DEC 2018

PFNDAI Bulletin

FOOD, NUTRITION & SAFETY MAGAZINE

SUPPLEMENTS PROMOTING HEALTHY AND ACTIVE AGING

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The Staple of Asians

Regulatory
Round Up

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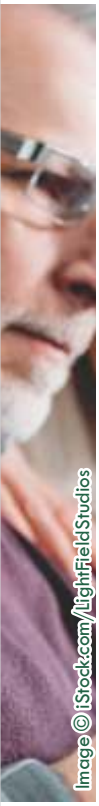
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EDITORIAL

Recently a draft notification was published in Gazette on 12 Dec 2018 and one of the items included in it was Blended Edible Vegetable Oil. The regulator now wants oil processors to only prepare blends of certain proportion and not anything else.

As this has major implications on the blended oil manufacturers it would have been most common to have a consultation with them before taking such a major decision. There was no such consultation and it was directly seen in public domain as a gazetted draft notification which could come into effect if no attention is given to any comments and suggestions made.

The regulation forces manufacturers to have the ratio of fatty acids saturated, mono-unsaturated and poly-unsaturated in the ratio of 1:1-1.5:1 with variation of 10% allowed. This kind of ratio is generally recommended for a diet consisting of various foods containing different oils and fats. Overall diet should consist of such ratio does not mean that every drop of oil that goes into the mouth should have this ratio. There are people who do not consume blended oils. Most people consume oils which are single and not blended. Not a single oil has this ratio.
Oils are blended with several specific purposes. Research studies have shown that certain proportion of fatty acids have beneficial health effect especially in terms of non-communicable diseases like heart diseases and diabetes. So certain blends have been proven to be beneficial.

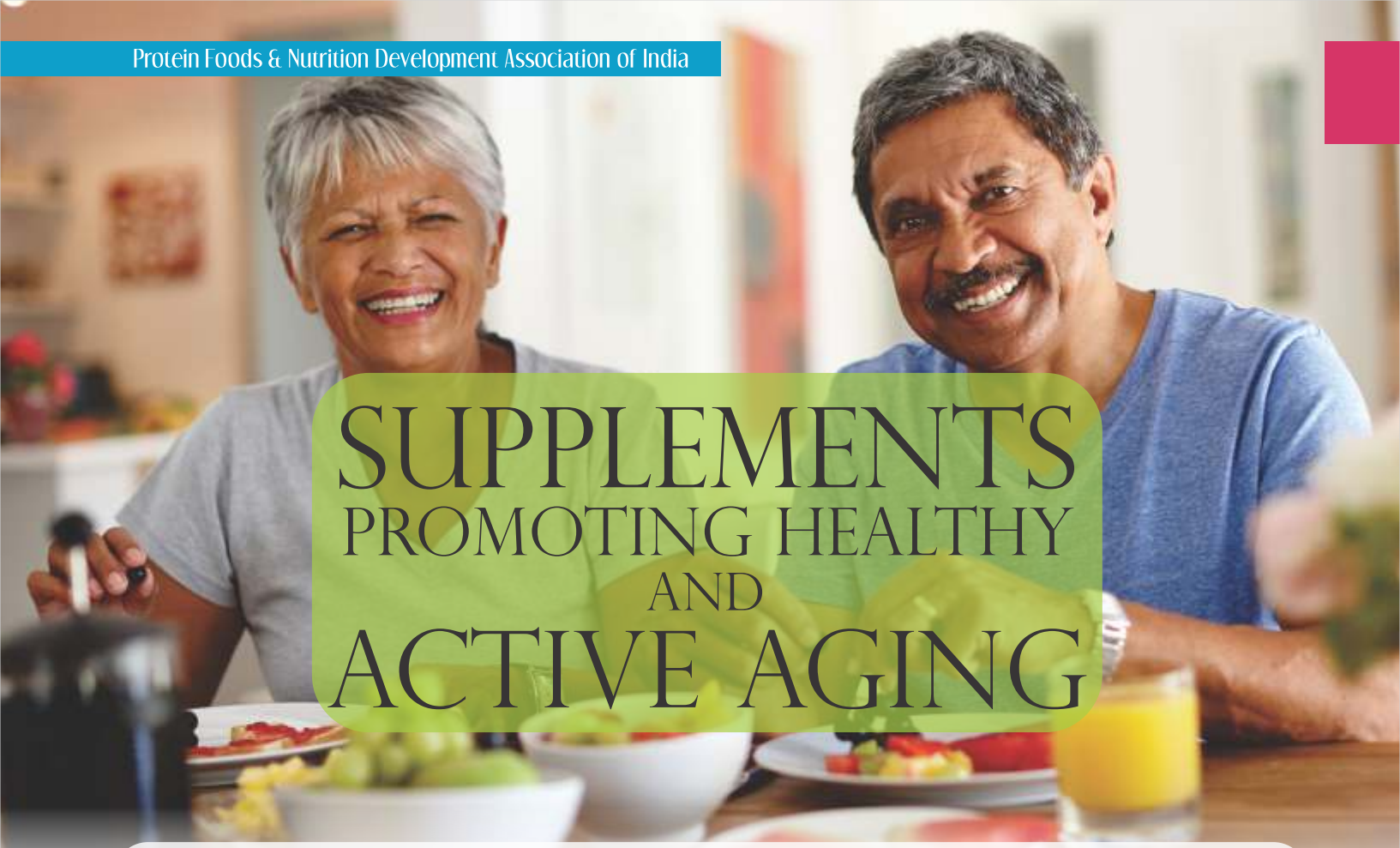
Blends are prepared also for improving sensory attributes like taste, aroma etc. as most consumers buy them based on their sensory preferences. Blending also improves stability and shelf life. As Indian housewives love to fry, blending provides better frying oils. Blending also makes oils economical by choosing availability of oils and selecting the blends that would be affordable. So blends are not decided arbitrarily.

The industry has been running for decades without any problems and complaints from consumers. There are no safety issues involved so all are surprised when this particular regulation was notified.

The regulator should always consult industry and other stakeholders when such a major change is envisaged. It would become very clear in this consultation that this type of ratio is extremely difficult to achieve unless one blends either coconut oil or palm oil. Some of the good oils will go out of usage if this rule is followed. Those which were scientifically proven to be beneficial will not be available anymore. In fact, the blended oils industry would suddenly be disrupted by this regulation.

We hope that officials would see the seriousness of the situation and would invite the industry for consultation and take a proper decision for the good of all the stakeholders.

Prof. Jagadish S. Pai,
Executive Director,
PFNDAI



SUPPLEMENTS PROMOTING HEALTHY AND ACTIVE AGING

Image © iStock.com/Iaflor

One fitness expert said that aging is for people who don't know better. There are 55 years old people doing vigorous pull-ups better than much younger individuals. There is a growing trend of Healthy Aging.

Merck Manual identifies healthy aging as the postponement or reduction in the undesired effects of aging. It means consumers aspiring to age healthfully are interested in maintaining physical and mental health, avoiding disorders and remaining active and independent.

Regarded as the largest, fastest-growing and wealthiest section of people in most developed countries, the 50-plus crowd is healthier and wealthier compared to earlier generation at the same age. This creates great opportunity to target this demographic section with healthy foods and beverages.

Aging consumers want positive messages with their aging products. There is a global increase in anti-aging claims overall, but products labelled as 'anti-aging' are decreasing according to Euromonitor Internationals. As consumer awareness grows, they are not interested in 'one-size-fits-all' approach to supplements.

Inflammation & Antioxidants
There is a lot discussion on inflammation and its link to chronic diseases. Oxidative stress is one of the common concerns in healthy aging. It has the ability to drive many aging processes like inflammation, skin damage, and cognitive decline among others. Because the build-up of damage from oxidative stress can lead to loss of function, antioxidants are in demand.

Curcumin
Curcumin helps as an anti-inflammatory agent in many diseases or conditions affecting us in aging. Curcumin is known to be a potent antibacterial and antioxidant agent. Over past decade, publications on curcumin and its positive health impacts have nearly quadrupled.

A water-dispersible curcumin was developed with unique technology with higher loads of curcuminoids and increased functionality. Curcumin is highly hydrophobic, limiting its functionality and diminishing its absorption by body. This technology stops agglomeration allowing better absorption and use in beverages and ready mixes. Currently clinical trials are being conducted to show relief from delayed muscle onset soreness using this.

One proprietary delivery system contains at least 20% curcuminoids in same profile as found naturally in turmeric. This unique technology converts lipophilic compounds and poorly absorbed nutrients to water-dispersible ingredients for enhanced bioavailability. This was granted a patent which covers ingredients' composition for improving muscle performance, endurance capacity and resistance to fatigue when


Image © iStock.com/Ljupco

administered in effective amounts in humans undergoing exercise.

Another encapsulation process was developed in which curcuminoids are encapsulated with β-cyclodextrin. Bioavailability studies on rats showed higher absorption and longer stay in bloodstream than standard curcumin.

Resveratrol
80% of older adults are dealing with one chronic disease while 70% with more than two. Resveratrol has several benefits because of its anti-inflammatory abilities as an antioxidant. It has been shown to penetrate mitochondria, thus supporting healthier aging. Often associated with heart health, resveratrol has also shown benefits in bone, brain and skin health as well. Study evaluating its effect on cardio-metabolic, brain and bone health in post-menopausal women is under progress.

Another company has prepared pure resveratrol produced by fermentation by yeast and purified to cold-water dispersible form containing 90% resveratrol. It can be used in beverages and foods to make functional beverages, liquid shots and instant powder drinks.

Glutathione
This antioxidant is produced in body but with age, ability to produce declines. One patented form of glutathione produced by proprietary fermentation process has been clinically studied. When taken orally it has been shown to replenish body's reserves, fight oxidative stress, promote immune health, detoxify, and support anti-aging.

Muscle Maintenance
Focus of muscle and protein is not just on athletes and sports nutrition, but maintenance of existing muscle becomes important in aging. Sarcopenia or muscle wasting is a growing concern globally. It will affect as many consumers as osteoporosis will. Hence protein and amino acid consumption is being monitored globally in aging population.

One study showed that higher intake of animal protein foods alone or in combination with physically active lifestyle could preserve muscle mass and functional performance in older adults. Higher intake of protein foods like meat, poultry, fish, dairy, soy, nuts, seeds and legumes was associated with higher percent of skeletal muscle mass, especially in women.

One company offers a product triggers muscle protein synthesis. Certain amino acids have poor solubility. This product binds free form amino acids or bioactive compounds to peptides isolated from sweet whey using advanced technology, making them soluble. Also peptides are more bioavailable than free amino acids, allowing better utilisation in body.

Bone and Joint Health
Human body goes through changes; bones and joints become more brittle and start to lose flexibility, and tissues start to lose elasticity making them more prone to injury and discomfort. Some products have been developed for alleviation of these problems.

Collagen
A patented combination of calcium and collagen has been clinically shown to improve bone mineral density, bone strength and flexibility. Collagen is critical to bone structure and function as it helps maintain flexibility and absorb impact during physical activity. Study has shown that its use reduces bone loss in osteopenic post-menopausal women.

Another product prepared using avian sternum provides major components of joint cartilage containing collagen type II along with chondroitin, glucosamine and hyaluronic acid in similar proportion that is naturally present in bodies.

One company offers different collagen peptides to support healthy aging stating that peptides are optimised to maximise the stimulatory effects on specific cells and the level of stimulation is different for varying collagen peptide compositions. One composition has proven effective for body toning in young and middle-aged people as well as for sarcopenia in aged. Another product with different composition increases bone density, promote bone health and reduce degradation process, making bones more elastic and stable helping reduce bone loss and fragility. This combination is supposed to stimulate osteoblasts and reduce the activity of osteoclasts.

Another combination product supports joint health and mobility and is supposed to help regeneration of joint cartilage. These collagen peptides have been shown to activate the growth of new cartilage. There is also another product which is designed to increase heath and quality of ligaments and tendons.

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INDIA'S PROTEIN-DEFICIENCY.

A recent survey suggests that 73% of Indian diets are protein-deficient*. Part of the reason lies in the insufficiency of protein content in conventional protein sources such as eggs, lentils, milk etc. Moreover, the steep cost (per 100 gms of protein) of these sources makes it even difficult for families to fulfil their daily protein need. We at Ruchi Soya, the makers of Nutrela Soya Chunks, Mini Chunks and Soya Granules, help consumers bridge this gap by providing the richest source of protein at the most affordable price, which we call '52% Dhaakad Protein'. 200 grams of soya contains 52% protein which is equivalent to 15 bowls of cooked daal or 16 boiled eggs or 17 glasses of cow's milk. We urge you to make soya an integral part of your diet recommendations. Let us join hands to help India say a GOODBYE to protein-deficiency!

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*Source: The Times of India, July 2017

Loggerheads_2018

Another company has developed collagen peptides optimised for high bioavailability and activity with glycine, proline and hydroxyproline representing half of its amino acid composition. Its cartilage regenerative and anti-inflammatory effects have been shown on mouse model with post-traumatic osteoarthritis. Findings confirmed that this product can preserve cartilage area during osteoarthritis development, stimulate chondrocyte proliferation and proteoglycan synthesis and reduce production of inflammatory marker TNF.

Botanicals
One company's product is an advanced botanical joint health complex that has been shown to help support joint mobility and comfort. It is a complex of curcumin, boswelia, black pepper oil and ginger extracts. Botanicals are encased in a turmeric matrix so they are protected and bioavailable. This product has been shown to reduce the VAS pain score and the WOMAX index score measuring pain, stiffness, and physical function in patients with knee osteoarthritis as compared to glcosamine 1500 mg + chondroitin 1200 mg.

Vitamin K2
This vitamin is growing in consumer awareness for its benefits to both heart health and bone health. It binds calcium and delivers it to the bone. The menaquinone MK-7 form of this vitamin has been clinically validated and patented for cardiovascular benefits. It is supposed play an important role in bone and heart health by activating key proteins that bind calcium to bone and direct free calcium away from the arteries to maintain healthy circulation.

Eggshell Membrane
One proprietary formula provides a blend of avian eggshell membrane and sternum cartilage to support healthy mechanical properties of connective tissue. It contains collagen, hyaluronic acid, chondroitin sulphate and mucopolysachharides, the nutrients critical to collagen synthesis and flexible, lubricated joints and connective tissues.

Cognition
Brain health is important for staying mentally active as people age. The cognition market aims areas like memory, mental focus and recall.

Blueberries
These are identified with high antioxidant properties and potential to reduce effects of age-related loss in brain function. Studies with older lab animals consuming blueberry-supplemented diets show measurable improvement in memory, coordination and balance. It also shows neuron regeneration. A recent study has shown that adding blueberry to diets of older adults can improve some aspects of cognition such as fewer repetition errors.

Magnesium
Patented compound of magnesium claims brain health by restoring old neurons and increasing synaptic density. Magnesium is essential cofactor for many systems regulating biochemical reactions in body including brain and nervous system. Clinical research with this material has been claimed to improve markers of cognitive health and function, including working memory, short- and long-term memory, attention and stress.

Botanicals
One product helps improve cognitive performance in visual processing, learning rate, working memory, information retention, and mental performance. It is a patented form of Bacopa monnieri (Brahmi). Study showed improvement of sustained cognitive performance.

Eye Health
Aging also shows decline in vision health with huge implication to overall quality of life.

Antioxidants
One product contains naturally derived marigold extract that provides all macular carotenoids: lutein, and both zeaxanthin isomers as found in nature. Another eye health category is visual support against high screen time and digital device use. This product has benefit on eye health and performance, sleep quality, and eye strain and fatigue.

