an important source of nutrients, and its consumption should not be avoided," said Dr. Leda Chatzi, associate professor of preventive medicine at the Keck School of Medicine of USC and the senior investigator on the study.

"But pregnant women should stick to one to three servings of fish a week as recommended, and not eat more, because of the potential contamination of fish by mercury and other persistent organic pollutants."

Fish is a major source of omega-3 long-chain polyunsaturated fatty acids which are important for the developing fetus.

However, some types, such as swordfish, shark and mackerel, can contain high levels of mercury -- a potent toxin that can cause permanent neurological damage. Mercury contamination is also found in soil, air, water and plants.

Researchers looked at 805 mother and child pairs from five European countries participating in a collaborative research project known



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as the HELIX study, which is following women and their children from pregnancy onwards.

During their pregnancy, the women were asked about their weekly fish consumption and tested for mercury exposure.

When the children were from 6 to 12 years old, they underwent a clinical examination with various measurements including waist circumference, blood pressure, high-density lipoprotein cholesterol, triglyceride levels and insulin levels. These measures were combined to calculate a metabolic syndrome score.

More fish is not better

The children of women who ate fish from one to three times a week had lower metabolic syndrome scores than the children of women who ate fish less than once a week. But the benefit declined if women ate fish more than three times a week.

"Fish can be a common route of exposure to certain chemical pollutants which can exert adverse effects," said Nikos Stratakis, PhD, a USC postdoctoral scholar who was one of the study authors.

"It is possible that when women eat fish more than three times a week, that pollutant exposure may counterbalance the beneficial effects

of fish consumption seen at lower intake levels."

The study found that higher mercury concentration in a woman's blood was associated with a higher metabolic syndrome score in her child.

The study also examined how fish consumption by the mother affected the levels of cytokines and adipokines in her child. These biomarkers are related to inflammation, a contributor to metabolic syndrome.

Compared with low fish intake, moderate and high fish consumption during pregnancy were associated with reduced levels of proinflammatory cytokines and adipokines in the children.

This is the first human study to show that the reduction in these inflammation biomarkers could be the underlying mechanism explaining why maternal fish consumption is associated with improved child metabolic health.

Next, the researchers plan to look at the effects of consuming different types of fish with different nutrients and mercury levels and to follow up on these children until the age of 14-15 years.



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Does consuming fruit during pregnancy improve cognition in babies?

Science Daily March 4, 2020

You may have heard of a 2016 study linking cognitive enhancement in babies with eating more fruit during pregnancy.

But how strong is that link? That's the question scientists at the University of Alberta asked as they set out to verify the findings in a new study.

"Our research followed up on results from the original CHILD Cohort Study, which found that fruit consumption in pregnant mothers influences infant measures of cognition up to one year after birth," said Claire Scavuzzo, co-lead author of the study and postdoctoral researcher in the Faculty of Science's Department of Psychology. "Although the findings from this study were exciting, they could not establish that fruit consumption, rather than other factors, caused the improvements on infant cognition."

In order to settle the record and determine if fruit was truly the factor influencing infant cognition, the scientists began a study with the goal to replicate the effects in an experimental mammalian model.

"Our findings replicated what was found in humans and fruit flies. In a controlled, isolated way we were

able to confirm a role for prenatal fruit exposure on the cognitive development of newborns," explained Scavuzzo.

"We see this as especially

valuable information for pregnant mothers, as this offers a nonpharmacological, dietary intervention to boost infant brain development."

Results show that infant animal models of mothers who had their diets supplemented with fruit juice performed significantly better on tests of memory -- consistent with the previous study.

"Our results show that there is significant cognitive benefit for the offspring of mothers that ingest more fruit during pregnancy," said Rachel Ward-Flanagan, co-lead author and PhD student studying under the supervision of Professor Clayton Dickson, who embarked on the follow-up study with Scavuzzo in collaboration with Francois Bolduc and Piushkumar Mandhane, both associate professors in the Department of Pediatrics of the Faculty of Medicine & Dentistry and members of the Women and Children's Health Research Institute, which helped support the original study through funding provided by the Stollery Children's Hospital Foundation and supporters of the Lois Hole Hospital for Women.

Dickson, Scavuzzo, Ward-Flanagan, and Bolduc are part of the University of Alberta's cross-faculty Neuroscience and Mental Health Institute (NMHI), a consortium dedicated to the exploration of how the nervous system functions, the basis for disease, and the translation

of discoveries into improved prevention and treatment options.

"The idea that nutrition may also impact mental health and cognition has only recently started to gain traction," said Ward-Flanagan. "People want to be able give their kids the best possible start in life, and from our findings, it seems that a diet enriched with fruit is a possible way to do so."

The paper, "Prenatal fruit juice exposure enhances memory consolidation in male post-weanling Sprague-Dawley rats," was published in PLOS ONE.

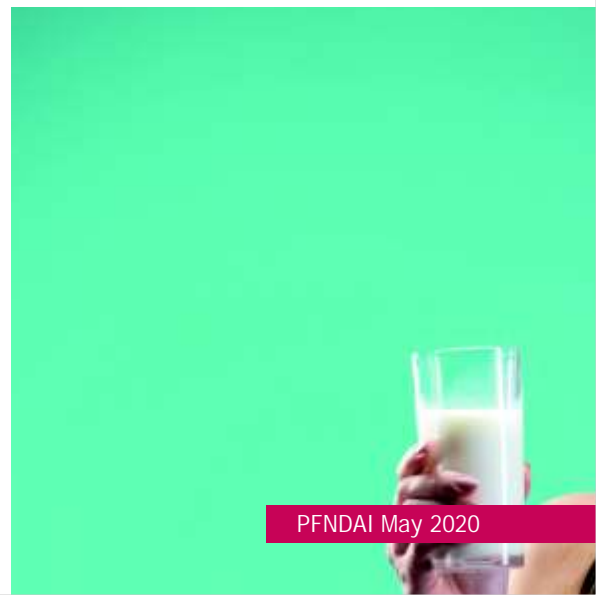
Can't sleep? Prebiotics could help *Dietary compounds found to influence gut metabolites, buffering stress*

Science Daily March 3, 2020

Think dietary fibre is just for digestive health? Think again.

Specific fibres known as prebiotics can improve sleep and boost stress resilience by influencing gut bacteria and the potent biologically active molecules, or metabolites, they produce new University of Colorado Boulder research shows.

The research could ultimately lead to new approaches to treating sleep problems, which affect 70 million Americans.



"The biggest takeaway here is that this type of fibre is not just there to bulk up the stool and pass through the digestive system," said Robert Thompson, a postdoctoral researcher in the Department of Integrative Physiology and lead author of the study, published today in the journal Scientific Reports.

"It is feeding the bugs that live in our gut and creating a symbiotic relationship with us that has powerful effects on our brain and behaviour."

Food for our bugs

Most people are familiar with probiotics, friendly bacteria present in fermented foods like yogurt and sauerkraut. More recently, scientists have taken an interest in prebiotics -- dietary compounds that humans cannot digest but serve as nourishment for our microbiome, or the trillions of bacteria residing within us.

While not all fibres are prebiotics, many fibrous foods like leeks, artichokes, onions and certain whole grains are rich in them.

For the study, the researchers started adolescent male rats on either standard chow or chow-infused with prebiotics and tracked an array of physiological measures before and after the rats were stressed. As reported in the researchers' previous study, those on the prebiotic diet spent more time in restorative non-

rapid-eye-movement (NREM) sleep. After stress, they also spent more time in rapid-eye-movement (REM) sleep, which is believed to be critical for recovery from stress.

While rats eating standard chow saw an unhealthy flattening of the body's natural temperature fluctuations and a drop in healthy diversity of their gut microbiome after stress, those fed prebiotics were buffered from these effects.

The new study sheds light on how prebiotics can help bust stress.

"We know that this combination of dietary fibres helps promote stress robustness and good sleep and protects the gut microbiome from disruption.

With this new study, we wanted to try to identify the signal," said senior author and Integrative Physiology Professor Monika Fleshner, director of the Stress Physiology Laboratory.

Using a technology called mass spectrometry to analyze the rats' fecal samples, the researchers measured metabolites, or bioactive small molecules produced by bacteria as food is broken down. They found rats on the prebiotic diet had a substantially different "metabolome," or make-up of metabolites. Theirs was higher in dozens of them, including fatty acids, sugars and steroids which may, via gut-brain signalling pathways, influence behaviour. The rats' metabolome also looked different after stress.

For instance, the rats on the standard chow diet saw dramatic spikes in allopregnanolone precursor and Ketone Steroid, potentially sleep-disrupting metabolites, while those on the prebiotic diet saw no such spike.

"Our results reveal novel signals that come from gut microbes that may modulate stress physiology and sleep," said Fleshner.

In search of a better sleeping pill While prebiotic dietary fiber is certainly healthy, it's uncertain whether just loading up on foods rich in it can promote sleep.

The rats were fed very high doses of four specific prebiotics, including: galactooligosaccharides, which are present in lentils and cabbage; polydextrose (PDX) an FDA-approved food additive often used as a sweetener; lactoferrin, found in breast milk; and milk fat globular protein, abundant in dairy products. "You'd probably have to eat a whole lot of lentils and cabbage to see any effect," said Thompson.

Prebiotic supplements already abound on natural food store shelves. But Fleshner said it's too soon to say whether a supplement or drug containing such compounds would be safe and effective for everyone. Depending on what their microbial make-up is, different people might respond differently. "These are powerful molecules with real neuroactive effects and people need to exercise some caution," she said.

Human studies are already in the works at CU Boulder.

Ultimately, Fleshner believes what they are learning in her lab could lead to a new class of options for people who can't sleep but don't like taking narcotics.

"Armed with this information, we might be able to develop a targeted therapeutic that boosts the molecules that buffer against stress and tamps down the ones that seem to disrupt sleep," she said. "It's exciting to think about." The study was funded in part by Mead Johnson Nutrition, formerly an infant formula company.