Omega 3 Fatty Acids
EPA and DHA have been shown in a recent study to prevent or delay occurrence of visually significant intermediate age-related macular degeneration.

Extracted from an article by Linda Milo Ohr from Food Technology July 2018

Image © iStock.com/LightFieldStudios

RICE: THE STAPLE OF ASIANS

By
Prof. Jagadish Pai, Executive Director, PFNDAI

Image © iStock.com/Charliestockis

Rice has been the most widely consumed staple in most of the world especially in Asia. India is the second largest producer of rice after China, accounting for over 22% of world production.

Indian rice production has been over 100 million tonnes higher and wheat production was about 95 million tonnes. According to FAO, India produced over 158 million tonnes of rice in 2016 while China's production was over 200 million tonnes. Together India and China accounted for half the rice production of the world.

Many varieties of rice are grown in India and some are globally popular e.g. Basmati, the long grain rice with fragrance is grown in Punjab, Haryana and western Uttar Pradesh. Rice is mainly consumed in south and east while wheat is the major grain consumed in north whereas in the western India consumption of both grains is about the same. Over almost a decade from 2004, consumption of rice has declined in India by 400g in rural to about 6kg whereas in urban areas decline is over 200g to about 4.5kg.

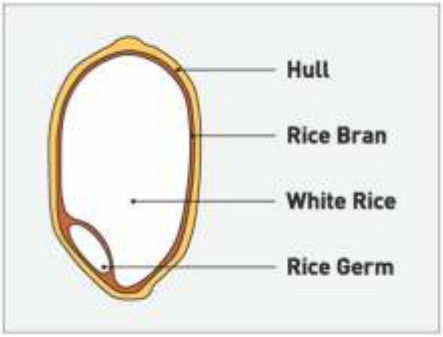
Different types of rice will have different properties depending on the growing conditions, variety, ageing or storage and milling etc. Normally long grain rice has higher amylase and is less sticky. The ageing also increases the amylase content. Shorter grains have higher amylopectin and are sticky and these are normally not stored much.

Processing of Rice

Post-harvest process also has an effect on rice properties. Brown rice has more bran than white rice which is milled to remove the bran more thoroughly. Bran also has more nutrients so brown rice has higher nutrient values. Parboiling is a process by which some of the nutrients are allowed to move to rice kernel from bran making it more nutrient-dense.

The structure of rice is shown in the figure and nutritive values in the table.

Schematic Structure of Rice



Seeds of rice or paddy with outer husk covering are dehulled to produce brown rice. This is also done by traditional hand pounding to produce brown rice which has varying amounts of bran. Dehulled rice may be milled further to remove bran in rice polisher and using buffing with glucose or talc to prepare white polished rice. While brown rice has more nutrients it is less stable than white rice. Bran has enzyme lipase which acts on germ oil producing rancidity in brown rice.

When bran is removed B vitamins and iron present in it are lost. Also bran has good proportion of protein and is rich in dietary fibre. Both are also lost along with vitamins and minerals making white polished rice less nutritious than brown rice. Vitamins and minerals may be recovered to some extent by the process of parboiling.

In parboiling process, the paddy is soaked in water and then it is heated to partially cook the grain inside. There is migration of vitamins and minerals from bran to the kernel inside. The paddy is then dried to remove the moisture absorbed and then milled. The milled parboiled rice is slightly brownish in colour.

Nutritive Values of Different Rice Forms

	Moisture	Protein	Fat	Fibre	Carbohydrate	Energy	Calcium	Iron	B1	B2	Niacin	B6	Folate
	g	g	g	g	g	Kcal	mg	mg	mg	mg	mg	mg	µg
Rice parboiled, hand pounded	12.6	8.5	0.6	-	77.4	349	10	2.8	0.27	0.12	4.0	-	-
Rice parboiled, milled	13.3	6.4	0.4	0.2	79.0	346	9	1.0	0.21	0.05	3.8	0.26	11
Rice, raw, hand pounded	13.3	7.5	1.0	0.6	76.7	346	10	3.2	0.21	0.16	3.9	-	-
Rice, white raw milled	13.7	6.8	0.5	0.2	78.2	345	10	0.7	0.06	0.06	1.9	-	8.0

Source: Nutritive Value of Indian Foods by Gopalan & others

There are many products that are made from rice in India. One very popular one is puffed rice or murmura which is used for savoury as well as sweet preparations. Water is added to rice and allowed to soak for a while. After that it is heated a bit and is added to either hot sand or salt which is heated while mixing with soaked rice. Rice puffed up and comes to the top which could be separated from salt or sand which is used as heating medium by sieve. The product is quite crispy and light and made into many savoury and sweet products like chivda, bhel, laddu, and in many recipes.

Flattened rice or poha is made usually with paddy which is soaked overnight and roasted when it gets slightly expanded and loose from husk. Then it is passed through rolls to flatten which will also separate them from the husk. It may be further polished or refined. As the process in the beginning is similar to parboiling it has more nutrients than white rice. This is also a starting material for many savoury and sweet traditional products and recipes.

There are many other rice products that are made which are used in food preparations. Rice flour is very common ingredient used in idli, dosa, vada etc. along with black gram flour. Rice flour may be made using white or parboiled rice. Earlier people used to make idli at home using milled rice and black gram dal. These would be soaked and then ground either separately or together to make a thick paste which would be fermented and then various products would be prepared. Now rice and black gram flours can be purchased. Even ready mixes with these with other ingredients and fermentation are available. So people can start at any point of convenience and make idli or dosa.

Another traditional product is vermicelli. Cooked rice is extruded to prepare vermicelli which is prepared into savoury as well as sweet preparations which are very popular in south.

Since rice is gluten-free various products are being tested to make baked products to replace wheat. It is easy to make cookies but making bread is difficult as gluten has advantage of holding carbon dioxide during leavening which provides porous structure to the dough and the bread is soft and fine grained. Using rice flour made from various types including brown, parboiled etc. and using gums and other grains have provided enough leavening to prepare good breads for people who have gluten intolerance.

Rice bran is one of the by-products along with husk. Bran was earlier dried and used as animal feed. Bran does not have oil but the germ contains oil and in milling to remove bran, germ comes along with bran and this together contains about 15 to 18% protein and 18 to 23% oil. Rice bran oil has become of late important commodity as it can lower LDL cholesterol and increase HDL cholesterol benefiting the heart. There is a problem with rice bran that it also contains enzyme lipase which forms free fatty acids in bran oil. So bran soon after recovery needs to be treated to deactivate lipase so oil will be stabilised. There are also attempts to get the rice bran protein.

Fortification of Rice

As rice is consumed by most people irrespective of any social or economic section, it is one of the ideal foods for fortification. In many Asian and African countries there are deficiencies of certain vitamins and minerals so there have been attempts to supply them through fortification of rice. Many trials have been taken with iron which is the most common deficient mineral and could be partly taken care if provided through rice.

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The earliest efforts were parboiled rice which produced grains which were richer in iron and vitamins. However, they were still low and alone would not be able to overcome deficiency of iron. It is easy to mix nutrient in a powder or flour but it is difficult to do so in a grain. The solution of nutrient needed to be applied as a coat. As iron is very reactive especially when very soluble salts like ferrous sulphate are used causing dark coloured discolouration which will be rejected by consumers. So it has to be protected by another coat. Coated grain also creates problem as Indians wash rice before cooking which incurs large losses of nutrient in wash water.

There was a unique method developed. Rice flour was mixed with iron compound. It was then extruded into tiny rice like grains. By itself they would be looking different from regular whole rice grain but when mixed in 1:100 of extruded grain to natural rice grain then it would be extremely difficult to recognise them. This would provide enough iron at the level of fortification used. This process has already been used successfully in Africa and in Philippines and is now being used in India.
Another method is being explored is use of iron EDTA in soaking water before parboiling. This would not only provide iron infused into the kernels but after milling the rice grains would resist loss of iron while washing.

Biofortification

Another nutrient that is deficient in Indian diets is vitamins A. This vitamin is present in carrots, oranges, green leafy vegetables, cod liver oil etc. Vitamin A deficiency affects large number of children and pregnant women which may cause blindness. Fruits and vegetables contain carotenes, the precursor of vit A which in body converts to vit A. Golden rice is genetically engineered to produce beta-carotene in the rice kernels. Most children and women deficient in vit A have rice as their staple food. Golden rice is seen as the simple and less expensive means compared to vitamin supplements or to increase consumption of green vegetables or other vit A rich foods. International Rice Research Institute (IRRI) developed golden rice to be cultivated in countries including Bangladesh, Indonesia and the Philippines to remove vit A deficiency. Golden rice has been approved by US FDA, Food Standards Australia New Zealand and Health Canada. At the same time, rice research institutes of Bangladesh and Philippines are developing high-yielding local rice varieties with beta-carotene producing golden rice traits. It is expected that about 150 g of golden rice would adequately meet the vit A requirements per day.

Thus rice can be a very effective vehicle to provide deficient nutrient through fortification. Although Indians are changing their food habits with many new foods brought in as well as new ones developed here. Rice also can undergo a lot of changes in the recipe and make appearances in newer forms and foods. There is already a large number of foods prepared using rice and people from different regions are experiencing newer tastes and recipes. They certainly would be open to try new foods.

COMING EVENTS

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Food Tech Pune 2019
February 23-24-25, 2019
HA Exhibition Ground
Pimpri, Pune
T: 011-2953 5593/5872
E: foodtechpune@gmail.com
W: www.foodtechpune.com

4th Intl Congress on Advances in Food Chem& Tech
February 25-26, 2019
J W Marriott Hotel Dubai, UAE
T: 4084292646
E: foodchemistry@pulsusevents.org

IIDE 2019
Indian International Dairy Expo
April 3-5, 2019
Bombay Exhibition Centre, Mumbai
T: +91 22 2871 5201
E: v.thosar@koelnmesse-india.com

3rd Intl Conference on Food & Nutritional Sci
April 15-17, 2019
Paris, France
E: contact@foodscienceconference.org

Nutraceuticals 2019
April 22-23, 2019
Osaka, Japan
E: nutraceuticals@annualmeetings.net

5th Intl Conf on Food & Beverages
April 22-23, 2019
Osaka, Japan
E: food@annualmeetings.net

Vitafoods Europe
A Brave New World in Nutrition & Food Safety
May 7-9, 2019
Palexpo, Geneva
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FOOD SAFETY AND STANDARDS (ADVERTISEMENT AND CLAIMS) REGULATION, 2018

Comments: We asked some of our members to give comments on the recent regulation notified by FSSAI and some have given their comments. We are giving some which we have received. These are the members' views and not necessarily ours. Thanks.

Comments by
Dr. Prabodh Halde,
Head, Regulatory, Marico
Governing Board Member, PFNDAI
President, AFST (India)

Summary:
The Food Safety and Standards (Advertisement and Claims) Regulation was gazette notified on 24th November, 2018 wherein the FBO's shall ensure compliance with all the provisions of the regulations by 1st July, 2019.

In the current scenario, Claims were only defined as Health Claim, Nutrition Claim and Risk Reduction Claim in FSSR (Packaging & Labelling Regulation), 2011 under 2.2.2 (3). However, no limits/riders were set to qualify productsin compliance to these claims.
The FSSR Gazette regulation has been majorly adapted from Codex which is the backbone of most international claim regulations.

As per the gazette, claims have been bucketed into five major categories i.e. Nutrition Claim, Health Claim, Non-addition Claim, Equivalence Claim and Conditional Claims. Nutrition Claims are further divided into Nutrient Content and Nutrient Comparative claims which do not require approval from FSSAI. The other claims are to be based on current relevant scientific substantiation and should provide sufficient evidence on the type of claimed effect and the relationship to health. The conditions to be met to qualify for these claims have been laid out in Schedule I.

Health Claims have been categorised into nutrient function claim, other function claim and disease risk reduction claim wherein, nutrient function claim describes the physiological role of the nutrient in growth, development and normal functions of the body. Other function claim described the specific beneficial effects of the consumption of foods or their constituents in the context of normal functions or biological activities of the body. Reduction of disease risk claims state, suggest or imply that consumption of such foods or food constituents reduces the risk of developing a disease or health related condition. FSSAI has approved a list of 8 disease risk reduction claims that can be made on the product if the subsequent stated conditions of Schedule III are in compliance. The FBO shall seek prior approval from the food authority for reduction of disease risk claims other than those defined in Schedule III. Food articles fortified as per Food Safety and Standards (fortification of Foods) Regulations, 2018 may make health claims as provided in Schedule IV. The regulation has also outlined the claim approval and redressal process with timelines against each step.

At a quick glance, the definitions and claim categorisation incorporated in the FSSR gazette regulation is a replica of the Codex Claim Guidelines. However, there have been gaps in the clarity and language of health claims in comparison to claims regulations of EU. In a snippet, we can observe that disease risk reduction claim statements designed in Schedule III are not in parity with the definition of disease risk reduction claim of the FSSR regulation.

For e.g. the definition of disease risk reduction claim along with its examples states the clear call out of the disease the risk factors affects or associates with. When we read the statement of Schedule III, 'diets low in saturated fat contributes to the maintenance of normal blood cholesterol levels' it is clearly evident that the disease associated with cholesterol is missing. Along the same lines, a similar claim has been authorised in EU with the statement 'Replacing saturated fats with unsaturated fats in the diet has been shown to lower/reduce blood cholesterol.

High cholesterol is a risk factor in the development of coronary heart disease'. Thus, we see a disconnect in the adaptation of claim language in comparison to EU as well as the contradiction to the definition of health claims as per the gazette. In fact, some of the claim statements stated in Schedule III are in fact Article 13 claims of EU which are classified as other function claims. This indicates that the disease risk reduction Schedule III claim statements have been incorrectly categorised as disease risk reduction claims in comparison to EU guidelines.

Thus, the advertisement and claims regulations have laid down a strong foundation for the industry to

create a level playing field in an era where advertisement and claims make an impact on the buying choices of consumers. However, understanding the genesis of the regulation will help gather insights into the gazette and also identify the gaps that can be implemented basis the international regulatory scenario.

Comments by

Ms Meenu Yadav,

Manager, Scientific & Regulatory Affairs, Mondelez

Governing Board Member, PFNDAI

From pre-draft form to draft form, we have witnessed many changes in the advertising and claim regulations. Most of the things have been clarified in the final gazette regulations. However document still has ambiguities which need further clarification.

1. Clarity in regulation: The new food safety and standard regulations on Advertising and claims is ambiguous at several places . Clarity is required for seamless implementation of these regulations. Some of the examples are stated below:

a. Under Section 4(5) Serve size declarations are mandatorily to be declared on packs but we don't have claims conditions laid down in the regulations on that basis.

b. Under section 5(3) Nutrition Claims section, the statement "Nutrient content or nutrient comparative claim or any synonymous claim shall be made in accordance with the conditions specified in Schedule I". However, Schedule 1 is only for Nutrient content claims and not for Nutrient comparative claims. Hence, the clause should be suitably amended.

c. Schedule III under the same regulations is stated as reference table for Health Claims but the schedule is stating conditions only for disease risk reduction claims. Hence, a contradiction.

d. Under SCHEDULE – II: Synonyms which may be used for claims defined in these regulations, "increased" is stated as a synonym for "High" they are comparative claims and nutrient content claims respectively and the same distinction needs to be made in the table.

e. Under Schedule III: HEALTH CLAIMS: The introductory note needs to be removed as that's in contradiction to definitions.

f. Conditions related to fortified food regulations should be separately covered.