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Resolving bitter debate over low-cal sweeteners

Science Daily March 3, 2020

Several studies in recent years have reported that low-calorie sweeteners in foods and beverages disrupt the human metabolism, promoting the development of diabetes and obesity. But other studies have found that consuming low-calorie drinks and food has little impact on metabolism and might actually aid in weight loss.

A new study by Yale researchers published March 3 in the journal *Cell Metabolism* may help reconcile these conflicting findings. The study showed that people who periodically drank beverages with the low-calorie sweetener sucralose, which is found in low-cal soft drinks, candy, breakfast bars, and other products, did experience problematic metabolic and neural responses -- but only when a carbohydrate in the form of a tasteless sugar was added to the drink. In contrast, people drinking beverages with low-calorie sweeteners alone, or beverages with real sugar, showed no changes in brain or metabolic response to sugars.

"The subjects had seven low-calorie drinks, each containing the equivalent of two packages of Splenda, over two weeks," said senior author Dana Small, professor of psychiatry and psychology and director of the Modern Diet and

sweetener was consumed with a carbohydrate added to the drink, sugar metabolism and brain response to sugar became impaired."

The study was designed to test the theory that consuming sweet foods and beverages without calories "uncouples" sweet taste perception from energy intake, resulting in a diminished physiological response to sugar that could ultimately lead to weight gain, glucose intolerance and diabetes.

The new study of 45 individuals demonstrates that the uncoupling hypothesis is wrong, the researchers reported: Rather, the findings suggest, consuming low-calorie sweeteners with a carbohydrate impairs metabolism. "The bottom line," said Small, who also directs Yale's newly formed division of nutritional psychiatry, "is that, at least in small quantities, individuals can safely drink a diet soda, but they shouldn't add French fries."

"This is an important information, particularly for people with diabetes who shouldn't consume sugars," Small said.

Physiology Research Center.

"When the drink was consumed with just the low-calorie sweetener, no changes were observed; however, when this same amount of low-calorie

Not only what you eat, but how you eat, may affect your microbiome

Science Daily March 3, 2020

The importance of the microorganisms that live on and in our bodies has long been recognized, and their complex synergistic impact on our systemic health is elucidated. Now, researchers from Japan have shown the importance of normal eating for the composition and balance of our individual oral and gut microbiota.

In a study published in *Frontiers in Cellular and Infection Microbiology* in December 2019, researchers from Tokyo Medical and Dental University (TMDU) have shown the importance of normal feeding for establishing and maintaining appropriate bacteria in the mouth and the gut.

Our bodies are symbiotic units of human cells and microorganisms. Far from being deleterious, this microbiota is now recognized as a vital modulator of functions such as digestion, mood, sleep and response to drugs, as well as susceptibility to diabetes, autism, obesity and cancer. Patients convalescing from stroke often have dysphagia, and need to be fed via a tube to bypass the mouth.

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PFNDAI May 2020

"We hypothesized that resuming oral food intake could modify the composition of oral and gut microbial communities in tube-fed patients," explains senior author Haruka Tohara, Associate Professor of Gerodontology and Oral Rehabilitation at TMDU.

"To test this, we compared oral and gut microbiome profiles before and after the resumption of oral food intake in eight post-stroke patients recovering from enteral nutrition."

Senior author, Takahiko Shiba, elaborates further: "We evaluated oral and gut microbiota community profiles by sequencing 16s rRNA in saliva and feces samples collected when the patients were being fed via tube and after they switched back to eating normally. We then examined the co-occurrence and interaction patterns of the microbial communities and conducted computational prediction of their function."

The researchers were surprised to find that re-initiation of oral food intake dramatically altered and diversified both oral and gut microbiomes. Though very different in composition, both showed an increase of the family *Carnobacteriaceae* and genus *Granulicatella* suggesting that orally ingested bacteria may directly modulate the gut community thus affecting systemic health.

Although oral microbiota alteration was more significant than that in the gut, metagenome prediction showed more differentially enriched pathways in the gut, especially those related to fatty acid metabolism.

"Networks in both microbiomes were simpler and fewer, which may indicate healthier restructuring," observes lead author Sayaka Katagiri, Assistant Professor of Periodontology at TMDU. "Additionally, altered interaction between core species suggests improved microbiome balance."

Given the problems associated with tube feeding, this study provides another overwhelming motive for early reversion to normal feeding: that of restoring a beneficial oral and gut microbiome.

to that of a human who drinks four cups of brewed coffee daily.

In addition to reducing weight gain and cholesterol production, mate tea contains phenolic compounds, vitamins, and flavonoids that have been found to offer additional health

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AntonioGuillem



Caffeine shown to reduce weight gain and fat accumulation

IFTNEXT March 13, 2020

Diets high in fat and sugar are known to fuel obesity. Still, a recent study published in the *Journal of Functional Foods* found that caffeine consumption may help to mitigate some effects of an unhealthy diet by reducing lipid storage in fat cells and triglyceride production.

During the study, rats were fed a diet of 40% fat, 45% carbohydrate, and 15% protein, along with either caffeinated or decaffeinated mate tea.

Those on the caffeinated diet experienced 16% less weight gain and 22% less accumulation of body fat than those on the decaffeinated regimen. The caffeinated diet provided a level of caffeine similar

benefits.

However, caffeine was determined to be the primary driver of the reduction in weight gain and body fat. After experimenting with a variety of caffeine treatments, the researchers concluded that caffeine from any source decreased lipid accumulation in fat cells by 20% to 41%.

Study co-author Elvira Gonzalez de Mejia, director of the division of nutritional sciences at the University of Illinois at Urbana-Champaign, believes the findings indicate that mate tea and caffeine can be considered anti-obesity agents.

The "research could be scaled to humans to understand the roles of mate tea and caffeine as potential strategies to prevent overweight and obesity, as well as the subsequent metabolic disorders associated with these conditions," she noted in a press release.



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Sleep improved by tryptophan and melatonin intake in diet and supplements, says study review

30 Mar 2020 Nutrition Insight

Nutrients such as tryptophan and melatonin consumed through food may have a positive effect on sleep metrics, according to a new Australian study.

It set out to establish the link between diet and sleep in healthy individuals, which is generally less researched in comparison to studies concerning patients with sleep-related disorders. As simple dietary changes to increase tryptophan and melatonin intake via food items were found to improve sleep quality, the study affirms that its findings are an important step in determining diet-related guidelines for general populations.

“The relationship between sleep and diet has gained considerable interest. However, it has largely focused on how diet can increase sleep for those with sleep-related disorders and co-morbidities, such as depression. Our findings suggested even in adults without clinically diagnosed sleep conditions, diet can influence sleep quality,” study author Dr. Saman Khalesi, Senior Lecturer at Central

Queensland University, Australia, tells NutritionInsight.

He highlights that this research has become particularly relevant for the current climate where sleep may be impacted by the stress of COVID-19. By making small dietary changes, individuals may be able to improve their sleep and consequently help maintain their immune health.

“It should be noted that sleep quality depends on individual factors, such as stress, health status and lifestyle, as well as environmental factors which can influence sleep quality. Diet is just one of the factors influencing sleep,” Dr. Khalesi explains.

Food for sleep

The given review identified four main themes in 32 studies previously researching the link between sleep and diets, namely tryptophan consumption and tryptophan depletion, dietary supplements, food items and macronutrients. Dr. Khalesi affirms that literature investigating the effect of tryptophan-rich or depleted diets on sleep quality has been around for over two decades. “However, these studies usually have conflicting findings with a specific focus on populations with severe sleep-related disorders,” he comments.

The review found that supplements

containing zinc, vitamin B, polyphenols and crocetins have proven effective in improving sleep quality. Dr. Khalesi highlights, however, that nutrients are more likely to benefit health when consumed as part of a balanced diet. “If dietary changes, such as increased fiber intake, increased carbohydrate and decreased fat intake, or consuming seafood as part of a balanced diet are not possible, then supplements are still useful for promoting sleep.”

Recently on World Sleep Day, NutritionInsight highlighted nutritional supplement companies such as Pharmactive, whose Spanish saffron-based ingredient affron can help reduce overall insomnia by 25 percent and induce restorative sleep even at very low doses. Having paired melatonin with cannabidiol (CBD), Charlotte’s Web by the Stanley Brothers created CBD Gummies: Sleep, which integrates hemp’s naturally occurring phytocannabinoids together with melatonin to support sleep quality and duration.

Milk, eggs, cheese, chicken and fish contain tryptophan and can be included in a balanced diet as a way to promote better sleep. Melatonin is present in Spanish Jerte Valley cherries, grains such as rice and oats, and a variety of nuts, including walnuts and peanuts.

“However, it is important to note that large dietary changes can be detrimental to sleep and health. Small dietary adjustments can be helpful,” Dr. Khalesi flags.

He concludes by underlining the importance of future studies to consider the “every day” factors that may influence what and when we eat. Some variables include work schedules, physical and mental health, light exposure, physical activity and family life. “All of these factors may impact our sleep and our ability to make dietary changes,” he adds.

By Anni Schleicher

Plant-based diets help prevent and manage asthma, review suggests

30 Mar 2020 Nutrition Insight

A plant-based diet could help prevent and manage asthma, while dairy products and high-fat foods raise the risk.

That is according to a new study review published in the online journal *Nutrition Reviews*. Study author Dr. Hana Kahleova says the research “offers hope that dietary changes could be helpful,” and a plant-based diet is beneficial because it has been shown to reduce systemic inflammation, which can exacerbate asthma.

“Asthma is a chronic condition that affects more than 25 million US adults. Unfortunately, it can make people more vulnerable in the COVID-19 outbreak,” says Dr. Kahleova, Director of Clinical Research for the Physicians Committee.

Plant-based diets can be beneficial for an abundance of reasons, from a health perspective as well as for the planet. Just last week, *NutritionInsight* reported that consuming tofu and foods rich in isoflavones – such as plant proteins – was linked to lower risk of heart disease, especially for younger women and postmenopausal women not taking hormones.

Researchers with the Physicians Committee for Responsible Medicine examined the evidence related to diet and asthma and found that certain foods – including fruits, vegetables, whole grains and other high-fibre foods – can be beneficial. Meanwhile others – such as dairy products and foods high in saturated fat – can be harmful.

The authors also highlight a prior study finding that when compared to a control group, asthma patients who consumed a plant-based diet for eight weeks experienced a



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greater reduction in use of asthma medication and less severe, less frequent symptoms.

In another study, asthma patients adopted a plant-based diet for a year and saw improvements in vital capacity – a measure of the volume of air patients can expel – and other measures.

Plant-based diets are also high in fibre, which has been positively associated with improvements in lung function. The researchers also highlight the antioxidants and flavonoids found in plant foods, which may have a protective effect.

The review finds that dairy consumption can raise the risk for asthma and worsen symptoms. A 2015 study found that children who consumed the most dairy had higher odds of developing asthma, compared with the children consuming the least. In another study, children with asthma were placed in either a control group, where they made no dietary changes, or in an experimental group where they eliminated dairy and eggs for eight weeks.

After eliminating dairy, the experimental group experienced a 22 percent improvement in peak expiratory flow rate – a measure of how fast the children were able to exhale – while children in the control group experienced a 0.6 percent decrease.

High fat intake, consumption of saturated fat, and low fibre intake

were also associated with airway inflammation and worsened lung function in asthma patients.

“This groundbreaking research shows that filling our plates with plant-based foods – and avoiding dairy products and other high-fat foods – can be a powerful tool for preventing and managing asthma,” explains Dr. Kahleova.

During the current COVID-19 pandemic, the US Centers for Disease Control and Prevention (CDC) urges those with asthma to have a plan in place – including stocking up on supplies, taking asthma medication as needed, avoiding crowds and practicing good hygiene.

Contrasting results

In contrast, a Greece-based study published earlier this month highlighted that plant-based diets have been widely promoted for cardiovascular disease (CVD) risk reduction, but not all kinds of plant-based diets are healthy.

Meanwhile, a recent UK survey conducted by health advocate Action on Salt (AoS), has chipped at the health halo of plant-based meat analogs due to their notably high salt and saturated fat contents.

Nearly two in five plant-based and vegan meals available in British fast food outlets and coffee chains contain more than 3 g of salt, which is half of an adult’s maximum daily intake of salt.

Highly purified EPA could prevent 70,000 CVD events in US adults, study finds

27 Mar 2020 Nutrition Insight

Therapy with icosapent ethyl, a purified stable eicosapentaenoic acid (EPA), could help prevent more than 70,000 cardiovascular events per year in US adults with a history of cardiovascular disease (CVD) or diabetes mellitus.

This is the conclusion of a multinational clinical trial called REDUCE-IT conducted at the University of California, Irvine (UCI), US, that will be presented at the upcoming ACC.20/World Congress of Cardiology conference. As heart health remains a constant national concern, this study provides a promising avenue for further research on long-term preventive measures to cardiovascular events via supplementation.

"I was not surprised by the findings given the unprecedented results showed an overall 25 percent reduction in CVD event risk. These results apply to many patients with CVD or diabetes who are on statin therapy," lead study author Dr. Nathan Wong, Professor and Director, Heart Disease Prevention Program and Division of Cardiology at the UCI tells NutritionInsight.

The study identified 319 US adults with prior CVD and diabetes mellitus with available REDUCE-IT inclusion criteria from the Centers for Disease Control and Prevention's National Health and Nutrition Examination Survey (NHANES) surveys 1999-2016. The researchers estimated that if the test subjects are given icosapent ethyl for the REDUCE-IT median trial period of

4.9 years, it could potentially prevent a total of 349,817 primary CVD outcomes, or 71,391 per year. Common primary CVD events include CVD death, nonfatal myocardial infarction, stroke, revascularization or unstable angina.

Market positioning

The heart health benefits associated with omega 3 supplements have the



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nutrition industry booming. Over the past four years, global supplement launches featuring omega 3 (EPA, docosahexaenoic acid (DHA) or fish oil) as an ingredient have witnessed an average annual growth of 8.7 percent between 2016 and 2019, according to Innova Market Insights.

Moreover, the market researcher further notes omega 3 inclusion has the highest penetration in Asia, with nearly 8 percent of all supplement launches tracked feature omega 3 as an ingredient (Asia, 2019). Omega 3 also ranked second in Top 5 positionings for supplement launches tracked with marine oils alone (Global, 2019).

However, Dr. Wong stresses that

icosapent ethyl is not meant for broader supplement usage. "The purity and processing of the icosapent ethyl product is very different from nutritional supplement omega 3 products. The findings of REDUCE-IT must not and should not be extrapolated to any other fish oil product. Vascepa is also the only fish oil product that is US Food and Drug Administration (FDA)-approved to reduce the risk of cardiovascular events. No other prescription or dietary supplementary fish oil product can make that claim," Dr. Wong underscores.

Vascepa produced by Amarin Pharma was used as the basis of the REDUCE-IT analysis. Besides lowering cardiovascular events, icosapent ethyl is FDA-approved to reduce very high triglycerides. It can also reduce cardiovascular events in patients with multiple CVD risk factors who have moderately elevated triglycerides and are on maximally tolerated statin therapy.

What's next?

As the most used omega 3 fatty acids, both EPA and DHA are touted for their heart health benefits. However, DHA was not used in the REDUCE-IT trial. "There is much we still need to understand about the differences between EPA and DHA," explains Dr. Wong. "There is data suggesting differences in the ability to stabilize cell membranes that could affect lipid transport. In addition, DHA is known to raise LDL-cholesterol."

"We hope that similar analyses can be done in other real-world populations, ideally those with follow-up for actual cardiovascular events and mortality that will help to further validate the impact of this therapy in different patient populations," Dr. Wong concludes.

By Anni Schleicher, with additional reporting by Akhil Aiyar



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Biofortification: FAO calls for policy measures and government intervention

19 Mar 2020 Nutrition Insight

Biofortification can improve crops' quality and deliver high yields and steady agronomic performance.

Consequently, it provides the key to tackling malnutrition and resolving global nutrient deficiencies at significant scale and should not be regarded as “alternative” to nutrition-enhancing agricultural and food-related interventions, as told to NutritionInsight by UN Food and Agriculture Organization (FAO)’s Senior Nutrition Officer, Dr. Patrizia Fracassi. NutritionInsight explores FAO’s stance on the role governments and policy inclusion can play in sustainable and biofortified food production.

“The ultimate nutrition goal is that everyone has access to an affordable, diversified healthy diet. Biofortification is a cost-effective, food-based, nutrition-sensitive agricultural approach for improving nutrition.

It is one of a range of complementary strategies, including diversification of various plants and

animals in the production system, dietary diversification, supplementation and commercial food fortification. Biofortification is part of the solution to tackling malnutrition and hidden hunger,” affirms Dr. Fracassi.

According to her, national governments can achieve sustainable mainstreaming of biofortification by taking both a bottom-up approach via reinforced nutrition education programs and a top-down path through policy making.

In terms of proper education, the FAO encourages governments to include biofortified inputs and foods in their programs, such as school meals as well as government subsidies and procurements.

Furthermore, policy making includes integrating biofortification into existing agriculture, health and social safety net policies and programs, regulations and standards pertaining to seeds and foods, and varietal release protocols, Dr. Fracassi details.

“Governments can incentivize the private sector to increase uptake of biofortification in their product portfolios through tax breaks or subsidies for producing biofortified products and offering free or

subsidized training on biofortified crops and foods,” she explains.

Moreover, monitoring efforts and end-cycle evaluations can establish whether government programs deliver the intended outcomes and are contributing to the overall impact of reducing micronutrient deficiencies.

The food industry is not exempt from FAO’s vision of sustainable scaling up of biofortification. For example, efforts include increasing the availability and affordability of nutrient-dense foods, food fortification, safety and quality.

Similarly, it can invest in agricultural research on crop varieties with high micronutrient content as well as in R&D to increase the availability and affordability of food-products from biofortified crops. These efforts combined can encourage consumer demand and consumption for nutrient-rich, biofortified foods.

Who’s the main target group?

Reliance on limited staples for their diets and limited access to a diversified, healthy diet has augmented the risk group for malnutrition.

Dr. Fracassi identifies children up to six years old and non-pregnant, non-lactating women of reproductive age (WRA), between 15 and 49 years, as particularly susceptible.

By 2018, an estimated 38 million people worldwide benefited from the production and consumption of biofortified crops and foods.

Farming households in low- or middle-income countries can be reached with biofortified crops through social, commercial or farmer-to-farmer delivery channels, Dr. Fracassi explains.

Biofortified examples include high-iron bean varieties in Rwanda, Uganda and the Democratic Republic of the Congo, which have helped prevent iron deficiency and improve cognitive performance in young women and adolescents. Orange flesh sweet potatoes have also improved vitamin A in eight African countries in the battle against child morbidity, she underscores.

“When combined with interventions that promote diet diversification and targeted supplementation to specific population groups, biofortified crops ultimately make for one component of a suite of complementary strategies to reduce micronutrient deficiencies,” Dr. Fracassi concludes.

By Anni Schleicher, with additional reporting from Kristiana Lalou

Seniors should spread protein intake throughout day, researchers flag

17 Mar 2020 Nutrition Insight

Older people should be spreading their protein intake evenly across all meals to most effectively mitigate against age-related muscle loss.

This is according to research from the University of Birmingham, UK, which found that in comparison to young and middle-aged people, older study participants were more likely to eat a lower-quality protein source, such as bread, at lunchtime. The researchers highlight that this offers evidence for revised nutritional guidelines and are calling for a “more sophisticated and individualized” approach.

“These findings contribute to a

growing body of evidence suggesting that dietary protein guidelines should be altered for older adults. While many older adults consume more than the current recommendations for dietary protein, it is clear that their protein is consumed in an uneven fashion. This means very little with breakfast and lunch and most of the daily protein coming at dinner time,” Dr. Leigh Breen, Senior Lecturer in Exercise Physiology and Metabolism at the University of Birmingham and an author of the study, tells NutritionInsight.

He continues that to support muscle mass and strength in older age, the researchers believe that sufficient protein (at least 30 g on average) needs to be consumed at each main meal throughout the day. Evenly distributing protein helps to ensure that each meal provides sufficient amino acids to support muscle mass in older age.

distribution that would support muscle growth responses on just one occasion in the day,” Dr. Breen details.