2. Contradiction with Global regulations:

a. Global regulations are based on per serve for most of the nutrients because ideally that is more senseful for products that are meant only for snacking like biscuits, wafers, chocolates etc. However in our regulations conditions are laid down only per 100 g and per 100 ml. This might be due to absence of predefined serve sizes in Industry. In Codex, for "Source" claim on Vitamins and Minerals, conditions laid down are basis 100g, 100ml, per serve or 100kcal. Hence, there is a restrictive flexibility for the food business operators depending upon the kind of product to make claims based on best utilization of the claimed amount. It is also contradictory to have the serve size claims not defined when there are parallel conditions in section 4 and others where the serve sizes are mandatorily to be given on packs where claims are made. These contradictions are creating open spaces for wrong interpretation and implementation challenges.

b. Schedule V should be kept out of the ambit of this regulation. It should be made voluntary and be released in the form of a guidance document. This is in contradiction with other global regulation.

3. Are some areas not covered: Most of the areas related to claims have been covered under this regulation. However, there has to be a provision in the regulations to update the list of approved Disease risk reduction claims from time to time.

4. Improvements over previous regulations: Definitely the new A & C regulations are way better than the current structure we have. The previous regulation covers only three definitions lying somewhere under nutritional information clause.

5. Do they adequately allow benefits of ingredients or nutrients to be communicated: The new regulation is definitely allowing better communication means related to benefits of ingredients or nutrients to consumer. The regulations is also allowing flexibility in the wording of the claims as long as the meaning of the claims is not altered.

6. Any restrictions: Putting an additional restriction on the brand / Trade name containing adjectives such as " Natural", " Fresh", "Pure", "Genuine", " Real" etc. have been established over a period of years in the country and are likely to mislead the consumer isquite challenging. The disclaimer which is now made mandatory for all those brand owners with minimum 3mm font size with and no exceptions to lower pack sizes is making it all the more difficult to implement.

7. Would you prefer any changes:

a. Claim approval process should be time bound and more transparent

b. Interpretation of this regulation along with the proposed Labelling and Display regulation (still under draft) may require sufficient time for its implementation as both the regulations are inter related with each other. This is a massive change and hence, the timeline for implementation by the industry shall be extended by2 years from date of implementation, that is, up to July 2020.

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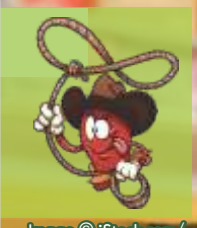

REGULATORY ROUND UP

By
Dr. N. Ramasubramanian,
VR Food Tech Private Limited
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Dear Readers

Wish you all a very happy, successful and peaceful new year.

One of the much-awaited regulation on packaging has been released. This issue also has other important regulations, announcements, orders, etc by FSSAI.

Standards

The "Packaging" section of the present regulation " Packaging and Labelling Regulation, 2011" has been separated into a new regulation " Food Safety and Standards (Packaging) Regulation, 2018". The regulation comes into force with immediate effect. However, the "Packaging" section of the existing regulation is also operational. This is likely to lead to confusion. The salient features of the new packaging regulation are

- The regulation covers all materials which are in contact or likely to be in contact with food used for packaging, preparation, storing, wrapping, transportation and sale or service of food. This includes equipment, cooking vessels, cutlery, etc.
- Standards (all BIS standards) for all food contact materials used in packaging have been laid down and must be complied with. In case of multilayered package, the layer in contact with the food must comply with the applicable standards.
- Table 1 of the Regulation specifies migration limits for metal contaminants in case of plastic materials in contact with food
- Food business operators using plastic material in contact with food must ensure that migration limit of 60 mg per kg or 10 mg per dm^2 ,when tested as per IS 9845, is complied with.
- Printing ink used on packaging material should comply with IS 15495.
- Printed surface should not be in contact with the food.
- The regulation prohibits the use of paper with print like newspaper for wrapping food.
- The regulation has a list of suggested packaging material for different foods and food categories.

Readers are requested to go through the regulation for detail.

Final notification on pesticide residues in different foods and food categories. This replaces the existing limits and is effective from 24 December 2018. A few have been deleted and new ones added. The list of pesticides has gone up from 149 to 213. The note to the table specifies the level of pesticides, for which limit have not been fixed, as 0.01 ppm.

Final notification amending the labelling requirement in case of blended oil.

Draft regulation setting standards for canned/ retort pouch, comminuted/restructured,cured/pickled /or smoked , dried/dehydrated, cooked /semi-cooked,fermented meat products, marinated meat products, and fresh/chilled/frozen rabbit meat.

A few changes have been proposed in the microbiological standards of milk, meat and their products

Draft regulation setting new/amending standards in wide variety of food and food categories like edible oil, fruit and vegetable products, reduction in trans fat to 2% over a period of time, egg products, fish and crab products, use of mineral water in alcoholic beverages, baking powder, etc.

FSSAI has postponed the implementation of regulation, published on 20July 2018, setting limits for antibiotics and veterinary residues in animal products to 01 April 2019.

FSSAI through its order dated 31 December 2018 prohibits the use of certain substances in foods covered under Health Supplement and Nutraceutical Regulation.

Deadline for complying with Fortification of Foods Regulation, 2018, has been extended to 01 July 2019.

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For details, please contact our India partner VR Food Tech Private Limited, Mumbai.
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RESEARCH IN HEALTH & NUTRITION

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Newly discovered compounds shed fresh light on whole grain health benefits

Science Daily October 3, 2018

Scientists have discovered new compounds that may explain whole grain health benefits, reports a new study led by the University of Eastern Finland.

A high intake of whole grains increased the levels of betaine compounds in the body which, in turn, was associated with improved glucose metabolism, among other things. The findings shed new light on the cell level effects of a whole grain-rich diet, and can help in the development of increasingly healthy food products. "Whole grains are one of the healthiest foods there is. For instance, we know that a high intake of whole grains protects against type 2 diabetes and cardiovascular diseases. Up until now, however, we haven't understood the cellular mechanisms through which a whole grain-rich diet impacts our body," says Dr Kati Hanhineva, Principal Investigator of the study at the University of Eastern Finland.

Using metabolomics analysis, Dr Hanhineva's research group investigated the effects of a whole grain-rich diet on the body's metabolites. The effects were studied in mice fed with bran-rich fodder, and in humans following a diet rich in whole grain products over the course of 12 weeks. A whole grain-rich diet increased the levels of betaine compounds in both mice and humans. "This is the first time many of these betaine compounds were observed in the human body in the first place," Dr Hanhineva says.

At the end of the 12-week follow-up, the researchers also observed a correlation between improved glucose metabolism and increased presence of betaine compounds in the body. "Pipecolic acid betaine, for example, is particularly interesting. Increased levels of pipecolic acid betaine after the consumption of whole grains was, among other things, associated with lower post-meal glucose levels."

New compound worked similarly to a heart drug in cell level experiments

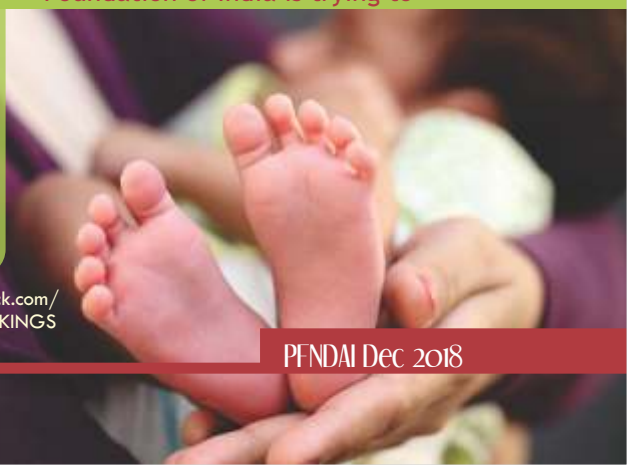
One of the betaine compounds discovered by the researchers is 5-aminovaleric acid betaine, 5-AVAB, which seems to cumulate in metabolically active tissues, such as the heart. With this observation in mind, the researchers set out to further test its effects in a cell model. "We observed that 5-AVAB reduces cardiomyocytes' use of fatty acids as a source of energy by inhibiting the function of a certain cell membrane protein," Researcher Olli Kärkkäinen from the University of Eastern Finland says. "This cell level effect is similar to that of certain drugs used for cardiovascular diseases. However, it is important to keep in mind that we haven't proceeded beyond cell level experiments yet. We need further research in animals and humans to verify that 5-AVAB really can impact the function of our body."

However, the discovery of the new compounds associated with whole grains significantly enhances our understanding of why whole grain products are good for our health. "In the future, we seek to analyse in greater detail the multitude of effects these new compounds can have on the human body, and we will also look into how intestinal microbes possibly contribute to the formation of these compounds," Dr Hanhineva continues.

First-of-its-kind trial in India to test maternal DHA supplementation's effect on offspring's neurodevelopment

Science Daily October 15, 2018

An on-going multi-country study led by the Public Health Foundation of India is trying to



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determine if maternal DHA (docosahexaenoic acid) supplementation may have beneficial effects on neurodevelopment in the offspring during its first 1,000 days of life.

A wealth of research points to a strong link between nutrition during the first 1,000 days (conception to two years) of life and cognitive development. DHA, which is a structural component of the human brain and retina, can be found in fatty fish, and marine algae and oils, and maternal DHA supplementation is one of the factors associated with the neurodevelopment of human offspring. However, Indian diets are mostly devoid of such components, leading to low plasma levels in the general population. Researchers in India are therefore conducting a study to assess the impact of pre- and postnatal DHA maternal supplementation on mental and motor development in infants, as well as their anthropometry and morbidity patterns. The study, called DHANI (DocosaHexaenoic Acid supplementation during pregnancy and lactation on Neurodevelopment of the offspring in India), is a double-blinded, parallel-group, RCT involving 957 pregnant women aged 18 to 35.

Each of the women are being supplemented from up to five months' gestation through to six months postpartum with either 400mg of algal-derived DHA or a placebo daily. Data on their anthropometric measurements, socio-demographic profile, and dietary intake are also taken at baseline. The mother-and-child pairs will be observed until each child reaches a year old, with the primary outcome variable being the infant mental and motor development quotient at 12 months of age, as evaluated by the DASII (Development Assessment Scale in Indian Infants). The secondary outcomes are infant anthropometry, gestational age, and APGAR (Appearance, Pulse, Grimace, Activity, Respiration) scores.

Acidic impact to be assessed
The researchers are also collecting biochemical indices (breastmilk and blood) from the mother-and-child pairs to estimate changes in DHA levels as a result of supplementation, and all analyses will follow the intent-to-treat principle (i.e., all enrolled patients who are randomly assigned to treatment are included in the analysis, and analysed in the groups to which they were randomly allocated). They will then use a two-sample t test to test unadjusted differences in mean DASII scores between those in the supplemented group and those in the placebo group. The researchers said the mechanisms involved were "not completely understood" , but added that DHA's active properties were said to include effects on neuronal development and plasticity, as well as changes in membrane fluidity, and / or improvements in the production of anti-inflammatory lipid mediators.

DHANI is the first large pre- and postnatal maternal dietary supplementation trial in India — if it "finds substantial benefit", it could act as a guide to help improve the DHA interventions in the country. Apart from the Public Health Foundation of India, the researchers also come from the Centre for Chronic Disease Control, KLEU's JN Medical College, Sangath, the Child Development Centre, Prabhakar Kore Hospital, the All India Institute of Medical Sciences and KLE University in India, as well as Emory University in the US. They concluded: "Studies conducted to date suggest that improvements in DHA levels in (the) mother may confer some benefit for child neurodevelopment. Furthermore, DHA appears to be safe, with no adverse birth outcomes related to DHA supplementation observed in low-risk pregnancy cases. "Very few studies to date have continued supplementation through lactation. We therefore implemented a large-scale randomised trial to study the effects of pre- and postnatal DHA supplementation on birth weight, gestational age and neurodevelopment in India, a country with low DHA intakes and a high dietary omega-6 to omega-3 ratio. "This will be the first to examine the effects of in utero and early life DHA exposure (through maternal supplementation from mid-pregnancy through to six months postpartum on postnatal neurodevelopment and body size of Indian infants.

"Long-term contact and follow-up with this cohort is being planned. The biological specimens being collected (blood, cord blood, and breast milk) from the mother-child dyads can further help pursue new hypotheses and unravel critical information about early DHA intervention on (the) later life of an individual. "If successful, we will work to ascertain the best ways to translate the findings to the existing infrastructure and delivery mechanisms of national child development and nutrition programmes like the Integrated Child Development Scheme."

Increasing vigorous exercise decreases risk of type two diabetes, cardiovascular disease in childhood

Science Daily October 15, 2018

Physical exercise can reduce the risk factors of type 2 diabetes and cardiovascular disease even in children, a new study from the University of Eastern Finland shows.


Image © iStock.com / gilaxia

In a two-year follow-up of primary school children, sedentary behaviour increased the accumulation of risk factors, whereas increasing the amount of vigorous exercise reduced it. This is one of the first follow-up studies to reliably demonstrate these associations in children.

The results are based on follow-up data from the Physical Activity and Nutrition in Children (PANIC) Study, ongoing at the University of Eastern Finland. Conducted in collaboration with scientists from the University of Cambridge, the Norwegian School of Sport Sciences and the University of Copenhagen, the findings of the study were published in the Scandinavian Journal of Medicine & Science in Sports.

The two-year follow-up study analysed associations of changes in the amount of vigorous, moderate and light exercise, as well as sedentary behaviour, with risk factors of type 2 diabetes and cardiovascular disease, such as body fat content, waist circumference, blood insulin and glucose levels, blood lipids and blood pressure. The amounts of vigorous, moderate and light exercise, as well as sedentary behaviour, were objectively measured using the Actiheart® device, which records heart rate and body movement. Children wore the Actiheart® device continuously for a minimum of four days, and the measurement period included weekdays and days of the weekend.

During the two-year follow-up, the overall risk and individual risk factors of type 2 diabetes and cardiovascular reduced in children who increased their amount of vigorous exercise. In children whose sedentary behaviour increased, the risk increased as well. These changes were independent of gender, biological maturity and lean body mass, as well as of the levels of risk factors and physical activity measured at the beginning of the study. The study is highly significant, as it is one of the first follow-up studies in the world to reliably show that increasing the amount of vigorous exercise is independently associated with a reduced risk of type 2 diabetes and cardiovascular disease in ordinary primary school children.

"A physically passive lifestyle is gradually becoming alarmingly widespread among children and young people almost all over the world. Our findings provide support for the role of physical activity in preventing common chronic diseases already in childhood," says Researcher Juuso Väistö, the first author of the article, from the University of Eastern Finland. He points out that children and young people should engage in more physical exercise than what it takes to go about their daily activities.

"Our findings show that increasing the amount of vigorous exercise and reducing sedentary behaviour are equally important in preventing type 2 diabetes and cardiovascular disease. According to latest recommendations, children need diverse physical activity every day, and at least 60 minutes should be vigorous exercise. In practice, vigorous exercise refers to exercise or games that cause shortness of breath and perspiration."

Prevention of type 2 diabetes and cardiovascular disease are best begun already in childhood
The PANIC Study has earlier shown that the accumulation of risk factors of type 2 diabetes and cardiovascular disease, which typically exists in people who are overweight, often begins already in childhood. This is a cause for concern, as the accumulation of risk factors in childhood significantly increases the risk of these diseases in adulthood. According to this newly published study, regular exercise and avoiding a physically passive lifestyle constitute efficient means of mitigating the risk factors type 2 diabetes and cardiovascular disease.