Influencing guidelines

The research was inspired by a drive to generate evidence to support the idea that dietary protein recommendations need to be reconsidered in older adults. “We know that older muscles need more dietary protein than younger muscles, but this is not reflected in the current guidelines, where recommendations are broadly similar for all adults. Hence, we wanted to characterize the eating habits of healthy older adults in our local population,” explains Dr. Breen.

The results show that a one-size-fits-all guideline for protein intake isn’t appropriate across all age groups. Meanwhile, Dr. Benoit Smeuninx, first author of the study, states that



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“The muscle growth response to food intake is relatively short-lived, no more than several hours. Therefore, there is a need to ensure that sufficient protein is consumed around four hours after the previous meal. Even spreading of protein intake helps to ensure muscle benefit repeatedly across the day, as opposed to an uneven protein

the results show that a one-size-fits-all guideline for protein intake isn’t appropriate across all age groups. “Simply saying older people should eat more protein isn’t really enough either. We need a more sophisticated and individualized approach that can help people understand when and how much protein to consume to support muscle mass.”

Dr. Breen further adds that certain aspects of the findings were surprising, while others were not.

Previous research had established that dietary protein intake alters with advancing age for a number of reasons, including but not limited to changes in taste perception, chewing efficiency and socio-economic factors, for example cost and eating out less.

“While we were encouraged that many of our healthy older population consumed protein above the current recommended level, we were surprised to see how low protein intake was at breakfast and lunch. Even more concerning was that the quality of protein at these meals was often quite low, meaning that these protein sources would not provide all the amino acids that our muscles need,” he continues.

Protein for seniors has been a key focus for many companies in recent years as people are living longer lives than ever before.

NutritionInsight has previously reported on how companies are rapidly innovating to address a range of needs, with muscle mass-protecting protein being a particular emphasis.

Younger people to benefit from spreading protein?

The study divided 120 participants into three groups, with average ages of 23, 51 and 77. The participants completed a food diary over a three-day period, weighing out every single food item consumed.

This allowed the researchers to identify 18 different patterns of protein intake throughout the day, showing a wide variety of eating habits.

Dr. Breen says that it is currently unclear if younger people would also benefit from spreading their protein.

“Younger adults need less protein to support their muscle mass, so it is easier for younger adults to consume sufficient amounts with each main meal. However, younger athletic populations may benefit from higher and more regular protein intakes and this strategy should be considered in order to support the training goals of this population.”

Looking forward, future areas of research include studying how protein needs in hospitalized individuals could aid the maintenance of muscle mass.

Another avenue of exploration is the interaction between physical activity protein consumption in the fight against age-related muscle loss.

By Katherine Durrell

Female nutritional needs throughout life cycle spotlighted for International Women's Day

06 Mar 2020 Nutrition Insight

Women's nutritional needs vary throughout their life stages, shifting in nature from childhood to adulthood and childbearing years, to old age and infirmity.

Ahead of Sunday's annual International Women's Day, NutritionInsight speaks with three

Registered Dietitians from the UK, the US and Australia, who highlight how a nutritious, balanced diet and regulated supplementation can help navigate bodily changes throughout one's life cycle.

Regarding this year's International Women's Day theme, “An equal world is an enabled world,” they also stress the importance of conducting clinical studies targeting male and female health with an equal male-female study participant ratio.

As nutritional needs change, meeting adequate macronutrient needs, such as protein, carbohydrate and fat, and micronutrient needs, such as vitamins and minerals, is essential and will vary between these stages, says Milly Smith, spokesperson for the Dietitians Association of Australia.

Meanwhile, the US Academy of Nutrition and Dietetics' spokesperson, Yasi Ansari, details a balanced diet as including nutritious whole grains, fruits, vegetables, lean protein and heart-healthy fats throughout the day and with every meal.

Above all, adhering to a balanced, diverse diet helps maintain overall health throughout the female life cycle.

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Puberty, menstruation and pregnancy

Aisling Pigott, spokesperson from the British Dietetic Association, underscores that adequate body fat and energy are essential to support the onset of puberty in young girls. “Appropriate vitamin and mineral intake are important during this period to support bone mass.”

Moreover, increased iron intake is encouraged as monthly menstrual cycles can put females at risk of iron deficiency.

That is easier said than done, given common iron supplements can cause unpleasant side effects such as abdominal pain and constipation.

Supplement company Taiyo's take on circumventing gastrointestinal range from its SunActive Fe for liquid consumption to its Regular Girl prebiotic fibre.

Before and during pregnancy, increased folate and folic acid intake is an established means of preventing the risk of neural tube defects in the infant and helps decrease the risk of birth defects, Smith notes.

As previous research confirms the importance of folic acid in the first 1,000 days of life, Ansari recommends foods that naturally contain folate, such as leafy greens and beans, and fortified foods, such as bread and breakfast cereals.

On top of a balanced diet, Pigott additionally recommends women considering pregnancy to supplement with folic acid as well given the need from folate and folic acid are higher in pregnant and breastfeeding women than non-pregnant women during their childbearing age.

Responding to this need,

Arla Foods Ingredients (AFI) launched two maternal supplementation prototypes under its Smart Mama concept containing folic acid, which helps prevent said neural tube congenital disabilities. Similarly, Probi found its FerroSorb supplement can improve the iron status of pregnant women significantly via its folic acid, vitamin C and iron mix.

Battling menopause with iron
Once menopause dawns on elderly women, foods rich in iron, calcium and vitamin D can help prevent osteoporosis, a bone-weakening disease common in senior citizens. “From perimenopause to post-menopause and beyond, women's bone health is particularly important as estrogen levels drop. Good fiber, calcium and balanced meals during older age can be an important part of aging and maintaining muscle mass,” Pigott summarizes.

Prior to menopause, Ansari emphasizes how prevention can begin while women are younger. Notably, the healthy aging trend has not only led industry to focalize prevention methods, but also target

more senior citizens with nutrition NPD.

“Women have been treated as small men when it comes to health and

activity recommendations,” Pigott stresses.

An equal world is an enabled world

Annually celebrated on March 8, this year's International Women's Day's theme is “an equal world is an enabled world.” In terms of equality in the scientific community, all three dietitians question the legitimacy of researchers predominantly selecting men as default test subjects in clinical studies.

“For too long, women have been treated as small men when it comes to health and activity recommendations. Our health, nutritional needs and disease risks will be similar, but are still different. Our advice needs to consider this,” Pigott stresses.

When men are used as the default test for a clinical study that relates to a female health issue, Smith deems it should only be extrapolated for men. “An optimal clinical trial for a female-specific issue would need to be completed on female participants,” she states.

In general biomedical research, Ansari also notes how vital it is to include women as well as men in clinical trials and analyze results by gender to better understand key differences and, ultimately, advance public health.

The importance of balanced male-female ratios is seen in cardiovascular trials as well as responses to medications, to name a few examples.

“There are biological, environmental and behavioral differences that can affect the outcome in a study between gender groups. It is improving; however, further progress can be made in this area to increase the presence of female subjects in studies,” Ansari concludes.

By Anni Schleicher

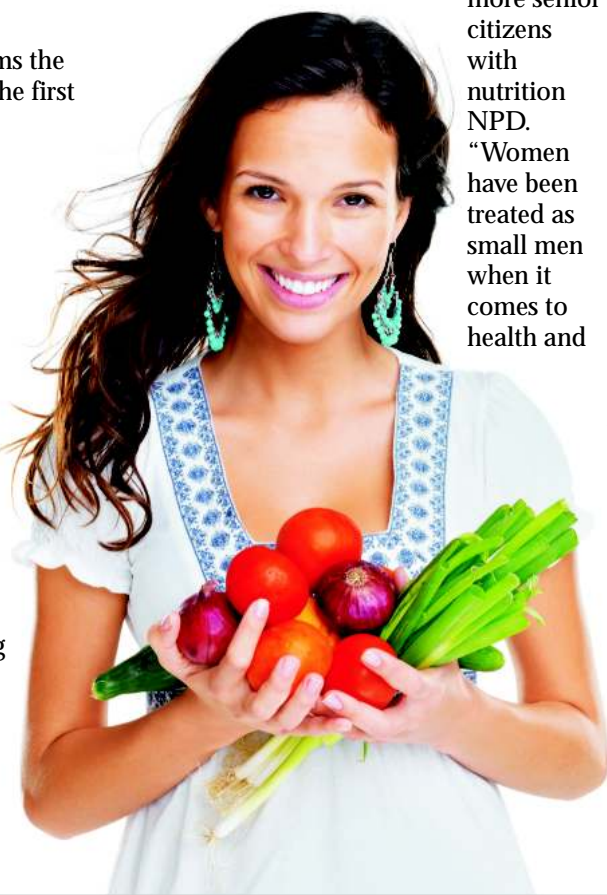


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Jacob Wackerhausen

Omega 3 and prostate cancer connection flagged by review

The study notes that omega 3s may benefit heart health but also influence prostate cancer occurrence

02 Mar 2020 Nutrition Insight

Omega 3s may do as much harm as they do good - according to new research from the University of East Anglia (UEA).

Two systematic reviews have found that omega 3 supplements may slightly reduce coronary heart disease mortality and events, but slightly increase the risk of prostate cancer. The researchers note that further trials are warranted to better understand the health outcomes related to omega 3 intake, particularly through oily fish as a whole food. The research was endorsed by the World Health Organisation (WHO).

"Fish oil supplements do not appear very protective, but neither are they harmful," Dr. Lee Hooper, from UEA's Norwich Medical School, tells NutritionInsight. "Long-chain omega 3 fats are prescribed for reducing blood triglycerides and they work well for this. Otherwise, we suggest that people choose to promote their health in other ways, such as spending the cost of the supplements instead on an enjoyable physical activity or nutritious meal – running shoes, walking boots or some fish or fruit," affirms Hooper.

Omega 3s are a type of fat that is readily available as over-the-counter supplements and they are widely bought and used. Small amounts are essential for good health and can be found in the food that we eat including nuts and seeds and fatty fish, such as salmon.

The sister analyses, which were published in the British Journal of Cancer and the Cochrane Database of Systematic Reviews, found that

both beneficial and harmful effects from taking omega 3 supplements are small.

"These large systematic reviews included information from thousands of people over long periods. This large amount of information has clarified that if we take omega 3 supplements for several years, we may slightly reduce our risk of heart disease, but balance this with very slightly increasing our risk of some cancers.

The overall effects on our health are minimal," she explains.

Oily fish is rich in protein, energy, and a variety of useful micronutrients, as well as omega 3s.

Large scale trials

The research team looked at 47 trials involving adults who didn't have cancer, who were at increased risk of cancer, or had a previous cancer diagnosis, and 86 trials with evidence on cardiovascular events or deaths.

More than 100,000 participants were randomized to consume more long-chain omega 3 fats from fish oils, or maintain their usual intake, for at least a year for each of the reviews. They studied the number of people who died, received a new diagnosis of cancer, heart attack or

stroke or died of any of the diseases.

If 1,000 people increase their long-chain omega 3 intake – by taking a fish oil, EPA or DHA supplement – for around four years, six of those people will not experience a heart attack or angina that they would have had otherwise, Hooper notes. "Additionally, three of those people will not die of a heart attack. However, an extra three people will be diagnosed with prostate cancer," she adds.

"Meanwhile, the effects of increasing total polyunsaturated fats are similar but stronger. If 1,000 people increase their polyunsaturated fat intake – by using polyunsaturated oils in cooking and a polyunsaturated margarine for spreading – for around four years, then 19 of those people will not experience a heart attack or angina, of whom five would have died. However, an additional eight people will experience a cancer diagnosis, two of which would have died," she says.

"Our previous research has shown that long-chain omega 3 supplements, including fish oils, do not protect against conditions such as anxiety, depression, stroke, diabetes or death," Hooper further explains.



As for why omega 3s may be linked to cancer, the mechanisms are not clear.

“Protective effects of total polyunsaturated fat on heart health appear to be mediated via reductions in blood cholesterol levels. Long-chain omega 3 effects on cancer could be mediated by heavy metals such as mercury, cadmium, chromium, nickel, lead and cobalt and toxic compounds such as dioxins, which have been found in fish and fish oils.

However, this doesn't explain the effects of increasing polyunsaturated fats more generally on cancers. Effects may be mediated by reactive oxygen species, but our trials did not provide these intermediate markers,” continues Hooper.

“The evidence on omega 3 mostly comes from trials of fish oil supplements, so health effects of oily fish, a rich source of long-chain omega 3, are unclear.”

Oily fish is a very nutritious food as part of a balanced diet, rich in protein and energy as well as important micronutrients such as selenium, iodine, vitamin D and calcium – it is much more than an omega 3 source.

“We would suggest following the general healthy eating advice to eat two portions of fish each week, one of which should be oily fish. Oily fish includes mackerel, herring, salmon, pilchards and fresh tuna, not canned,” Hooper adds.

“Considering the environmental concerns about industrial fishing and the impact it is having on fish stocks and plastic pollution in the oceans, it seems unhelpful to continue to take fish oil tablets that give little or no benefit.”

More trials needed

Looking ahead, Hooper stresses that more trials of the health effects of eating more oily fish are needed.

“Oily fish is rich in protein, energy, and a variety of useful micronutrients like iodine, selenium, calcium and so on, as well as omega 3. Understanding the health effects of eating more oily fish would be very useful, and an ideal research topic,” she states.

Hooper further notes that there are several large ongoing trials of supplemental long-chain omega 3 fats from fish oil supplements and that no further trials should be initiated until the ongoing trials have reported.

“Ongoing and completed trials should make data on baseline long-chain omega 3 intake, and details of deaths, cancer diagnoses, cardiovascular outcomes, diabetes, cognition, depression, inflammatory bowel disease, lipids, adiposity and blood pressure available, as well as other key health outcomes, regardless of their primary outcomes,” she concludes.

Further large and high-quality trials of alpha-linolenic acid (ALA, the plant-based omega 3, found in rapeseed or canola oil, soya oil, flaxseed oil and some nuts) carried out in lower- and higher-income countries, and that assess baseline ALA intake and use biomarkers to assess compliance would be helpful to clarify the health effects of ALA (on cardiovascular and cancer diagnoses and deaths).

Meta-analysis reveals omega-3 supplementation could improve urine protein excretion in diabetics

By Guan Yu Lim
12-Mar-2020 – NutraIngredients Asia

A meta-analysis of 10 randomised controlled trials has found that supplementation of omega-3 fatty acids for 24 weeks could significantly reduce urine protein excretion (proteinuria) in people

with type 2 diabetes (T2D).

According to researchers in Thailand and the US, while omega-3 could reduce the amount of proteinuria in both type 1 and type 2 diabetes, the association was only significant among people with T2D ($p=0.03$).

Proteinuria is commonly used as a predictor of cardiovascular and stroke events among diabetic patients, and between 30 to 40% of patients with diabetes will develop diabetic kidney disease which is characterised by proteinuria.

Researchers say of their current findings that omega-3 fatty acids could possibly help diminish proteinuria and subsequently reduce cardiovascular complications and stroke incidence among people with T2D.

Even though several meta-analyses have previously investigated the effects of omega-3 fatty acids on proteinuria, the possible benefits of omega-3 fatty acids remain unclear, especially among diabetic patients.

They added: “This is the largest meta-analysis to assess the treatment effect of omega-3 fatty acids on proteinuria and other outcomes among different types of diabetic patients.” The study was published in the journal, PLOS ONE .



The researchers conducted electronic searches in PubMed, Embase and Cochrane Central Register of Controlled Trials from 1960 to 2019 and selected 10 RCTs with a total of 344 participants. The criteria for RCTs were those examining the effect of omega-3 fatty acid supplementation compared to control on proteinuria or albuminuria, and included both T1D and T2D patients. There were no restrictions on sample size or study duration. There were three trials conducted in North America (USA), three in Europe (UK, Denmark, Czech), three trials conducted in Asia (two in Japan, South Korea) and one trial conducted in Australia. There were five trials that included only T2D, three trials that included only T1D and two trials that included both T1D and T2D.

In these RCTs, sample size varied from nine to 79 patients. Study follow-up durations ranged between 6 to 52 weeks. Omega-3 supplementation was taken in the form of fish oil containing either EPA or DHA or a combination of both. Results from the meta-analysis revealed among T2D group with 213 participants, omega-3 fatty acids could significantly reduce proteinuria ($p=0.03$) when compared to control group. However, among T1D group with 97 participants, there was no significant difference in proteinuria

($p=0.95$) between omega-3 fatty acids group and control group.

Researchers explained their findings: “The pathophysiology of diabetic nephropathy in T2D and T1D patients is somewhat different. For T2D, proteinuria could be caused by various etiologies including but not limited to insulin resistance, concomitant hypertension and obesity, “One of the possible explanations would be that among T2D there are pro-inflammatory cytokines generated from abundant adipose tissue as a part of obesity in T2D. This inflammatory response leads to proteinuria among diabetic nephropathy. Omega-3 fatty acids help reduce insulin resistance as well as pro-inflammatory responses from adipose tissue. This effect might result in lower proteinuria compared to patients with T1D which proteinuria is mainly through polyol, hexosamine, advanced glycation end product and protein kinase C (PKC) pathways.”

In addition, only T2D patients who received omega-3 fatty acids for at least 24 weeks (165 participants) had a significant decrease in proteinuria compared to control group ($p=0.04$). Researchers chose 24 weeks as the cut off point since this value was the median. Studies with follow-up period less than 24 weeks failed to show significant difference in proteinuria ($p=0.68$). On the

other hand in T1D patients, there was no significant difference in decreasing proteinuria even supplementing with omega-3 fatty acids for more than 24 weeks (38 participants) ($p=0.93$). While the strength in this meta-analysis was its use of RCTs, there were some limitations. “Different doses and components of omega-3 fatty acids in each trial as well as different control group could lead to heterogeneity and we did not have enough data to perform a dose response meta-analysis. Moreover, it was also difficult to conclude whether the effects on proteinuria or other outcomes were caused by EPA or DHA,” researchers acknowledged.

Diabetes affects an estimated 350 million people worldwide, which is predicted to grow to over 550 million people by the year 2035, hence studies on potential preventive treatment will be impactful. Researchers suggested clinical trials with more participants, longer duration of follow-up, analysing markers of oxidative stress, inflammation and urine protein fingerprinting should be extensively studied to address the potential mechanism of omega-3 fatty acids on delaying proteinuria, cardiovascular complications and incidence of stroke among diabetic patients.

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FOOD SCIENCE & INDUSTRY NEWS

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COVID-19 and food: 'This virus is sensitive to cooking temperatures'

By Flora Southey 16-Mar-2020 - Food Navigator USA

French food agency ANSES says heat treatment can reduce contamination of a food product by a factor of 10,000.

The novel coronavirus COVID-19 outbreak – now characterised a pandemic – has swept through China and northern Italy. As of 15 March, the virus is present in 143 countries and territories around the world, with 153,517 cases confirmed. A total of 5735 people have died. The virus is spread from human-to-human mainly via respiratory droplets that people sneeze, cough, or exhale. Common signs of infection include respiratory symptoms, fever, cough, shortness of breath and breathing difficulties. However, consumers around the world have raised concerns the novel Coronavirus can be transmitted via food.

The European Food Safety Authority (EFSA) and the German Federal Institute for Risk Assessment (BfR) have both published information regarding known, and potential, Coronavirus transmission routes. Each agency concluded that there is currently no evidence of the virus having been transmitted via food. Now France has gone one step further, detailing how smear infections and poor hygiene can potentially lead to food contamination. France's health and safety agency (ANSES) convened an expert group to investigate whether the COVID-19 disease can be potentially transmitted via contaminated food.