PANIC Study -- a source of scientifically valuable data on children's health
The Physical Activity and Nutrition in Children (PANIC) Study is an on-going lifestyle intervention study. A total of 512 children aged 6 to 8 years participated in the onset measurements in 2007-2009. The study applies scientifically sound methods to extensively study the lifestyles, health and well-being of children. The study provides novel information on children's physical activity, sedentary behaviour, nutrition, physical fitness, body composition, metabolism, cardiovascular system function, brain function, oral health, life quality, effects of exercise and nutrition on children's health and well-being, and on the effects of these factors on health care costs.

Eating leafy greens could help prevent macular degeneration

Science Daily October 19, 2018

A new study has shown that eating vegetable nitrates, found mainly in green leafy vegetables and beetroot, could help reduce your risk of developing early-stage age-related macular degeneration (AMD).

Image © iStock.com/VikramRaghuvanshi

Researchers at the Westmead Institute for Medical Research interviewed more than 2,000 Australian adults aged over 49 and followed them over a 15-year period. The research showed that people who ate between 100 to 142 mgs of vegetable nitrates each day had a 35% lower risk of developing early AMD than people who ate less than 69mgs of vegetable nitrates each day.
Lead Researcher Associate Professor Bamini Gopinath from the Westmead Institute and the University of Sydney said the link between vegetable nitrates and macular degeneration could have important implications. "This is the first time the effects of dietary nitrates on macular degeneration risk has been measured. Essentially we found that people who ate 100 to 142 mgs of vegetable nitrates every day had a reduced risk of developing early signs of macular degeneration compared with people who ate fewer nitrates.

"If our findings are confirmed, incorporating a range of foods rich in dietary nitrates -- like green leafy vegetables and beetroot -- could be a simple strategy to reduce the risk of early macular degeneration," Associate Professor Gopinath said. Spinach has approximately 20mg of nitrate per 100g, while beetroot has nearly 15mg of nitrate per 100g. The research did not show any additional benefits for people who exceeded 142mgs of dietary nitrate each day. It also did not show any significant connections between vegetable nitrates and late stage AMD, or between non-vegetable nitrates and AMD risk.

One in seven Australians over 50 has some signs of macular degeneration. Age is the strongest known risk factor and the disease is more likely to occur after the age of 50. There is currently no cure for the disease.

The research compiled data from the Blue Mountains Eye Study, a benchmark population-based study that started in 1992. It is one of the world's largest epidemiology studies, measuring diet and lifestyle factors against health outcomes and a range of chronic diseases. "Our research aims to understand why eye diseases occur, as well as the genetic and environmental conditions that may threaten vision," Associate Professor Gopinath concluded.

Fermented dairy products may protect against heart attack, study suggests

Science Daily October 30, 2018

Men who eat plenty of fermented dairy products have a smaller risk of incident coronary heart disease than men who eat less of these products, according to a new study from the University of Eastern Finland.

A very high consumption of non-fermented dairy products, on the other hand, was associated with an increased risk of incident coronary heart disease. The findings were published in the British Journal of Nutrition. Earlier studies have shown that fermented dairy products have more positive effects on blood lipid profiles and on the risk of heart disease than other dairy products. Examples of fermented dairy products include cheese, yoghurt, quark, kefir and sour milk. However, research into the topic remains scarce.

The Kuopio Ischaemic Heart Disease Risk Factor Study ongoing at the University of Eastern Finland explored the associations of fermented and non-fermented dairy products with the risk of incident coronary heart disease. Approximately 2,000 men participated in the study. Their dietary habits were assessed at the beginning of the study in 1984-1989, and they were followed up for an average of 20 years. During this follow-up, 472 men experienced an incident coronary heart disease event.

The study participants were divided into groups on the basis of how much they ate different dairy products, and the researchers compared the groups with the highest and lowest consumption, while also taking various lifestyle and nutrition factors into consideration.

When the study participants were divided into four groups on the basis of their consumption of fermented dairy products with less than 3.5% fat, the risk of incident coronary heart disease was 26% lower in the highest consumption group compared to the lowest consumption group. Sour milk was the most commonly used low-fat fermented dairy product. The consumption of high-fat fermented dairy products, such as cheese, was not associated with the risk of incident coronary heart disease.

However, the researchers found that a very high consumption on non-fermented dairy products was associated with an increased risk of incident coronary heart disease. Milk was the most commonly used product in this category, and a very high consumption was defined as an average daily milk intake of 0.9 litres. Lower consumption levels were not associated with the risk.

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"Here in Finland, people's habits of consuming different dairy products have changed over the past decades. For instance, the consumption of milk and sour milk have declined, while many fermented dairy products, such as yoghurt, quark and cheeses, have gained in popularity," Adjunct Professor Jyrki Virtanen from the University of Eastern Finland says.

The new study provides further evidence on the health benefits that fermented dairy products may have over non-fermented ones. All the mechanisms are not understood yet, but they may be linked to compounds forming during the fermentation process.

Gut microbiota can affect insulin response, study finds

29 Oct 2018 Nutrition Insight

The gut microbiota has the ability to affect how cells respond to insulin, and can thus contribute to Type 2 diabetes, according to a study published in the journal Cell.

According to the study authors, the findings show how important the interaction between gut microbiota and diet is to understand the metabolism in health and disease. During recent years, the gut microbiota has been associated with health and several disease conditions. However, only a few studies have investigated whether an altered gut microbiota can directly affect disease.
Scientists at Sahlgrenska Academy, University of Gothenburg, Sweden, are now showing that the gut microbiota of people with treatment-naïve Type 2 diabetes can be linked to a different metabolism of the amino acid histidine, which is mainly derived from the diet.

This in turn leads to the formation of imidazole propionate, a

Image © iStock.com/Dr_Microbe

substance that impairs the cells' ability to respond to insulin. Reducing the amount of bacterial-produced imidazole propionate could therefore be a new way of treating patients with Type 2 diabetes. "This substance does not cause all Type 2 diabetes, but our working hypothesis is that there are subpopulations of patients who might benefit from changing their diet or altering their gut microbiota to reduce the levels of imidazole propionate," says Fredrik Backhed, Professor of Molecular Medicine with a research focus on the role of gut microbiota in metabolism.

The latest study included analysis of various substances in the blood vessel that goes from the intestine to the liver. The researchers then identified an elevated concentration of the substance imidazole propionate in patients with Type 2 diabetes.
Using fecal samples, it was also possible to show that the microbiota of people with Type 2 diabetes produced imidazole propionate when histidine was added. This mechanism was not found in the diabetes-free control subjects.

The study comprised 5 patients with Type 2 diabetes and 10 diabetes-free control subjects. The findings were then confirmed in a larger study involving 649 people.
The Gothenburg scientists then proceeded to investigate the effect of imidazole propionate on sugar metabolism, and found that the molecule affected a signaling pathway previously linked to metabolic-related diseases by directly activating a specific protein, p38gamma.

These findings provide answers to questions about the nature of the underlying mechanisms. These, according to Backhed, often remain unanswered in studies of how gut bacteria are associated with, for example, obesity, diabetes and cardiovascular disease.
As Director of the Wallenberg Laboratory for Cardiovascular and Metabolic Research at Sahlgrenska Academy, he sees the translational research environment as a key to the results now being presented.

The combination of basic and clinical research paves the way for identification of bacteria-induced mechanisms and simultaneously, through further studies, stratify patient populations and identifying new more personalized forms of treatment.

Breakfast vital for reaching daily nutrient goals, study suggests

29 Oct 2018 Nutrition Insight

The regular consumption of breakfast is necessary to achieve the recommended daily intake of nutrients and can boost an overall healthy lifestyle, according to a study published in Nutrients.

The study used data from the National Adult Nutrition Survey (NANS) – a food consumption

Image © iStock.com/Magone

survey conducted among 1,500 Irish men and women over the age of 18 – to determine the difference between regular breakfast consumption versus irregular breakfast consumption – as opposed to breakfast omission. The findings could serve as a simple message from health professionals to ensure optimal nutrition profiles in the public and help the population in reaching its overall daily micronutrient targets, the researchers concluded.

Skipping breakfast has been associated with increased disease risk such as obesity, diabetes and coronary heart disease, as well as unhealthy lifestyles and lower dietary quality. Those who regularly consumed breakfast were identified as those who consumed breakfast three to four times out of the four days of the data collection period; such consumers comprised the majority of the population at 94 percent.

The consumption of breakfast contributed significantly to the daily micronutrient intake of individuals, by providing, on average, 24 percent of dietary fibre, 32 percent of iron, 30 percent of calcium, 32 percent of folate and 37 percent of riboflavin. These participants also had the highest adherence to healthier dietary patterns, such as vegetarianism. They also consumed higher levels or fish, vegetables and dietary supplements in the diet, as well as lower intakes of red meat and sugar confectionery. Healthier lifestyle traits were also identified, such as less time watching TV and lower levels of smoking. Facets of an unhealthy lifestyle were more prevalent among those who irregularly ate breakfast. Women over fifty were the most likely to regularly consume breakfast while younger, single participants who smoke were least likely.

The researchers conclude that the study suggests that regular breakfast intake is associated with overall higher dietary quality, lower prevalence of smoking and decreased television watching time. Therefore, this study could serve as an indicator of healthy dietary and lifestyle behaviour. Based on the findings obtained, it could be suggested that health professionals highlight the importance of regular breakfast consumption to those who skip breakfast. This simple message could improve compliance with nutritional recommendations and adherence to a healthy lifestyle.

When too much isn't enough: Food production falls short in meeting nutritional needs, study warns

26 Oct 2018 Nutrition Insight

If nutritionists' recommendations for fruit and vegetable consumption were followed internationally, global agriculture production would fall short in feeding populations, according to a University of Guelph study.

Grains, fats and sugars are, however, overproduced with the study noting that currently 12 servings of grains per person are being produced, instead of the recommended eight; three servings of proteins instead of five and four servings of sugar instead of none. In order to reach nutritionist's recommendations by 2050, when the global population is expected to reach 9.8 billion, consumers need to eat less meat, and the agri-food sector has to produce more plant proteins. "We simply can't all adopt a healthy diet under the current global agriculture system," says study co-author Prof. Evan Fraser, Holder of The Canada Research Chair in Global Food Security and Director of U of G's Arrell Food Institute.

"Results show that the global system currently overproduces grains, fats and sugars, while production of fruits and vegetables and, to a smaller degree, protein is not sufficient to meet the nutritional needs of the current population."

A recent report from the Changing Markets Foundation similarly highlighted this pressing issue. The report, "Growing the Good: The Case for Low Carbon Transition in the Food Sector", called on Governments to introduce policies that tackle both unsustainable agricultural production systems, as well as consumer overconsumption.

The study, published in PLOS ONE, calculated the number of servings per person on the planet for each food group based on the Harvard University's "Healthy Eating Plate" guide, which recommends that half of our diet consist of fruits and vegetables; 25 percent, whole grains; and 25 percent, protein, fat and dairy. Researchers also calculated how much land is currently used for farming and how much would be needed if everyone followed the nutritional recommendations. They then projected those numbers for 2050, when the global population is expected to reach 9.8 billion. "What we are producing at a global level is not what we should be producing according to nutritionists," says Fraser. Commonly, because carbohydrates are relatively easy to produce and can feed many people, developing countries focus on growing grains, the researchers note.

Image © iStock.com/trait2lumiere

Developed countries have subsidized grain and corn production for decades in order to become self-sufficient and to establish global leadership in their production, explains co-author Krishna KC. These countries have also spent far more money on research and innovation for these crops than for fruits and vegetables. "Also fat, sugar and salt are tasty and are what we humans crave, so we have a real hunger for these foods," says KC. "All of these factors combined have resulted in a world system that is really overproducing these types of foods."

The researchers also found that shifting production to match nutritional dietary guidelines would require 50 million fewer hectares of arable land because fruits and vegetables take less land to grow than grain, sugar and fat. But to achieve this decrease, consumers would need to eat less meat, and the agri-food sector would have to produce more plant proteins.

The space of plant-based proteins
The number of vegans and vegetarians is snowballing and many more people, particularly among the younger generations, are reducing their meat intake, leading to a jump in the number of flexitarians. Innova Market Insights data reports that plant-based product claims increased by 62 percent globally (CAGR, 2013-2017) with growth occurring on platforms such as plant proteins and active botanicals.

"Major players in the protein industry are investing in alternative protein options such as plant-based proteins, and consumers are taking advantage of the recent increase in alternative protein options hitting the market," says Fraser.
"Feeding the next generation is one of the most pressing challenges facing the 21st century. For a growing population, our calculations suggest that the only way to eat a nutritionally balanced diet, save land and reduce greenhouse gas emission is to consume and produce more fruits and vegetables as well as transition to diets higher in plant-based protein," he concludes.
Incidentally, the report Growing the Good: The Case for Low Carbon Transition in the Food Sector also highlighted positive market trends around plant-based proteins, which is positive news considering the findings of this study.

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Pioneering treatment could end the need for insulin therapy in Type 2 Diabetes patients

25 Oct 2018 Nutrition Insight

Researchers at the Amsterdam UMC have come up with a novel method to ensure that diabetes Type 2 patients can avoid needing to undergo insulin therapy.

Diabetes is a chronic disease characterized by an inability of the pancreas to produce enough insulin, a hormone that regulates blood sugar, or the body's inability to effectively use the insulin it produces. According to the researchers, the new method could have myriad other benefits in reducing metabolic conditions. The method involves duodenal mucosal resurfacing (DMR), in which the mucous membrane in the small intestine is removed so that a newer one can grow in its place. According to Jacques Bergman, Professor of Gastroenterology at Amsterdam UMC, the vast majority of the patients who have undergone the DMR procedure saw a significant improvement in their glucose regulation and, therefore, did not need to move from oral medication to insulin therapy.

"There is an enormous population of diabetic patients whose condition is poorly controlled or who are using insulin. The technology holds the potential promise that diabetes can be better controlled and leave fewer patients needing insulin therapy," Bergman tells NutritionInsight.

A lot more scientific research will need to be conducted before the method can be up-scaled to a level that will allow for the treatment of thousands of diabetic patients. However, following that "rather sobering scientific remark," Bergman says the technology and the way it impacts on the disease are indeed "amazing."

"The duodenum is not an area where endoscopists generally apply therapy to treat diabetes or metabolic syndrome," he says. This therapy, Bergman explains, appears to impact the duodenum in such a way that it increases the insulin sensitivity of the liver of Type 2 diabetic patients, causing improved glucose homeostasis in the patient. "This [method] has all kinds of beneficial metabolic effects. Patients have a reduction in liver fat and better cardiovascular balance," he says. The effect that this method appears to have is comparable to taking oral medication glucose lowering drug, but in a way that is physiologically much more healthy by reversing the underlying mechanism of Type 2 diabetes – insulin insensitivity, Bergman explains.

The treatment would likely be applicable to patients who have not yet been prescribed insulin treatment. "One of the key elements that you need to make this therapy

work is that your pancreas still needs to be able to produce insulin," he says.

However, the vast majority of Type 2 diabetes patients are still on oral glucose medication and do not yet require insulin medication. Patients in the early stages of Type 2 diabetes, which account for 40 percent of all Type 2 diabetes patients, could benefit from this method, Bergman notes. "In the long run, this will prevent an enormous amount of complications because this is a chronic disease – so if patients are poorly controlled for many years, the adverse effects of high glucose levels in the body are felt – such as cardiovascular risk and renal failure," Bergman says. "By treating patients earlier in the disease, we might better control it and prevent long-term complications."