In light of the scientific knowledge available, ANSES has suggested transmission through food could occur if a person infected with the virus prepares or handles food with dirty hands – and contaminates it. "This could concern all types of food (animal or plant products)," noted the agency. "Furthermore, while there is no evidence to suggest that consumption of contaminated food can lead to infection of the digestive tract, the possibility of the respiratory tract becoming infecting during chewing cannot be completely ruled out." As with other known Coronaviruses, the novel Coronavirus is sensitive to cooking temperatures, ANSES continued. "Heat treatment at 63°C for four minutes (temperature used when preparing hot food in mass catering) can therefore reduce contamination of a food product by a factor of 1,000."

ANSES has reiterated that cooking food and observing good hygiene practices when handling and preparing food are effective at preventing contamination of the novel Coronavirus.

COVID-19 and industry shutdown: ANZ supplement firms seek clarification on 'essential services' status

By Tingmin Koe 24-Mar-2020 - NutraIngredients Asia

The dietary supplement industry bodies in both Australia and New Zealand are seeking clarification that the sector is

classified as an 'essential service', with both countries imposing movement restriction to curb the spread of COVID-19.

The Natural Health Product New Zealand (NHPNZ) said in a notice circulated on March 23 that it had written to the Ministry of Business, Innovation, and Employment (MBIE) on the week before to seek clarification. It added that the MBIE and Ministry of Health (MOH) officials would be meeting today (March 24) to finalise the list of sectors that fall under the 'essential services'. Based on the Government's definition on 'essential services', the trade body believes that most, if not all of its members qualify as an essential business since they could be classified as FMCG, and/or primary industries, including food and beverage production and processing, and/or health services.

The move to seek clarification is in light of the country's decision to move to Alert Level 4 from tomorrow for at least four weeks, where businesses will be closed, except for 'essential services'. Examples of 'essential services' include health and emergency services, as well as utilities and goods transport. "This is promising but not definitive, and they state that 'more specific information for each sector will be published shortly'," the association said, commenting on

the list of essential services announced. "We will continue to work with MBIE and MOH and provide updates to members as soon as possible."

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Complementary Medicines Australia (CMA) is also doing the same and is expecting a clarification by this Thursday. NutraIngredients-Asia understands that the association is making the case that the sector is considered an 'essential service' since complementary medicines are manufactured as medicines in Australia. To stem the spread of COVID-19, Australia has begun control measures such as reducing the operating hours of entertainment venues and restaurants etc.

In New South Wales, the state premier Gladys Berejiklian on March 22 announced for all non-essential services across the state to be closed over the next 48 hours. The non-essential activities and businesses include pubs, gyms, entertainment venues, and restaurants. Elsewhere in Malaysia, there is confusion as to whether the dietary supplement industry is considered as 'essential service' and whether production can still go ahead during its two-week Movement Control Order (MCO) starting from March 18.

The president of Malaysian Dietary Supplement Association Muthu Kumar Shanmughom told us that the confusion was due to the registration of health supplements coming under the purview of the National Pharmaceutical Regulatory Division, but it was not clearly stated on whether health supplements were part of the essential health services.

Meanwhile in the US, industry bodies are advocating for dietary supplement manufacturers and sales channels to remain open during the COVID-19 shutdown. The Council for Responsible Nutrition and the National Products Association in the US have issued statements to voice their stance, explaining that these products "matter more than ever right now". The need to differentiate between 'essential' and 'non-essential' services have also

spilled over to the ecommerce companies.

Amazon announced that it was prohibiting the shipments of any non-essential goods to its warehouses in the US and Europe until April 5. Dietary supplements which rely heavily on Amazon to sell their products are said to be affected by this move. The outbreak of COVID-19 has led to a high demand for dietary supplements, especially for immune boosting products.

One Chinese botanical association Shaanxi Plant Extract Association told us that there was a rebound in the orders received for its immune-boosting plant extracts, especially from the US, in early March. Others such as vitamin C have sold well in China via JD.com and Singapore's supermarket chain FairPrice. Chinese supplement brands such as Angel Yeast also said the demand for glucan, lactoferrin, and selenium-enriched yeast has increased by three-fold.

Eating right: COVID-19 pumps up sales for India's protein bread maker

By Tingmin Koe 26-Mar-2020 - NutraIngredients Asia

An Indian start-up specialising in making protein bread and cookies saw online sales go up by 15% in mid March, with the firm believing consumers are increasingly making more healthy food choices as COVID-19 continues to spread.

According to India's first high protein bread maker, The Health Factory, consumers are also starting to "eat right". The company currently has seven product SKUs, consisting of two high protein bread and five high protein cookies.

The protein content in its protein bread can go up to 48g per loaf and 6.77g per serve for its cookies. The two-year-old start-up currently sells its products on Amazon, its own website, via a four-week subscription order, as well as physical retail stores such as Foodhall and Nature's Basket.

Although COVID-19 has led to a sluggish retail scene, the company had however, saw its products going out of stock in certain stores as well. "Not a lot of people want to get into the retail market and pick up products, because you don't want to get expose to people coming from different places, you don't know who's coming into the stores," MD Vinay Maheshwari told NutraIngredients-Asia. "However, what we have seen in the couple of retail stores that our products are available, is that the products are going out of stock. We realised that purchase is due to its high protein and high fibre content. And so, a lot of people are starting to pick it up, thinking that they need to start eating right."

As for its online business, he said that sales were up by 15% to 20% in the second week of March. He attributed the growth to two other reasons besides the desire to eat more healthily, namely consumers' preferring to purchase items online and the company's recent marketing efforts. "It has been a week since we have seen the good online response that we are getting from our own website, from Amazon, and from our other online partners. We are 15% to 20% better in online sales," he said.



Image © The Health Factory

He remains optimistic of continuous online sales growth in the upcoming days. “We see that it will only grow further, because we are very optimistic about people not walking into the retail stores, but at least calling for their daily essentials online and since we are in the space of bread, that is something that you consume daily.”

India has 553 active cases of COVID-19 as of March 25. The Health Factory's first product – the multi-protein bread containing 48g of protein per loaf was launched two years ago.

The range subsequently expanded to include protein cookies and vegan protein bread. Maheshwari said the idea of protein bread came about when he realised that there was a market gap in the types of nutritional bread present. “Every morning, I was eating six slices of bread and half a can of beans or vegetables. That was like my staple every morning. One day, I walked into the kitchen to get my bread and there was no bread because the family has decided that we are not going to buy bread anymore because it's packed with calories, carbs, and has no nutrition value. That's when I realised that there is a big gap in the market.”

He then left his job in a pharmaceutical firm and develop his own version of nutritional bread via a partnership with a Netherlands food tech company. The team took about half a year to complete the R&D, sourcing ingredients from worldwide. A search on Amazon shows that there are a number of brands selling protein bread at present, including Mestemacher from Germany, which contains 10g of protein per serving, and US brand – Pro Therapies' high protein brown bread, which contains 15g of protein per serving.

The Health Factory uses proteins from six different sources based on their amino acid profiles. They are

namely whey, peas, soy, wheat, rice and wheat, and milk. These were also the popular protein sources according to a survey that the company has conducted. “We took those six essential ingredients that they will like to have, and we used the concentrate and isolates of these ingredients to make the bread so that the bread could now become holistic in its nutrient profile,” Maheshwari said.

As bread is a daily staple, the target audience is essentially everyone, according to Maheshwari. At present, the company's bread and cookies are available in Mumbai and Pune while only cookies are available in Delhi and Bangalore. Its next step is to establish a presence in the whole of India and there are also places to go overseas. Currently, it has received queries from countries such as the US and Dubai.

For personalized nutrition to reach its full market potential, brands must better explain benefits

By Elizabeth Crawford 16-Mar-2020 - Food Navigator USA

Demand for personalized nutrition is gaining traction quickly, according to Mintel market research, but for companies to fully leverage the trend they must offer more than bespoke products to include also detailed guidance that “connects the dots” between shoppers' needs and what they are offering.

“The real crux of what is going to make [personalized nutrition] resonate with consumers is guidance, because consumers are confused,” and overwhelmed by claims of what a healthy diet should be, said Melanie Zanoza Bartelme, a global food analyst with Mintel. She explained to attendees at The Spoon's Customized conference in New York

City Feb. 27 that 83% of US consumers understand that healthy diet means different things to different people and 66% say there is too much conflicting information about what a healthy diet is. Given this confusion, she added, 43% of US consumers who use or would be interested in health tech and who want to share health data would do so because they want guidance.

“You hear about all these things – like keto, Whole30, the Mediterranean diet or even some of these emerging new things like low-FODMAP – and a lot of consumers feel like they are just taking their best guess when it comes to eating and living in a way that will really suit them in the long term,” she said. She added, “They want to have someone help them connect all the different dots about what they know about themselves,” including their family history, their health and their goals, and “create a road map” that both shows how using products will benefit them and motivate them to actually use those products. The percentage of consumers interested in personalized nutrition may be relatively small still, but it has grown exponentially in recent years as they have become more familiar with the concept of personalization in other aspects of their lives, Bartelme said.

She pointed to consumer adoption of fitness trackers as an example of how interest in personalized nutrition likely will evolve. In 2015, she said, only 12% of US consumers used fitness trackers and only 12% said they used an app on their phone to track their physical activity.



By 2019, those numbers rose to 19% and 25% respectively. She also pointed to consumer interest in personalization in other categories as support for the concept in food and diet. For example, she said, 5% of US consumers currently own or use a smart mattress and 70% use it to manage their health. In addition, 28% of US consumers would be interested in small kitchen appliances with connected smart technology and 32% of US women would be interested in a smart hairbrush.

On the nutrition side, she noted that 34% of US diners would like to see more personalization options in 2020, 71% of Mexican consumers would be interested in personalized diet based on their family history and 55% of Canadian adult sports, nutrition or performance food and drink users would be interested in a nutritional plan based on their DNA. While personalized nutrition is still coming into its own, Bartelme predicts that functional ingredients are ahead of the curve and as consumers become more familiar with them they will seek more specificity. For example, functional ingredients currently are now in products that claim to help with “focus” or “stress relief,” but soon, she says consumers will want specific ingredient recommendations based on their DNA and their goals. Indeed, she notes 67% of US consumers say they are interested in customizing their supplements based on DNA test results.

Even as consumer interest in personalized products and diets grows, there are several roadblocks that Bartelme said manufacturers must overcome before these trends can realize their full potential. The first are privacy concerns and consumer fears that their health information will be used against them in some way. However, Bartelme said, many consumers are willing to share their data if they believe what they get in return offers

a high enough value.

The second significant barrier is price. Bartelme noted that while DNA tests are coming down in price as the field becomes more competitive and the technology more accessible, she notes that it is still out of reach for many Americans. Again, she notes, one way to overcome this is to offer more value. And one aspect that consumers across the board say they are interested in are tools and personalized programs that also are fun to follow can be used to help motivate not just themselves but their loved ones.

Health void: Just 16% of India's products classified as 'healthy' with local firms leading the way

By Pearly Neo 16-Mar-2020 - Food Navigator Asia

Local F&B companies in India such as Mother Dairy and Parle Products appear to have come out on top in terms of product healthiness in a new listing – but overall, just 16% of all companies' products have been recognised as 'healthy' items in the country.

A total of 1,456 food and beverage products in India across the 16 largest F&B manufacturers in the country accounting for over 31% of the processed foods market in 2018 were analysed by researchers from the Access to Nutrition Initiative (ATNI). Assessment criteria was based on the Health Star Rating (HSR) scoring system used in Australia and New Zealand. “Of the 1,456 products assessed based on the HSR's 'healthy' threshold of 3.5 or more stars out of five, only 16% of the assessed products were considered healthy,” wrote the report authors.

Additionally, only 12% of the products assessed met nutrition criteria for marketing to children, [when analysed] according to the nutrient profile model for the World Health Organisation's South East Asian Region (SEAR).”

Even the two companies that obtained the overall top scores in the listing – Nestle India and Hindustan Unilever at 6.9 each respectively – did not perform well in terms of product healthiness scorings. “[For Nestle India], just] 13 products (19%) of 68 that were analysed were found to meet the HSR healthy threshold and the company is estimated to have derived 29% of its 2018 sales from these healthy products,” said ATNI. “[Hindustan Unilever saw] a total of 120 products [analysed, and just] 10 of these (8%) were found to meet the HSR healthy threshold.”

Overall, Nestle India scored just 2.4 out of 5 stars under the HSR scoring system and a mean healthiness score of 4.8 out of 10, whereas Hindustan Unilever obtained 2.0 out of five stars, getting a mean healthiness score of 4.1 out of 10. On the other hand, local brands such as Mother Dairy and Parle Products were found to shine in terms of product healthiness. “Mother Dairy ranked first in the [product analysis] with a score of 7.5 out of 10, [whereas] Parle Products [ranked] better than its peers across three product categories: Savory Snacks; Confectionary; and Sweet Biscuits, Snack Bars and Fruit Snacks,” said the report authors.



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Mother Dairy had 99 products assessed using the HSR, of which 41 products (41%) were found to meet the HSR healthy threshold. This was estimated to comprise over half (53%) of Mother Dairy's 2018 sales. That said, Mother Dairy is primarily a milk and milk products firm, which are assessed somewhat differently from other products under the HSR system, and its focused product portfolio may have lent it some advantage in this assessment.

Parle Products saw a total of 201 products assessed, of which just seven were found to be considered 'healthy' – but managed to maintain a high ranking in terms of healthiness as it ranked either first/joint first across the Confectionery, Savoury Snacks, and Sweet Biscuits, Snack Bars, and Fruit Snacks categories with scores of 10 out of 10. Of note though was the fact that none of Parle Products' products were found suitable to be marketed to children when assessed according to WHO SEAR nutrient profile model.



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Irish researchers explore novel approach to texturize plant-proteins: 'We found a way to spin protein into fibres'

By Elaine Watson 13-Mar-2020 - Food Navigator USA

Scientists at Irish contract research firm Cybercolloids have developed a novel 'high shear spinning system' to texturize plant-based proteins in to 'meat-like fibres' that is cheaper than extrusion and could potentially

prove more efficient at producing large quantities of plant-based meat or meat extenders.

The approach is based on a "precipitation mechanism and equipment used in another manufacturing industry," and begins with plant-based protein powders combined with water and [an undisclosed but widely used] food-grade binder, said business director Ross Campbell. "It basically requires a tank and a high shear mixer, and that's as much as I can tell you," said Campbell, who has received a flurry of inquiries from protein suppliers and meat-analog firms after a video of the resulting 'protein fibre' was posted on the firm's LinkedIn page a few days ago. "Extrusion involves high heat and pressure and expensive equipment; this would involve significantly less capital expenditure and it's faster, you can produce significantly more per hour."

Formed by ex-Unilever scientists in 2002, Cork-based Cybercolloids was originally focused on hydrocolloids but has since broadened its scope to explore plant-based proteins and techniques to valorize all parts of a plant, with a particular interest in developing value added ingredients from what's left after target substances have been extracted, he told FoodNavigator-USA. "Today we've got projects on everything from extracting pectins from what's left from sunflower seeds [after the oil has been extracted], to extracting protein from lupin and potatoes, and in that process of understanding different proteins, we started looking at proteins from brewers' spent grains and seeing if we could texturize them.

"We played around with different tricks and one of my guys who used to work in a different industry found a way to spin that protein into fibres." He added: "We don't think its patentable, as the equipment has been used

in other industries, so for companies that are interested in learning more, phase one would be they would supply us their protein, and we'll work with it in the lab to optimize it [the texturization process for that protein], and send samples back. Phase two would be scale up, so we'd make kilos of the product for the client to give to their customers. Third phrase, and the third payment, would be IP disclosure, a thorough report including pilot plant design for that company to share with whatever engineering company they work with to create a pilot plant, or we could be retained as consultants to do that as well. If they want to scale up we can talk about a reasonable license or royalties."

Cybercolloids has not yet conducted any sensory testing on the protein fibres it has produced and has only experimented with three plant-based proteins, so recognizes that it's very early days, said Campbell. "It may be that it works best as a meat extender – something to add to [regular] meat products [as more firms explore the 'blended' trend, for example]. We haven't been able to make enough yet to make and cook burgers and things; that would happen in the second phase, so it's still very early days."

Legume-based snacks: a great alternative to industrial products

09-Mar-2020 Food Navigator USA

Agriculture began more than 10,000 years ago when gatherers and hunters turned into farmers; since then, legumes – plants belonging to the Fabaceae (or Leguminosae)



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family - have been part of the human diet, traditionally cultivated for human consumption, for livestock forage and silage, and as soil-enhancing green manure. Legumes probably were one of the first crops cultivated by mankind and have remained a staple food for many cultures all over the world.

These seeds are valued worldwide as an inexpensive meat alternative and are considered the second most important food source after cereals. To raise awareness about the importance of legumes and highlight their role in healthy diets and family farmers' livelihoods as well as their contribution to soil health and the environment, the United Nations General Assembly declared 2016 as the International Year of Pulses (IYP). The Food and Agriculture Organization of the United Nations (FAO) was mandated to facilitate the implementation of the IYP, together with all relevant stakeholders.

FAO applies the term "pulse" to legume crops harvested solely to get dry seeds and recognises 11 types of pulses which are cultivated worldwide, among which dried beans, lentils and peas are the most known and consumed. Crops which are harvested green, like for instance green beans and peas, and seeds mainly grown to extract oil, e.g. soybeans and peanuts, as well as sowing forage (alfalfa and clover) are classified as vegetable crops. Legumes are recognised worldwide as a sustainable and inexpensive alternative to meat and are considered the second most important food source after cereals.

In many countries, legumes are a consumed on a regular or even daily basis. They are nutritionally valuable, being a great source of proteins (20–45%) with essential amino acids, complex carbohydrates ($\pm 60\%$) and dietary fibre (5–37%), essential for supporting digestive health and helping to reduce the

risks of cardiovascular diseases. Low in sodium, they have no cholesterol and are generally low in fat - with $\pm 5\%$ energy from fat, except for peanuts ($\pm 45\%$), chickpeas ($\pm 15\%$) and soybeans ($\pm 47\%$) - which can contribute to reducing the risk of cardiovascular diseases.

They are also a good source of essential minerals (iron and potassium) and folate, a B vitamin naturally present in many foods that is essential to the nervous system function and especially important during pregnancy to prevent foetal defects. Legumes are also a source of a particular starch which is broken down by bacteria in the large intestine to produce short-chain fatty acids (such as butyrate) used by intestinal cells for food energy. Considering the excellent nutritional facts about legumes, FAO and nutrition experts recommend increasing the consumption of legumes and pulses in the daily diet. Legumes are a great alternative to industrial snacks for everybody, not only for vegans and vegetarians but particularly for kids and for seniors as well. The key points which make legume-based products a great alternative to traditional snacks can be summarized in natural production processing, the nutritional balance, excellent flavour and taste, and a wide application range.

Impulses: a new line of legume-based snacks

After several years of research and thanks to the expertise gained in the hydrothermal treatment of legumes and cereals, Naturesis, an Italian company specialized in the production of legumes- and cereals-based foods, is now launching on the US market a range of new legume-based snacks to meet the increasing demand for plant-based nutrition. Impulses is Naturesis' new line of legume-based snacks, crunchy grains and seeds treated in a natural way to be consumed instantly, as a snack, in a salad or

even in breakfast muesli, allowing food companies to successfully use legumes in their most classic formulations and direct consumption; they are not fried, making them very healthy.

Contrary to products commonly used as snacks such as dried fruit, which normally might contain an important quantity of fats and sugars, crunchy pulses and seeds feature a great nutritional profile and provide a balanced dosage of proteins, carbohydrates, and fats, the majority of which are unsaturated. They are also a great source of fibres and minerals, such as iron, zinc, phosphorous, folate and B vitamins. The industrial process is natural and involves the use of water and thermal energy without changing the basic properties of the legume. Thanks to this natural process, nutritional properties of legumes are amplified and make proteins more readily available for their biological absorption.