The next step in furthering this research involves a sham-controlled double-blind study, which is currently underway. The results of this study will likely be published next year, Bergman says.
By Lucy Gunn

HMOs crucial for infants in establishing life-long healthy gut, study notes

25 Oct 2018 Nutrition Insight

The development of a healthy microbiome hinges on the first two and a half years of life, with Bifidobacterium, abundant in breast milk, shaping a healthy gut.

This is among the main findings from research conducted at Newcastle University. Ultimately, the findings highlight the importance of breastfeeding and human milk oligosaccharides (HMOs) – which promote a healthy gut – in breast milk substitute for infants. "The findings that breastfeeding is the number one factor in shaping how the bacterial community in the gut develop are important and suggest these bacteria enriched by breast milk may be important early in life. The research comes at a time when infant nutrition and the gut microbiome are of huge interest. The third major solid component of breast milk is human milk oligosaccharides (HMOs), which exist not to feed the baby, but to feed the baby's bacteria in their gut," Christopher Stewart, Research Fellow at Newcastle University, Institute of Cellular Medicine, tells NutritionInsight.

"Ultimately, it may be of interest to the nutrition industry to add certain breast milk components, such as HMOs, to formula in order to enrich certain potentially beneficial bacteria in the infant gut," he adds. The research, published in Nature, is one of the largest clinical microbiome studies in babies to date.

The study used 12,500 stool samples from 903 children involved in the TEDDY (The Environmental Determinants of Diabetes in the Young) study. Microbiome composition and diversity changed over time in three distinct phases: the developmental phase (3-14 months), transitional phase (15-30 months) and stable phase (31 months onwards).

The research revealed that once infants were weaned, there was a rapid turnover in the bacterial community and a loss of most of the Bifidobacterium, replaced by bacteria within the Firmicutes phyla. Firmicutes are typical of an adult microbiome and the appearance of these bacteria once breastfeeding was stopped occurred much quicker than experts expected.

Vaginal birth was also associated with a temporary increase in Bacteroides bacteria. Siblings, exposure to pets and geographical location were also factors in the differences between microbiome profiles. These findings surprised the researchers, Stewart tells NutritionInsight.

"Because a diet without breast milk delivers different nutrients to the gut, this rapid turnover in the bacterial community is likely to be in response to the new food sources promoting the growth of a different community," he says. "Remarkably, from this point on, the microbiome progressed quickly towards being stable, where the bacteria in the gut will potentially remain roughly the same for the rest of that individual's life."

Future research should investigate how exactly breast milk enriches certain bacteria, as well as whether probiotics can offer the same health benefits of being breastfed, Stewart explains. "For this we need more clinical studies, but more importantly we need basic science investigations in the laboratory using model systems to understand how diet-microbiome-host are interlinked," he concludes.

Image © iStock.com/damircudic

The benefits of breastfeeding are well accepted, with the World Health Organization (WHO) recommending breastfeeding for infants. However, in bids to mimic the health benefits of breast milk, manufacturers are continuously innovating in the area of HMO's for the incorporation in breast milk substitutes, for example. You can read more about the R&D challenges they often face here.

By Laxmi Haigh

Females' "healthier fat" protects them from obesity-related health issues, mice study finds

24 Oct 2018
Nutrition Insight


Image © iStock.com/mapodile

Female abdominal fat, in mice, has more blood vessels than males' which may explain why males and females differ in susceptibility to cardiovascular disease, insulin resistance and diabetes, notes research from York University, Canada.

Previously, it was noted that female fat tissue tends to be more protective against health issues, such as diabetes and cardiovascular disease, than male fat tissue but the underlying reasons were not understood. Understanding the underlying mechanisms behind sex differences in cellular processes are important as they may contribute to individual's susceptibility to develop serious health issues.

"We found that female mice have a higher number of blood vessels in their fat than males and that females increase the number of blood vessels as they are fed a high-fat diet, while males do not. We concluded that this response enabled females to maintain healthier fat and better insulin sensitivity as they grew fat," says Tara Haas, a Professor in the School of Kinesiology and Health Science, Faculty of Health.

Blood vessels are critical for maintaining healthy fat tissue by ensuring that the expanding fat cells are supplied with enough oxygen and nutrients, so the researchers looked at whether the abilities of the fat tissue to grow blood vessels and maintain healthy fat tissue would be different between males and females.

The sex differences in the fundamental cellular processes that regulate the growth of blood vessels were unappreciated in the past, says Haas. It is important to understand them because they may contribute to an individual's susceptibility to develop serious obesity-related health complications such as diabetes, heart disease and cancer, ultimately impacting the health of more than 5.3 million Canadian adults.

Martina Rudnicki, a York post-doctoral Associate and first author of the study, pointed out that the study, published in Frontiers in Physiology – Vascular Physiology, was unique because it focused on the differences in male and female fat tissue in the abdominal area.

Although fat accumulates in different regions of the body, it is abdominal fat that is closely linked with increased risk of developing diabetes, particularly in males. So, the fact that females grow new blood vessels in this abdominal fat during weight gain may exert a health advantage for females.

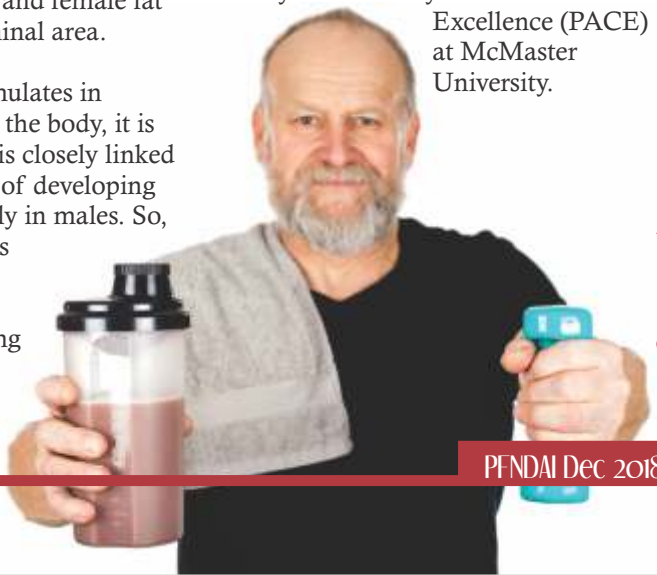
The research team plans to confirm these findings in human samples. While it is clear that females also develop health problems with obesity, the fact that there was such a difference in the vascularization in male and female fat may mean it would be more effective to have different treatments for males and females.

Study: Whey protein superior for rebuilding muscle mass in seniors

12 Oct 2018 Nutrition Insight

Whey protein may be the best protein source for older adults wishing to rebuild lost muscle mass.

The findings, published in the American Journal of Clinical Nutrition, identified that when it comes to seniors, proteins are not created equal. In the study, only whey protein was found to increase lean muscle mass and muscle protein synthesis during recovery from short-term muscle loss. Rebuilding muscle mass in seniors is of immense importance as they are more likely to be hospitalized and suffer from weakened muscle and strength conditions, such as sarcopenia. "Muscle loss is quite common with aging and accelerated with unexpected bouts of inactivity, illness or even a brief hospital stay in aging adults," says Stuart Phillips, Senior Author and Director of the Physical Activity Centre of Excellence (PACE) at McMaster University.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"The aim of our study was to determine if one type of protein supplement (30g of whey or collagen consumed twice daily) could optimize how well muscle made new proteins by measuring muscle protein synthesis during recovery from a period of inactivity – to recover lost muscle," he adds.

The study

The participants were divided into two groups – each group consumed a diet containing 55 percent of protein from foods and 45 percent of protein from supplements of either whey protein or collagen protein during the five-week period. Additionally, both groups experienced a two-week simulated hospital stay or bout of inactivity. Their daily steps were restricted to 750 per day and their calorie intake reduced by 500 calories. A one-week recovery period immediately followed where participants returned to normal activity levels.

"We chose to compare whey protein versus collagen protein because they differ in the amount of leucine they provide," says Sara Oikawa, the Lead Author and a graduate student in the Department of Kinesiology at McMaster. "The essential amino acid, leucine, has been shown to be a key stimulator of muscle protein synthesis. Whey protein from dairy has a greater amount of leucine than almost all other commonly available proteins," she adds.

During the periods of reduced activity and calorie intake, both the groups experienced decreased muscle mass. To the surprise of the researchers, neither protein supplementation protected muscle mass during inactivity and calorie-restriction. "The remarkable takeaway is that proteins – even if 'complete' – are not created equal. Formulations designed to enhance seniors' muscle health should include the right protein in the ingredients," says Dr. Phillips. "Our data shows that for seniors, collagen isn't a great choice, whereas whey protein is very effective. Whey is a high-quality protein that can be superior for muscle stimulation and recovery in older adults."

What's next?

The next vital area of research for whey protein is clinical nutrition, Moises Torres-Gonzalez, PhD, Scientific Subcommittee Chair, Whey Protein Research Consortium, tells NutritionInsight.
"Whey protein has the potential to provide great benefits for older adults or any patient for recovery after hospitalization. We know that hospitalization, which is more common in older adults, causes a dramatic loss of muscle mass and strength. If patients don't receive the proper nutrition, which should include a high-quality protein such as whey protein, after being discharged from the hospital, it is very likely they would have poor recovery and could end up being re-hospitalized. Here is where we feel whey protein has a great potential to become as part of the nutrition strategy for patients during and after hospitalization," he explains.

There will also need to be more focus on whey protein delivery forms, Dr. Phillips tells NutritionInsight.
"I think that whey is clearly the superior protein source but we need to work on vehicles for its delivery – drinks, puddings, bars – that are convenient and tastes great. It's also likely that other nutraceutical bioactive components could be added to whey to improve its efficacy," he says.
Phillips also points out that although plant-based proteins are increasingly in demand from consumers, it is important for consumers "to understand the benefits of whey. While there are a variety of reasons why people choose vegetarian options, whey protein is the superior option for stimulating muscle protein synthesis. It is a high-quality protein with a complete amino acid composition. And research has shown that its leucine content triggers protein synthesis more effectively than other proteins."
By Laxmi Haigh

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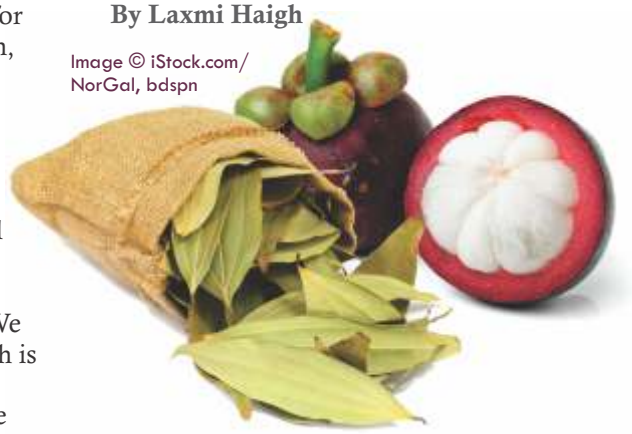

Extracts of mangosteen rind and Indian bay leaf may enhance muscle strength, endurance

By Adi Menayang 23-Oct-2018 - NutraIngredients Asia

Results from two studies—one on mice and another on adult human males—suggest that supplementation of extracts from two plants may enhance muscle strength.

Researchers in India looked at the effects of Garcinia mangostana fruit rind and Cinnamomum tamala leaf extracts on muscle strength and endurance, and at the end of the trial found that the extracts, "in combination with resistance training, is effective in promoting muscle strength, growth and in improving endurance performance in resistance-trained young males," they wrote in their report. More specifically, participants from the human trial who ingested the botanical blend exhibited a significantly increased number of repetitions in leg extension exercises as well as bigger arm girth increases compared to the placebo group.

Laila Nutraceuticals, an Indian supplier of functional ingredients and specialist of botanical extracts, funded and conducted the study, which was published yesterday in the Journal of the International Society of Sports Nutrition. The blend used is commercially available under the brand name CinDura. The plants were chosen because of previous studies linking their nitrate content to boosted nitric oxide synthesis in the body, which in turn may support physical performance and tolerance to exercise.

Additionally, these plants have been used for millennia by different societies in the Indian subcontinent and Southeast Asia for medicinal purposes. "There are growing concerns over possible side effects of long-term consumption of many plants used in various supplements," they wrote. "Hence, we sought to develop an herbal blend using extracts from plants with a long history of human consumption as food or condiment to ensure the product's safety."

Lab mice swam longer with botanical blend compared to placebo
There were two arms in the study—an animal trial followed by a human clinical trial. For the first arm, researchers analyzed how male Swiss albino mice performed in different physical tests after consuming the botanical extract blend.

In four groups with six mice each, researchers gave them either a placebo (made of carboxymethyl-cellulose sodium), 150 mg/kg botanical blend, 300 mg/kg of the botanical blend, or the anabolic androgenic steroid Oxymetholone (also known as Anadrol). Mice consumed the materials once a day through oral gavage for 21 days. After the supplementation period, mice went through two different physical tests—a forced swim test, where mice were forced to swim in warm water for 10 minutes with a load of 5% of body weight attached to tails, and a forelimb grip strength test, where mice grasped a bar equipped with a force transducer so researchers can assess grip strength.

Researchers then collected muscle tissue samples. At the end, they found that mice receiving the botanical blend exhibited increased swimming time. In fact, the 300 mg supplement group exhibited an increase similar to the mice given the drug Anadrol. Additionally, mice supplemented with the botanical blend exhibited increased grip strength compared to the control group.

Human clinical trial details
For the human portion of the study, 38 healthy, resistance-trained male subjects between the ages 19 and 39 completed the study. At random, researchers assigned either a placebo or botanical blend to each participant, and advised them to maintain their regular dietary habits and refrain from consuming any other nutritional supplements or energy drinks containing creatine, arginine, citrulline, proteins, or amino acids.

Supplements came in two capsules for daily consumption—wither 400 mg of excipients in each capsule for the placebo or 400 mg botanical blend for the intervention capsule. Participants consumed both doses daily for 42 days. After initial intake and baseline measurements, the participants visited the lab again on days 14, 28, and 42 to perform full body exercises (like bent rows, calf raises, hammer curls), leg extensions on a machine to measure endurance, and collect body measurements.


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Hot right now: Coconut oil row

By Gary Scattergood 03-Oct-2018 - Food Navigator Asia

The stand-off between a Harvard academic and the Indian government over the benefits of coconut oil, Coconut oil 'poison' row: Harvard distances itself from 'pure poison' statement in response to Indian government's wrath

Harvard University has responded to the Indian agricultural department's emphatic letter protesting the description of coconut oil as 'pure poison' by distancing itself from any direct connection with the claims, saying that these were "not [made] on behalf of the institution (Harvard)". Harvard T. H. Chan School of Public Health Dean Dr Michelle Williams wrote an email response to Dr B. N. Srinivasa Murthy, Horticulture Commissioner of India, which FoodNavigator-Asia has read, courtesy of Dr Murthy. Dr Murthy wrote the original strongly-worded letter to Dr Williams, calling for a retraction of the statement.

Low-dose DHA-rich fish oil may lower triglycerides in premenopausal women

By Adi Menayang 09-Oct-2018 - NutraIngredients Asia

Researchers in Australia found that pre-menopausal women supplemented with 1 g of DHA-rich tuna oil had significantly lowered triglyceride levels compared to those who took the placebo.


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The majority of studies on DHA's effect on triglycerides, an important marker for heart health, have been conducted on men and post-menopausal women, the researchers argued in their report, published yesterday in the journal Nutrients.

Results from this latest study suggested a benefit for pre-menopausal women "of a similar degree to that observed in men and post-menopausal women," the researchers reported, where participants who took the high DHA oil had approximately 20% lower plasma triglyceride levels from baseline.

An Australian Research Council Linkage Grant funded the study, with Nu-Mega Ingredients as an industry partner. Nu-Mega Ingredients provided its proprietary HiDHA tuna oil in 500 mg sized capsules that researchers used in the study.

Plasma triglyceride levels lowered according to increasing dose
The research team randomly assigned pre-menopausal women with mildly elevated triglycerides into four groups. Participants in three of the groups consumed HiDHA with various doses of long chain polyunsaturated fatty acid (0.35 g/day, 0.7g/day, and 1 g/day). The fourth group, the placebo group, consumed Sunola oil, which contained no long chain polyunsaturated fatty acid but contained other fatty acids such as monounsaturated and saturated fats. Fifty-three participants completed the study.

Daily doses of the capsules were provided in individual zip-lock bags. Participants kept a diary to record daily capsule intake and menstrual cycle status.

Participants visited the research clinic on two consecutive mornings each at the beginning of the study, and after approximately eight weeks (two menstrual cycles) of supplementation. During these visits, researchers measured the participants' plasma concentration of triglycerides and cholesterol. Though the research team observed improvements in plasma triglyceride levels, they did not observe any significant effects on cholesterol levels. As the 1 g/day group experienced the most improved levels of plasma triglycerides, the researchers suggested, "Consumption in this dose range may be of particular significance in maintaining cardiovascular health in premenopausal women, given the greater contribution of triglyceride levels to their cardiovascular disease risk."

Older adults at risk for supplement-drug interactions, study finds

By Will Chu 09-Oct-2018 – NutraIngredients Asia


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Older adults that use herbal supplements along with prescription drugs may run the risk of supplement-drug interactions that have the potential to be harmful to health, say UK researchers.

Findings from a cross-sectional survey of older adults revealed the most commonly used dietary supplements were cod liver oil, glucosamine, multivitamins, and vitamin D. Out of the 155 responders, 20% used only herbal medicinal products (HMPs) with prescription drugs. Common HMPs were evening primrose oil, valerian, and Nytol Herbal (a combination of hops, gentian, and passion flower).

"This research has highlighted potential risk of interactions with certain combinations of prescription drugs, HMPs, and dietary supplements," said the team, who were based at the University of Hertfordshire. "If applied to the UK population that would mean 1.3 million older adults are at risk of at least one potential herb– drug or supplement–drug interaction."
The use of herbal medicines and dietary supplements by older adults is common as are the rates of medication-related problems due to co-morbidities and slower clearance of pharmacologically active compounds.

Previous work
A recent systematic review established that concurrent use of prescription drugs and HMPs is substantial among older adults, with potential interactions from some herb–drug combinations such as garlic–aspirin and ginseng–warfarin. However, the only available UK study on this issue among older adults is close to 15 years old, included people aged over 50 years, and relied on a self-selected sample from a publication's readership.

Taking a sample group of older adults aged 65 years and above, who took one or more prescription drug, the research team posted out over 400 questionnaires receiving 155 returned forms. The researchers found females were more likely than males to be concurrent users (43.4% versus 22.5% with the number of HMPs and dietary supplements ranging from 1 to 8, (mean = 3, median = 1). The majority of concurrent users (78.0%) used dietary supplements with prescription drugs. In addition to the commonly used dietary supplements and common HMP, the team calculated that 16 participants (32.6%) were at risk of potential adverse drug interactions.

"A response rate of 39% is disappointing but high for a study of this kind and enough to provide credible findings," the study said. "Examples of HMPs and dietary supplements were included in the questionnaire. It is possible that some participants did not consider products such as garlic or ginger used for medicinal purposes as HMPs and did not report them."
This research also highlighted the problem with recall and what patients thought were HMPs or supplements. "Targeted questioning about use of any alternative medicine or supplements could initiate conversations about wider HMP use and possible interactions," the team suggested.

Thoughts from Food Supplements Europe

Patrick Coppens, director of regulatory and scientific airs at Food Supplements Europe added that while the study used a small sample of only two general practices, it was not surprising that 30% of people took food supplements while taking medicines. "The inverse would probably also be true. Food supplements cover a wide range of food compounds that consumers chose to complement their diet with. The interactions described in the paper come from literature. The study does not establish that these interactions occurred in the sample investigated. Nevertheless, knowledge on interactions is important and is collected in relation to individual medicinal products. Such possible interactions are mentioned in the medicinal le et."

Coppens added that the regulatory framework already provided for the requirements of the information in the medicinal product le et, which included information on interactions and contra-indications. "The legal framework for food supplements also enables the legislator to require information being mentioned for certain food products, wherever necessary. Formation and awareness are important tools that can ensure that possible interactions can be prevented. This is however not something that can be considered as part of legislation."

Popular Indian kitchen spice shows indigestion benefits: Study

By Stephen Daniells 10-Oct-2018 - NutraIngredients USA


Image © iStock.com/subodhsathe

Supplementation with oleo-gum-resin from Ferula asafoetida, a traditional Indian medicine and popular kitchen spice, may ease dyspepsia-related discomforts, says a new RCT from India.

The double-blinded, placebo-controlled, randomized study used the Asafin-branded ingredient from Akay Flavours & Aromatics Pvt Ltd, India under its Spiceuticals brand of nutritional ingredients. Thirty days of supplementation indicated that 81% of people with so-called functional dyspepsia experienced significant improvement in overall symptoms. In addition, 66% of the subjects remained symptoms-free at the end of the study, reported the study's authors in Evidence-Based Complementary and Alternative Medicine.

The study is reportedly the first to report the safety and efficacy of the formulation. "Almost 67% of the subjects in the Asafin group improved the quality of their life with better interest and focus on their daily works from the second week onwards with a significant improvement in bloating, postprandial fullness, food intake, heart burn, constipation, and digestion with no side effects or adverse events as demonstrated by the blood analysis," wrote the authors.

Dyspepsia

Dyspepsia – more commonly known as indigestion – reportedly affects about 25% of Americans every year. According to the National Institute of Diabetes and Digestion and Kidney Diseases , of the people with indigestion who consult a doctor, almost 75% are diagnosed with functional dyspepsia. Functional dyspepsia is referred to as "non-ulcer dyspepsia" that causes an upset stomach or pain or discomfort, bloating, early satiety, postprandial fullness, nausea, heartburn, regurgitation, and burping. It usually affects young adults, with women being affected more often than men. The cause(s) of functional dyspepsia is not clear, but it could be associated with poor eating habits, diet influences, food allergies, westernized lifestyles, medication side effects, psychological factors or excessive acid secretion, all of which can lead to inflammation.

Study details

Researchers from Sri Rama Hospital (Bangalore), Leads Clinical Research & Bio Services (Bangalore), and Akay Flavours & Aromatics recruited 43 people with moderate to severe functional dyspepsia to participate in their study. The volunteers were randomly assigned to receive hard-shell capsules of placebo or Asafin (250 mg twice-a-day) for 30 days. The asafoetida gum is known for its unpleasant organoleptic characteristics and stickiness, so the Asafin formulation uses fenugreek soluble dietary fiber (galactomannans) and water to produce a free-flowing water soluble powder.

"Though the meaning of the Latin word "assa-foetida" itself is "Carrier of bad smell" with its common name as "Devils' dunk" indicating the degree of unpleasant flavour characteristics of asafoetida oleo-gum-resin, uniform impregnation of the lipophilic gum into the hydrophilic matrix of the dietary fibre was found to provide taste and odour masked Asafin particles suitable for dietary applications," explained the researchers.

Results showed that, while symptoms improved significantly in both the groups, a higher relative percentage of participants in the Asafin group had 80% or more reductions in symptoms, including bloating (58%), appetite (69%), postprandial fullness (74%) motion sickness (75%), and digestion (77%). In addition, 66% of subjects remained free of symptoms at the end of the study, with 75% reporting significant improvement in their ability and/or interest in daily activities.

Greater synthetic drug use in the placebo group

"The present randomized, placebo-controlled, and double-blinded pilot study employed Asafin containing about 42% (w/w) asafoetida-gum-oleo-resin formulated with debitterized fenugreek powder rich in soluble dietary fibre, so that each 250 mg capsules of Asafin provided 90 ± 5 mg of asafoetida-gum," explained the researchers. When supplementing two capsules per day (180±10 mg of asafoetida gum/day), the subjects with moderate to severe [functional dyspepsia] symptoms were found to have significant reduction in the gut disorders with an improvement in the quality of life as compared to placebo. While the [functional dyspepsia] symptoms were rated with well-validated symptoms scores scales (GSRS, GDSS, and NDI), 69% of the subjects reported to have significant reduction in symptoms scores with 87% of the subjects reporting no usage of synthetic drugs during the study period, as compared to the placebo group where 61% of the subjects reported the repeated use of synthetic drugs during the course of the study."

Regular omega-3 intake during pregnancy could boost baby brain and vision: Study

By Nathan Gray 02-Oct-2018 - NutraIngredients

Women could enhance the development of their unborn child's eyesight and brain function by regularly eating omega-3 rich fatty _sh during pregnancy, say researchers from Finland.

The small-scale study, published in Pediatric Research, supports previous research that demonstrates the importance of diet and lifestyle during pregnancy on the development of a baby – finding that adjusting the diet of healthy pregnant women to include higher levels of omega-3 could be beneficial to their babies. "The results of our study suggest that frequent fish consumption by pregnant women is of benefit for their unborn child's development. This may be attributable to long-chain polyunsaturated fatty acids within fish, but also due to other nutrients like vitamin D and E, which are also important for development," explained Kirsi Laitinen of the University of Turku and Turku University Hospital in Finland.

According to Laitinen, a mother's diet during pregnancy and breastfeeding is the main way that valuable long-chain polyunsaturated fatty acids become available to a foetus and infant brain during the period of maximum brain growth during the first years of a child's life. Such fatty acids help to shape the nerve cells that are relevant to eyesight and particularly the retina. They are also important in forming the synapses that are vital in the transport of messages between neurons in the nervous system.


Image © iStock.com/ajijchan

"Our study therefore highlights the potential importance of subtle changes in the diet of healthy women with uncompromised pregnancies, beyond prematurity or nutritional deficiencies, in regulating infantile neurodevelopment," said Laitinen – who believes that their results should be incorporated into counselling given to pregnant women about their diets.

Study details

The Finnish research team analysed the results of 56 mothers and their children drawn from a larger study. As part of the study mothers had to keep a regular food diary during the course of their pregnancy. Fluctuations in weight before and during pregnancy were taken into account, along with their blood sugar level and blood pressure. Aspects such as whether they smoked or developed diabetes related to pregnancy were also noted. The team recorded the levels of nutritional long-chain polyunsaturated fatty acid sources in the mother's diet, in addition to measures of blood serum, and the levels in the blood of their children by the age of one month.

Children were also tested around their second birthday using pattern reversal visual evoked potentials (pVEP) – a sensitive and accurate, non-invasive method that used to detect visual functioning and maturational changes occurring within a young child's visual system. Analysis of these test results showed that infants whose mothers ate fish three or more times a week during the last trimester of their pregnancy fared better than those whose mothers ate no fish or only up to two portions per week. These observations were further substantiated when the serum phospholipid fatty acid status was evaluated, said the team.

Vitamin D beneficial not just to diabetic expectant mothers, but also their offspring: Iranian review

By Cheryl Tay 10-Oct-2018 - NutraIngredients Asia

Vitamin D supplementation for pregnant women with gestational diabetes mellitus (GDM) may lead to improvements in their glucose and cholesterol levels, and lower their offspring's risk of hyper-bilirubinemia, say researchers in Iran.

Researchers at Tabriz University of Medical Sciences conducted a review to examine the effects of vitamin D supplementation on maternal and neonatal health in the context of GDM.

Mothers need the D

Following a comprehensive systematic literature search in several electronic databases — such as the Cochrane Central Register of Controlled Trials, PubMed, EMBASE and ProQuest — they selected all RCTs and quasi-experimental studies comparing vitamin D supplementation with placebo or non-supplementation in women with GDM, including five RCTs involving 310 women in the meta-analysis.

The researchers reported significant differences in fasting plasma glucose, total cholesterol, LDL cholesterol, HDL cholesterol, high-sensitivity C-reactive protein (hs-CRP), and newborns' hyper-bilirubinemia between the supplemented women and those who were given a placebo or not supplemented at all. In three of the RCTs (involving a total of 223 participants), a statistically significant difference was observed in serum levels of total cholesterol, LDL cholesterol and HDL cholesterol in the GDM women on vitamin D supplementation, compared to the women taking a placebo. Similarly, in two of the RCTs (with a total of 126 participants), a statistically significant difference was noted in the serum hs-CRP level of women with GDM taking vitamin D and those receiving a placebo.

When it came to the effect of maternal vitamin D supplementation on their offspring's health, two of the RCTs — involving 129 participants — found no statistically significant difference between the treatment and placebo groups in terms of the impact they had on the newborns' hypoglycaemia. With regards to the newborn's hyper-bilirubinemia — a condition whereby bilirubin, produced by red blood cell breakdown, builds up excessively in the baby's blood, tissues and fluids, often causing jaundice — the researchers reported a statistically significant lower risk for the babies of mothers supplemented with vitamin D, compared to babies whose mothers were taking a placebo.

Vital exploration for vitamin supplementation

Still, they added that the review's main limitations were the high degree of heterogeneity among the studies included, as well as their small sample sizes and relatively short intervention durations, which they believed could have restricted their "capability to extract inferences on the effects of long-term vitamin D supplementation" . Furthermore, the limited number of studies in the meta-analysis meant they could not perform sub-group analysis based on the supplemental dosages the participants had received. They added that the systematic review and meta-analysis were "not generalisable to pregnant subjects with normal glucose metabolism or with normal 25(OH)D serum levels" .

In conclusion, they wrote: "This systematic review and meta-analysis demonstrate that the supplementation of GDM women with vitamin D may lead to improvement in fasting plasma glucose, total cholesterol, LDL cholesterol, HDL cholesterol, and hs-CRP serum levels, as well as newborns' hyper-bilirubinemia, but did not affect insulin and triglyceride serum levels, HOMA-IR, and newborns' hypoglycemia.

"However, the potential benefit is evident regardless of dose. Considering the low serum level of 25(OH)D in women in the included studies, it is possible that these women benefit more from vitamin D supplements. Therefore, it seems that investigating Reference Daily Intake (RDI) of vitamin D for these women during pregnancy through further studies is necessary. This is particularly important because management of gestational diabetes with medications, such as metformin, is intricate by the hazards related to trans-placental transmission and probable detrimental impacts on foetal evolvement and / or upcoming neonate well-being."

FOOD SCIENCE & INDUSTRY NEWS

Wheat that pumps iron, naturally

Research shows possibility of increasing nutrition without sacrificing yield

Science Daily October 3, 2018

Is biofortification the best thing since sliced bread? Well, biofortified wheat could certainly make it easier to help some humans get proper nutrition.