The process also results in a very pleasant, lightly roasted flavour, modifying and amplifying the typical notes of cooked legumes, making them distinguishable and good. The application of these products on the food market varies according to the final product. Impulses products are particularly suitable for bakery products, in the production of high nutritional value bars, in the preparation of breakfast mixes or as delicious additions to salads. Furthermore, to get an even tastier touch, they adapt well to a rapid passage in oil to obtain a golden colour and an even more crunchy and appetizing texture. The line includes lentils, yellow peas, green peas, chickpeas to be used as they are or to add them in predefined mixes. Naturesis' cereals- and legumes-based products are distributed on the North American market by Faravelli Inc, the US subsidiary of Faravelli. Faravelli began operating in its native Italy in 1926, before going on to establish a presence in North America in 2014.

Microbial minefield? Functional formulation with prebiotics and probiotics

By Nathan Gray 28-Feb-2020 –
NutraIngredients

Interest in the use of probiotics and prebiotics as ingredients in food continues to grow, as consumers and industry look for microbiome-friendly foods. But just how do these ingredients impact food development and, in particular, the texture of foods?

While the potential health benefits of functional food ingredients like probiotics and prebiotics are often touted, the impact that these components can have on the texture of food is something that has been less widely reported and considered. “Texture is one of the most important sensory characteristics of food products, which influence greatly the consumer’s acceptance,” noted researchers writing in *Current Opinion in Food Science*. Moreover, the texture may influence the food intake and satiety, being important in the development of products aiming to control obesity and for seniors with masticatory/swallowing dysfunctions.”

Led by Jonas Guimarães from Universidade Federal Fluminense (UFF) in Brazil, the research team noted that recent advances in food technology have allowed manufacturers to incorporate a wide variety of functional ingredients into foods – with the aim of boosting nutritional values without impacting the sensory characteristics of the product. However, they note that in many cases, despite a strong demand for healthy products, consumers reject functional foods “due to the low sensory acceptance.”

Despite the health benefits provided by the prebiotics and probiotics, Guimarães and colleagues noted that such ingredients can have an important influence the food texture

– which if carefully considered can be manipulated to develop products with a desired texture. The team note that given the most recent ISAPP definition, prebiotics do not need to be a carbohydrate. However, they noted that many recognised prebiotics come in the form of non-digestible carbohydrates. “Typical examples of prebiotic compounds are the oligosaccharides, which cannot be digested by human enzymes, but may be metabolized by a group of host microorganisms, mainly those from gut microbiota, as *Bifidobacterium* and *Lactobacillus*,” note the researchers.

The addition of such non-digestible polysaccharides into foods can have a distinct effect on food structure and rheological behaviours, said the authors – noting that for certain applications such as ice cream, the addition of a prebiotic can add depth and creaminess, while for other products there may be negative effects. “Among the studied prebiotic compounds, the inulin, FOS and GOS had the most interesting effects in viscosity, consistency and firmness, mainly in liquid or semi solid dairy products,” they noted. “However, the addition prebiotics to solid products may influence negatively, depending on the desired texture of the product.”

Probiotic impact

While the structural size and effects of prebiotics – especially non-digestible fibres – may have an impact on texture that must be addressed, the team noted that for probiotics, the main issues tend to relate to the production of secondary products such as exopolysaccharides (EPS) – which may impact sensory characteristics.

“Overall, the texture of food products is dependent on both the bacteria used for fermentation and process parameters,” they said noting that some lactic acid bacteria (LAB) can improve texture through production of metabolites or by hydrolysing added fibres during the production process. They added that many polysaccharides produced by food-grade LAB are well known to act as natural thickeners, emulsifiers, stabilizers, binders, gelling agents, coagulants and suspending agents in food and cosmetics industry. “EPS from LAB bacteria can also be isolated and applied to starchy products (e.g. bread, pasta, noodles, soup, salad dressings, jellies, puddings, white sauce, ketchup) in order to prevent syneresis as well as to improve appearance and texture properties of starch,” they said – noting that EPS are currently being studied for potential applications in gluten-free bread products.

Great potential

Guimarães and colleagues concluded that in addition to their potential for providing health benefits, there is great interest and potential in the use of prebiotics and probiotics to enhance and manipulate the texture of food products. They added that the use of probiotics and prebiotics to modify food texture creates further opportunities for development of novel functional foods with desirable sensory characteristics.



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REGULATORY NEWS

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International standards for seafood traceability make their debut

DAILY NEWS March 16, 2020

The first-ever global standards for tracing seafood from the place of origin to the point of sale have been released.

This achievement represents a significant culmination of a concerted effort by an international consortium of nongovernmental organizations and stakeholders in the seafood industry: The Global Dialogue on Seafood Traceability.

Organized and launched by the Institute of Food Technologists' Global Food Traceability Center and the World Wildlife Fund, the Global Dialogue on Seafood Traceability was developed to address the seafood around the world that is caught illegally. Illegal fishing is a pervasive issue for which standardized and consistent solutions had been lacking. With the release of these international traceability standards, a critical step has been taken to reduce illegal fishing and unethical labor practices.

As the principal globalized sector of the food industry, seafood provides

nourishment to billions of people around the world; it is also a source of income to millions of individuals. But the unethical actions of a few unscrupulous fishermen threaten to deplete the world's natural fisheries and destroy natural ecosystems. Often accomplished under slave-like conditions, illegal fishing constitutes up to a quarter of the commercial fish available, with a value of more than \$36 billion.

The standards demonstrate the seafood industry's commitment to the ethical sourcing of seafood. A cost-effective, full-chain traceability system for seafood benefits fisheries, the seafood industry, and consumers by protecting public health, improving trade, increasing sustainable practices, and ensuring quality seafood products. The standards also help harmonize various international regulations on seafood traceability.

The international seafood traceability standards will serve to inform consumers of where their seafood comes from. Such information will help consumers make better purchasing decisions and reduce the profitability of illegal seafood and the purveyors who buy it and sell it. The standards will also

establish the data elements that should be tracked and the digital tools necessary to share that information with all stakeholders interested in sourcing seafood through legal and ethical methods.

Lastly, the standards will help fishermen, food companies, and other seafood stakeholders meet growing commercial and regulatory demands for a global seafood traceability system. In a press release, Carrie Brownstein, principal quality standards advisor for seafood at Whole Foods Market, said, "These ground-breaking standards have the power to positively change how seafood is tracked through supply chains globally."

More than 60 companies and nongovernmental agencies helped draft the global seafood traceability standards. These companies include ALDI North Group, Bumble Bee Foods, Fishin' Co., Japanese Consumers' Co-operative Union, Karoo Catch, Labeyrie Fine Foods, Orca Bay Foods, Santa Monica Seafood, Sainsbury's, Sunwoo, Whole Foods Market, and Young's Seafood.

Coronavirus 'leverage': FSSAI ups meat hygiene auditing and manpower in India

By Pearly Neo 02-Mar-2020 - Food Navigator Asia

The Food Safety and Standards Authority of India (FSSAI) has denied that the recent novel Coronavirus (COVID-19) outbreak has had any impact on the local meat and fish industry, but said that it intended to 'leverage' the crisis to raise hygiene standards nationwide.

The vast majority of evidence so far has pointed to COVID-19 originating from a wet market in Wuhan, China known for selling various forms of meat, and FSSAI wants to utilise the fact that many public consumers are aware of this to clean up the acts of local meat and fish businesses. "The hygiene of our meat and fish shops and slaughterhouses is very critical. Slaughtering meat products in India requires a lot of hygiene upgradation," FSSAI CEO Pawan Agarwal said at a press conference earlier this month. "Across the past few months, we have taken steps to do this. In the first phase, we did a third party audit of all the municipal slaughterhouses and in the second phase the same for all slaughterhouses in the country at the cost of the FSSAI. "We are planning to introduce hygiene rating schemes for meat shops too."

Agarwal went on to add that FSSAI intended to 'leverage on the awareness in the country

surrounding the Coronavirus to improve local meat and fish shop/market hygiene', but categorically denied that COVID-19 has had any impact on the local meat industry. As of time of publishing, India claims that it has only detected three cases of COVID-19 in the country, all of which have supposedly already recovered. All three were from the state of Kerala, and were students that had been studying in Wuhan and were evacuated. Despite the low number of cases and denial of any negative impacts, this move by FSSAI is an understandably cautious one, as India may have a real problem on its hands if the situation escalates further.

"Serious cases that have viral pneumonia will need supportive intensive care, including mechanical ventilation when required," Public Health Foundation of India (PHFI) President Dr K. Srinath Reddy, told India Today. "Hospitals in large cities can provide this, if the numbers are not overwhelming. Small towns and rural areas in most states will be ill-equipped if the virus spreads further."

The country's Ministry of Health and Family Welfare declared the situation 'under control' earlier this month, but a public survey conducted by Local Circles found that over half of the 40,000 participants felt that the government was not doing enough about the situation, and a further 7% was certain that it does not have the capacity to do anything beyond current efforts.

FSSAI also announced earlier this month that it would be setting up a total of 12 new facilities (six new branch offices, four import offices and two food laboratories) to ensure it reached a 'pan-Indian presence, strengthen its inspection and enforcement activities and have better control of imported food'. While all issues of food safety and nutrition in the country have not been addressed, there is now a correct diagnosis and a proper treatment regimen available to address all the safety issues in a comprehensive manner," Agarwal said in a formal statement. "Building a public institution like the food safety authority is not a sprint, it is like a marathon. At times we may appear slower than the others, but eventually we have to be ahead.

The agency also gushed about its 'beautiful office space with a modern day-care centre', 'a well-equipped fitness centre' and 'nice cafeteria', but no mention was made of how these additional facilities and manpower would help in preventing the agency's continued postponements of regulation enforcements due to 'representations' from various parties, or the high rate of dairy adulteration in the country, which FSSAI seems to consider a closed case. "Intense scrutiny, greater visibility and full commitment has helped FSSAI to become a better public institution and a model regulator that other countries around the world could emulate," Agarwal added.



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WE THANK all the warriors in the covid- 19 crisis- the health care workers, the armed forces, the cleaners, the food processors & suppliers who are standing at the forefront to keep us protected and safe ensuring that all the necessities reach us without any risk of infection. We thank and salute them for their endless efforts.



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