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Biofortification is the process of naturally increasing the nutritional value of a crop. Unlike fortification, which might add a mineral like iron directly to something like bread dough, the goal of biofortification is to have the wheat in the dough naturally contain more iron in the first place. Robert Graybosch of the USDA Agricultural Research Service explains that about 60% of the world's population doesn't get enough iron. This happens because the food people eat doesn't contain enough minerals or contains what are called 'antinutrients.' These are molecules that prevent the body from absorbing good nutrients. "Fortification is potentially useful as people in many parts of the world do not consume a balanced diet and their main foods lack minerals," he says. "This can be addressed by fortification, the process of adding minerals back to food products. This is done with flours used for bread baking."

However, some people are hesitant to eat products with what they think might be weird ingredients, he adds. Graybosch is trying to naturally enhance the minerals of wheat flours to help people around the world get more iron. "Biofortification can be done via traditional plant breeding using natural genetic variation or natural mutations, or via genetic engineering," he says. "If one found a mutation that resulted in more grain iron, and then bred this trait into wheat that was produced and consumed, then we could say the crop has been biofortified."

Graybosch and his team developed experimental breeding lines of winter wheat. Breeding lines are the first step in the long process of creating a new type of wheat that farmers can grow. The team tried to combine two properties -- low phytate and high grain protein -- without lowering grain yield. Phytate is an antinutrient that prevents the body from taking in some minerals. Biofortification is a delicate balance. Often, increasing the nutrition causes the overall grain yield to drop. This can lead to the wheat being overall less nutritious and can also hurt farmers' profits. Their results show that combining the two traits without any bad effects on grain yield is possible. It increased the amount of zinc, calcium, and manganese humans could get from it. Although more work needs to be done to get it in wheat that can be planted by farmers, the genes can be used to develop more nutritious wheat without sacrificing yield.

The next steps in their research, some of which they have already undertaken, are to then breed these beneficial genes into plants adapted for areas where wheat is grown, such as the Great Plains of the U.S. "It is important to note that all wheat grown in a specific area is adapted to that area," Graybosch explains. "Great Plains wheats do well in the Great Plains, but not elsewhere. If the trait is of interest in other locations, additional breeders need to start introducing it to their own backgrounds. And they are interested in doing so."

Graybosch says his journey to this research began as he walked home from work one day. He wanted to devise a project to investigate "the most important nutritional problem facing mankind," which he learned was likely that people weren't getting enough iron. He and then-graduate student Jorge Venegas started to look for genes that would improve the nutrition of wheat. "I think anything that can improve food mineral nutrition at low or no cost to the consumer is of value," Graybosch says. "Anything we can do to improve nutrition worldwide will go a long way toward improving the lives of our fellow earthlings."

Chewing gum may be effective for delivering vitamins

Science Daily October 10, 2018

Nearly 15 percent of all chewing gum varieties sold promise to provide health-enhancing supplements to users, so Penn State researchers studied whether two vitamin-

Image © iStock.com/ Eva-Katalin

supplemented products were effective at delivering vitamins to the body. Their results validate the concept of gum as an effective delivery system for at least some vitamins.

The research marks the first time that researchers closely scrutinized vitamin delivery from chewing gum, according to Joshua Lambert, professor of food science in the College of Agricultural Sciences. The findings, he suggests, indicate that chewing gum -- a pleasant habit for many -- could be a strategy to help reduce vitamin deficiency around the world, a problem described as an epidemic. Even in the United States vitamin deficiency is a serious problem, with nearly one in 10 people over the age of 1 deficient in vitamins B6 and C, according to a recent analysis of the National Health and Nutrition Examination Survey. "I was slightly surprised that no one had done a study like this before given the number of supplement-containing gum products on the market," Lambert said. "But there is no requirement that nutritional gums be tested for efficacy, since they fall into the category of dietary supplements."

To find out if supplemented gum contributes vitamins to chewers' bodies, researchers had 15 people chew two off-the-shelf supplemented gums and measured the levels of eight vitamins released into their saliva. In a separate experiment on the same subjects, the researchers measured the levels of seven vitamins in their plasma. The researchers used an identical gum product -- minus the vitamin supplements -- as a placebo in the study.
Lambert and colleagues found that retinol (A1), thiamine (B1), riboflavin (B2), niacinamide (B3), pyridoxine (B6), folic acid, cyanocobalamin (B12), ascorbic acid (C), and alpha-tocopherol (E) were released into the saliva of study participants who chewed the supplemented gums. After chewing the supplemented gums, study participants' blood plasma vitamin concentrations, depending on which supplemented gum they chewed, were increased for retinol, by 75 to 96 percent; pyridoxine, 906 to 1,077 percent; ascorbic acid, 64 to 141 percent; and alpha-tocopherol, 418 to 502 percent, compared to the placebo.

For the most part, the research demonstrated that water-soluble vitamins such as vitamins B6 and C were increased in the plasma of participants who chewed supplemented gum compared to participants who chewed the placebo gum. In supplemented gum chewers, researchers also saw increases in the plasma of several fat-soluble vitamins such as the vitamin-A derivative retinol and the vitamin-E derivative alpha tocopherol. That was the most significant finding of the study, Lambert pointed out. At least for the products tested, the water-soluble vitamins were almost completely extracted from the gum during the process of chewing. The fat-soluble vitamins were not completely released from the gum.

"Improving the release of fat-soluble vitamins from the gum base is an area for future development for the manufacturer," he said.
Lambert offered one caution about the findings, which were published online this month in the Journal of Functional Foods.
"This study was done in an acute setting -- for a day we have shown that chewing supplemented gum bumps up vitamin levels in blood plasma," he said. "But we haven't shown that this will elevate plasma levels for vitamins long-term. Ideally, that would be the next study. Enroll people who have some level of deficiency for some of the vitamins in supplemented gum and have them chew it regularly for a month to see if that raises levels of the vitamins in their blood."

'Seaweed extract key to breakthrough fish oil microencapsulation technique

17 Oct 2018 Nutrition Insight

Australian researchers have developed a novel technique to significantly reduce oxidation in microencapsulated fish oils using a fucoidan seaweed.

The method is hoped to revolutionize the delivery of fish oils, as well as other dietary supplements, as it overcomes fish oil's susceptibility to oxidation during production and storage. Produced by Australian biotechnology company, Marinova, the fucoidan extract was included in the shell material at 7 percent.
"The benefits of this new method can be applied not only to fish oils but to the wider dietary supplement sector. It's a real game changer for microencapsulation," says Dr. Helen Fitton, Marinova's Chief Scientist. "An added benefit of using fucoidan is that it's an organic functional food ingredient with anti-inflammatory, immune and digestive health properties. So fucoidan can potentially work together with the material inside the capsule to deliver complementary benefits," she adds.

The researchers from Deakin University's School of Life and Environmental Sciences developed the two-step microencapsulation system with a "double shell" structure using a bioactive seaweed polysaccharide, known as fucoidan.


Image © iStock.com/ BlackJack3D

The use of fucoidan was found to greatly improve the oxidative stability of the encapsulated oil and induce better crosslinking of the cell material. The technique also offers greater stability at high temperatures. Oxidation of the polyunsaturated fatty acids in fish oil can lead to an unpleasant odor and taste, as well as compromised functional benefits.

"The polyphenols present in the fucoidan extract cross-link to form a tight network of chains with gelatin, which provides this powerful stability," explains Professor Colin Barrow of the Deakin University's School of Life and Environmental Sciences.
This study transcends a former one-step method using transglutaminase as a cross-linker in microencapsulation shells. Using transglutaminase is a slow process requiring a complex temperature profile. This, in addition to potential safety concerns around the use of transglutaminase in food products, led to an urgent need to find a replacement agent. In comparison, the fucoidan extract is a food-grade ingredient naturally present in brown seaweeds and widely consumed for its beneficial properties. The extract provided superior cross-linking and oxidative stability when compared to transglutaminase. This study adds to a growing number of functional applications involving Marinova's Maritech fucoidan ingredients, including its recent use in biomaterials for brain injury and wound healing.

Novel food status

In January this year, Marinova's Maritech fucoidan extracts gained novel foods status in the EU. Extracted from Undaria pinnatifida and Fucus vesiculosus seaweed, the bioactive marine ingredients mark the first fucoidans to receive approval as novel foods. The official approval notice was issued by the Superior Health Council of Belgium on 5 December 2017, making Maritech fucoidans the only fucoidan ingredients with global regulatory acceptance. This includes FDA notified GRAS in the USA, TGA listable ingredients in Australia, NHP listed in Canada, KFDA registered in Korea and now novel foods status in Europe, Claire Smoorenburg, Marketing & Communications Officer at Marinova, told NutritionInsight at the time.

According to Smoorenburg, the company's proprietary, solvent-free extraction technology was a key factor in demonstrating substantial equivalence in the novel foods process. Using green-chemistry principles, the technology preserves the natural structure and bioactivity of fucoidan during extraction, resulting in an ingredient equivalent to fucoidan present in everyday-consumed seaweeds. "This approval has increased the market opportunity for our fucoidan ingredients significantly, especially now that they are the only fucoidans to achieve novel foods status," Smoorenburg adds. "The biggest potential for Maritech fucoidan in Europe currently lies in nutritional supplements and functional foods and beverage applications. Following this approval, we will continue to work with our European partners to deliver our fucoidan ingredients into the European market. We are very confident that this latest accreditation will attract new customers, as well as create opportunities for our existing clients who are looking to extend their products into Europe," says Smoorenburg.

Ashwagandha: Rooted in tradition, set for sky-high NPD growth

18 Oct 2018 Nutrition Insight

Boosted by growing consumer demand for natural remedies to fight the daily stresses of modern life, the adaptogenic herb ashwagandha is seeing an impressive uptake in usage.

Innova Market Insights data has shown an increase of 48 percent in the number of food and beverage launches globally in 2018 (year to date) relative to 2015, and the adaptogenic herb's market potential has not gone unnoticed by suppliers, with both Arjuna Natural and Sabinsa announcing the launch of ashwagandha ingredients this autumn. The US leads in the commercial application of ashwagandha in food & beverage launches. In fact, Innova Market Insights reports that the number of food and beverage launches tracked in the US is 3 times higher than those reported in India (2015-2018 YTD), ashwagandha's country of origin.

Ashwagandha is an Ayurvedic herb traditionally used to counter the reactions of stress by reducing the amount of cortisol released in the body. The Ayurvedic herb, which has been used for centuries is experiencing worldwide growth thanks to a growing body of clinical evidence. Ashwagandha opposes the reactions of stress by reducing the amount of cortisol released, reduces the formation of stress-induced ulcers, boosts sleep, and, notably, increases the number of immune cells which aid in fighting infections.


Image © iStock.com/eskymaks

In a recent report, NutritionInsight explored the adaptogens space, with suppliers noting that ashwagandha has found application in various delivery forms including chocolates, chewing gum, nutritional bars, soft chews, gummy bears, juices, RTD beverages, coffee, tea and granola. Sports nutrition is the leading category for the ingredient, Innova Market Insights further notes, with one in three product launches tracked globally between 2015 and 2018 belonging to this category. A further two in five launches featured an energy or alertness claim.

Suppliers take note

At Hi Europe 2018, Arjuna Natural is to feature Shoden, an all-natural extract of ashwagandha (Withania somnifera). Shoden contains ashwagandha extract standardized with 35 percent withanolide glycosides, a highly active component of ashwagandha. Arjuna reports that Shoden is manufactured from carefully selected ashwagandha roots and leaves. Toxins are removed from the roots and leaves using a proprietary detoxification process that also removes other undesirable components and maintains withanolide glycosides at optimum levels.

Arjuna developed its Bioactive Ingredient Protection System (BIPS) proprietary safety technology to ensure optimal delivery of the bioactive components of ashwagandha. BIPS is a patented procedure in which all the active molecules are encapsulated in a shield to deliver them safely and at the desired potency, reportedly making Shoden active, even at a low dosage. Several ongoing clinical studies of Shoden are already yielding promising results for alleviating depression, stress and sleep disturbances and for improving immunomodulation and the production of testosterone, the company reports. Sabinsa is to launch Shagandha USP grade branded Ashwagandha at SupplySide West, Las Vegas, with experts on hand to describe why Sabinsa's distinctive extract "will change the way people look at this popular adaptogen."

Well-established yet room for development

A key supplier of ashwagandha, Ixoreal, tells NutritionInsight that although the adaptogen category as a whole has seen an uptake in popularity over the past years, ashwagandha, in particular, has seen "phenomenal growth." "Adaptogens like ashwagandha are very well established in tradition and science and offer a broad range of health benefits. Ashwagandha has the market advantage of strong advocacy from other purveyors, while other adaptogens like schisandraand rhodiola lag, with no major company pushing those forward," claims Kartikeya Baldwa, CEO at Ixoreal. "[Ixoreal's] KSM-66 Ashwagandha has been shown to decrease stress and anxiety, promote relaxation and sleep quality and enhance energy. KSM-66 Ashwagandha has also been shown to reduce serum cortisol, an essential marker of stress," Baldwa says. "Enhanced mental function is a major trend now. This is because no drugs can actually provide this, while adaptogens can."

As interest in ashwagandha heats up, so will the challenges to supply the market with scientific, traceable supply. "As more and more manufacturers adopt adaptogenic herbs, there is also the fear that dubious supply of these ingredients may creep into the marketplace. While sourcing an adaptogenic ingredient, manufacturers need to be vigilant about factors like proper botanical identification, purity, third-party quality certifications, good manufacturing practices, supply chain transparency and scientific corroboration," Baldwa notes. "To appeal to consumers, firms need to present scientific research and evidence in a manner that is easy to understand and not too complicated. Therefore, investment is required in conducting high-quality research," she adds.

Continued studies should focus on stress, enhanced mental acuity, sleep improvement in overall quality of life and happiness, Baldwa notes, adding that these should be accompanied by highly visible marketing efforts highlighting tradition and origins. "A strong, prominent, well-rounded presentation of all of these is required for continued success and growth," Baldwa concludes.

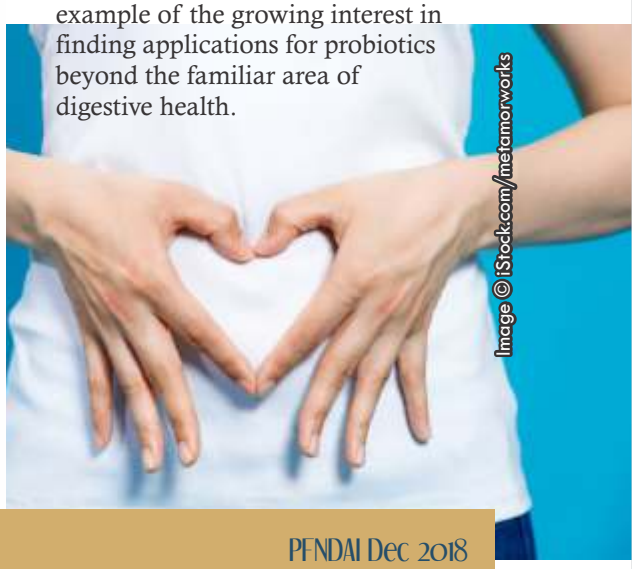
By Lucy Gunn

Expanding probiotic potential: Bacillus found to curb Staphylococcus bacteria in NIH study

11 Oct 2018 Nutrition Insight

A "good" bacterium commonly found in probiotic digestive supplements can help eliminate Staphylococcus aureus, a type of bacteria that can cause serious antibiotic-resistant infections.

This is according to a new study by the US National Institutes of Health scientists (NIH) and researchers from Mahidol University and Rajamangala University of Technology in Thailand. This study is a key example of the growing interest in finding applications for probiotics beyond the familiar area of digestive health.



The researchers, led by scientists at NIH's National Institute of Allergy and Infectious Diseases (NIAID), found that Bacillus bacteria prevented S. aureus bacteria from growing in the gut and nose of healthy individuals. "Probiotics frequently are recommended as dietary supplements to improve digestive health," says NIAID Director Anthony S. Fauci, M.D. "This is one of the first studies to describe precisely how they may work to provide health benefits. The possibility that oral Bacillus might be an effective alternative to antibiotic treatment for some conditions is scientifically intriguing and definitely worthy of further exploration."

Innova Market Insights data have shown that new products with probiotics are on the rise, showing an annual growth rate of 8.5 percent (Global, 2013-2017). Lactobacillus, Bifidobacterium cultures and Streptococcus Thermophilus, in particular, are gaining ground in food and beverages. The market researcher further posits that Lactobacillus Reuteri and Bifidobacterium Animalis are expected to increase. Methicillin-resistant Staphylococcus aureus (MRSA) is a well-known cause of serious disease, leading to thousands of deaths worldwide each year. S. aureus can live in the nose or gut without causing any harm, but can cause serious infections if the skin barrier is broken, or the immune system compromised. Staph infections can be prevented by eliminating S. aureus colonization, but some decolonization strategies are controversial because they require considerable amounts of topical antibiotics, contributing to growing rates of antibiotic resistance.

Moreover, decolonization strategies can have limited success, partly because they target only the nose and bacteria quickly recolonized from the gut. The study involved 200 volunteers in rural Thailand. This population was chosen because it would not likely be as affected by food sterilization or antibiotics as people in highly developed urban areas.

The scientists first analyzed fecal samples from the study participants for bacteria correlated with the absence of S. aureus. They found 101 samples positive for Bacillus, primarily B. subtilis, which is the type found mixed with other bacteria in many probiotic products. Bacillus bacteria form spores that can survive harsh environments and commonly are ingested naturally with vegetables, allowing them to temporarily grow in the intestine. The scientists then sampled the same 200 people for S. aureus in the gut (25 positive) and nose (26 positive). They found no S. aureus in any of the samples where Bacillus were present.

In mouse studies, the scientists discovered an S. aureus sensing system that must function for the bacteria to grow in the gut. Intriguingly, all of the more than 100 Bacillus isolates they had recovered from the human feces efficiently inhibited that system. Using chromatography and mass spectrometry techniques, the scientists identified fengycins, a specific class of lipopeptides, as the specific Bacillus substance that inhibited the S. aureus sensing system. Additional tests showed that fengycins had the same effect on several different strains of S. aureus. To further validate their findings, the scientists colonized the gut of mice with S. aureus and fed them B. subtilis spores to mimic probiotic intake. Probiotic Bacillus given every two days eliminated S. aureus in the guts of the mice. The same test using Bacillus where fengycin production had been removed had no effect, and S. aureus grew as expected.

The NIAID and Thai scientists next plan to test whether a probiotic product that contains only B. subtilis can eliminate S. aureus in people. "Ultimately, we hope to determine if a simple probiotic regimen can be used to reduce MRSA infection rates in hospitals," says Michael Otto, Ph.D., the NIAID lead investigator. Although a number of studies questioning the usage of probiotics have reached the mainstream media over the past months, this study is a good key example of the growing industry interest in finding applications for probiotics beyond the familiar are of digestive health. At Vitafoods Europe 2018, for example, key suppliers presented their probiotic solutions for areas such as women's health, active recovery and skin health.

Food fortification may not be a silver bullet, but it is a strong instrument against malnutrition

05 Oct 2018

Malnutrition is an umbrella term which includes under-nutrition, such as stunting and micronutrient deficiency, as well as obesity, over-nutrition and non-communicable diseases.

Accessible and cheap interventions, such as the fortification of staple foods with essential nutrients, seek to address micronutrient deficiencies, which is just one type of malnutrition.

NutritionInsight speaks to key players in the field to gauge the impact food fortification can have on malnutrition, on both a large and small scale.

The World Health Organization has described food fortification as the most cost-effective strategy for preventing and addressing micronutrient deficiencies in both developed and developing countries around the world. When food is fortified, key vitamins or minerals (iron, folic acid, iodine, vitamin A, vitamin B12 and zinc) are added to staple foods (primarily grain-based) with the purpose of improving their nutritional content and filling (any known) nutritional gaps in the population. A host of studies have identified the key role that vitamins and minerals, such as iron, zinc, iodine and vitamin A play in healthy growth, including brain development.

An EU funded project, EUthyroid has estimated that up to 50 percent of newborns in Europe do not reach their full cognitive potential due to iodine deficiencies. Such cognitive effect could be a lower IQ, which negatively affects individuals but on a population level, widespread lower IQ levels may affect the economic performance and growth of entire nations. The EUthyroid consortium advocated that iodine-fortified salt, which is employed by some EU governments such as Poland, could aid the prevention of widespread iodine deficiency. A further study, based on the UK National Diet and Nutrition Survey, identified that the micronutrient intake of women in their childbearing years is continuing to fall short – prompting researchers to call for industry to take note of the role of food fortification strategies in developed and high-income countries.

Shifts in societal structure

Modern shifts in societal structure have benefited fortification efforts across the globe, such as from the World Food Programme, which works in over 80 countries and Project Healthy Children (PHC). Both organizations focus their efforts on providing fortified foods in low and middle-income countries, where two billion people do not have the widespread access to fortified foods that are enjoyed in higher income countries.
A general trend over the decades has been food systems becoming more consolidated, Dora Panagides, Fortification Advisor Nutrition Division at the World Food Food Programme, tells NutritionInsight. "Fewer big food producers and processors are catering for a larger number of people. While some would say that there are certainly negative aspects to this, regarding fortification, it makes the process easier. Introducing fortification requires rolling out new technologies and processes which is difficult to do in a fragmented system where there are many small-scale producers," says Panagides.

Globalization also affords important opportunities to actors such as PHC and its project based in East Africa: Sanku. "Trade agreements between countries that are focused on improving food security and nutrition have improved access to inputs from reliable, quality-controlled sources across the globe to support fortification, and a clear focus from governments about the need to create better environments for industry to thrive," Felix Brooks-Church, Co-founding President and CEO of Sanku-PHC, tells NutritionInsight.

"Closing the nutrition gap now is more important than ever, to assure that countries do not lag behind in key indicators related to economic development, education and health outcomes. The importance of nutrition, and fortification is recognized in this," he adds. This heightened recognition of the importance of nutrition, often as a result of trade agreements or international development goals such as the Sustainable Development Goals, has improved access for companies such PHC.

Technological advancements allow for wider reach

Technological advancements have also allowed for innovations in food fortification in the form of tackling "difficult to fortify" staples.

Wheat flour is a staple that has been fortifiable since the 1930s, according to Panagides, but not all populations across different geographical locations eat staples that contain wheat flour. In this way, recent technology that has allowed for rice to be fortified is essential: "This is an important innovation as places where rice is the main staple tend to overlap with places where there is a high prevalence of micronutrient deficiencies. So the possibility of fortifying rice can really make a difference in improving people's nutrition in these areas."
"Fortifying rice is a two-step process that involves producing fortified kernels then blending these with regular rice. One method of producing the kernels is extrusion where vitamins or minerals are added to rice flour which is then molded back into a kernel shape," explains Panagides. WFP partnered with DSM on this innovative approach of extrusion, which you can read about in NutritionInsight's key interview with Anthony Hehir, Director of DSM's Nutrition Improvement Business Segment.

A second key innovation comes from PHC's East Africa based project, Sanku. "One of the largest challenges for people to access fortified foods is centralization. Most fortified foods end up being exported or located in cities," explains Brooks-Church. Therefore, Sanku developed the equipment for the small-scale fortification of

maize and wheat flour, to ensure access to fortified foods among populations in rural areas who do not have access to larger markets.

The equipment is now being used across five countries in East Africa, where the staple food most people eat is unfortified wheat flour. "Currently, Sanku is testing a remote monitoring tool that relies on real-time data generated by its patented "dosifier" [name of the equiptment] as well as field-based monitoring and compliance tools," Brooks-Church adds. However, despite these leaps forward, neither Brooks-Church nor Panagides think food fortification's potential is being utilized enough.

What more can be done?

Improvements in packaging are warranted, as adequate packaging plays a vital role in ensuring the stability of certain vitamins and minerals, Panagides explains. "Vitamin A will degrade when exposed to light, and many vitamins and minerals will lose potency at high temperatures. Packaging vitamin A-fortified oil in non-transparent material can make a difference in how long this vitamin will be retained and be effective, for example," she says.

"Furthermore, vitamin and mineral premix suppliers are looking at innovative ways to make nutrients more efficiently. For example, researchers are exploring how to make some vitamins and minerals more easily absorbed by the body," she adds.

Furthermore, although fortification staples can reach a large number of people through the more consolidated modern food system and the enhanced connectivity the processes of globalization has brought, companies that also seek to reach more rural areas on a smaller scale, face challenges which continue to inhibit efficiency.

"Small-scale food fortification is often left out of the health solution equation due to varying factors, such as applicable technology, monitoring system and sustainable business models, all factors that Sanku has successfully addressed," explains Brooks-Church. He hopes to see governments investing in small-scale fortification, such as Tanzania's government has with Sanku. This move has seen 94 percent of Tanzanian households consuming fortified flours.

Food fortification is just one instrument in the toolbox available for the battle against malnutrition. Lying to its side could be supplementation, which can deliver more personalized results although it can be costly on the individual, and on its other side, the biofortification of crops. The goal of biofortification is to ensure that the crops used to create food products contain higher levels of micronutrients, as opposed to the micronutrients being added later on.

By Laxmi Haigh

Can biofortification fill the micronutrient deficiency void? With more research it just might

04 Oct 2018

Despite obesity and the overconsumption of processed foods having become pertinent problems around the globe, large populations still suffer from micronutrient deficiency.

To address this pressing problem, the biofortification of crops is being put forward by industry and intergovernmental agencies such as the UN FAO as a viable and cost-effectiveness strategy. In this space, USDA agricultural researchers are now seeking to enhance the minerals of wheat flours to help people around the world get more iron.

Biofortification is the process of conventionally breeding food crops that are rich in micronutrients, such as vitamin A, zinc and iron. Unlike the more conventional form of food fortification, which might add micronutrients directly to food products, the goal of biofortification is to ensure that the crops used to create the food products contain higher levels of micronutrients.

"Biofortification can be done via traditional plant breeding using natural genetic variation or natural mutations, or via genetic engineering," explains Robert Graybosch of the USDA Agricultural Research Service. "If one found a mutation that resulted in more grain iron, and then bred this trait into wheat that was produced and consumed, then we could say the crop has been biofortified."

One advantage biofortification has over "regular" fortification is that formulators will not need to add any additional ingredients to products, allowing for shorter and clearer labelling. The industry has taken note of the potential biofortification holds for the improvement of public health and micronutrient intake.

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In the US, Graybosch and his team have developed experimental breeding lines of winter wheat. The team tried to combine two properties – low phytate and high grain protein – without lowering grain yield. Phytate is an "antinutrient" that prevents the body from taking in some minerals. Their results show that combining the two traits without any bad effects on grain yield is possible. It increased the amount of zinc, calcium, and manganese humans could get from it.

In India, the consumption of iron-biofortified pearl millet has been found to significantly improve cognitive abilities adolescents, according to a study published in the Journal of Nutrition. Manufactured by HarvestPlus, the biofortified pearl millet used in the study was found to cause an improvement in attention and memory, potentially benefiting the adolescents by increasing social mobility through improved academic and professional performance.

"When eaten, biofortified crops can provide essential micronutrients to improve nutrition and public health. Biofortification was developed to target rural farming families with limited access to healthier foods or other interventions such as fortification and supplementation. It is a food-based approach that improves the nutrient value of the staple foods these families often depend on. It complements these other efforts," Dr. Erick Boy, HarvestPlus' Head of Nutrition, tells NutritionInsight.

Biofortification is also being applied to target consumers experiencing the digestive issues associated with gluten sensitivity. Arcadia Biosciences, an agricultural food ingredient company, this year announced the addition of its new reduced gluten (RG) wheat lines to its GoodWheat portfolio of branded ingredients.

Challenging areas

Despite its potential to prevent micronutrient deficiencies and allow for nutrient-rich crops, the biofortification of crops comes with a set of challenges. In many cases, increasing the nutrition can cause the overall grain yield to drop, potentially hurting farmers' profits. Moreover, crops grown in a specific area need to be adapted to that area, making farmer adoption of biofortified crops a crucial bottleneck. "Great Plains wheats do well in the Great Plains, but not elsewhere. If the trait is of interest in other locations, additional breeders need to start introducing it to their own backgrounds," Graybosch explains.

Moreover, the technical challenges and timeline involved in researching and creating biofortified crops are significant.

Speaking about the reduced gluten wheat lines, Raj Ketkar, President and CEO of Arcadia Biosciences, says: "When we first start, we create multiple lines of wheat, and then we go mine all that data and search through all these thousands of lines looking for those specific lines that would have those characteristics." "It takes several years to identify those genes, then breed out the mutations you don't want, and then you breed the desired traits into a commercial line. It does take five to seven from discovery to commercialization," he continues.

Further research and governmental support to ensure farmer adoption of biofortified crops are warranted. Considering the potential biofortification holds for tackling micronutrient deficiencies, industry experts are in agreeance that biofortification should be a core activity of agricultural research centers across the globe.


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'Unstoppable' online grocery march: Four levels of development identified within Asia

By Pearly Neo
29-Oct-2018 Food Navigator Asia

Online grocery is on an 'unstoppable march' in Asia, but the Tetra Pak Index 2018 report has identified four different rates of development across the region.

These have been classified as: Leap-frogging pioneers, Pioneers, Laggards and Resisters. "Online grocery shopping is on an unstoppable march, taking an ever-greater share of the food retail market," said Dennis Jönsson, Tetra Pak Group President & CEO. "Offline and online are now merging into an "omni-channel" age, where consumers expect to be able to buy whenever, wherever and however they choose."

The results and analysis in the report were a result of detailed consumer research, a global market segmentation study, as well as interviews conducted with e-retailers. In the first classification, Leap-frogging pioneers were described as 'developing markets with fast growth in online grocery, driven by infrastructure development and demand for convenience' in the report. These markets include Shanghai, Bangkok and Jakarta. Rapid development of online grocery and the corresponding market shares are predicted for these countries between 2016 and 2030. The largest growth is expected for Shanghai, at 7.3%.

In contrast, very limited growth in online grocery is expected for Resister markets like India, where traditional trade is expected to maintain dominance due to 'deep penetration and emotional attachment with consumers'.
India's online grocery market is only expected to grow by 0.2% from 2016 to 2030.
Falling in the middle range are Pioneers like South Korea, which have developed markets and fast online grocery growth, but relatively poorer infrastructure development and demand. Tetra Pak described this as 'thanks to rising consumer confidence in online delivery and quality', and forecasted a respectable 6.5% growth in the South Korean online grocery market by 2030.
Laggards comprise markets that are still classified as developed, but in which the report predicts slow online grocery growth due to increasing quality and innovation in modern trade like convenience stores. Japan is identified as a laggard, particularly due to the outstanding quality of its convenience stores.

The importance of improving customer experience

As consumers are exposed to ever-increasing amounts of information online, this means "brands need to work harder than ever to capture attention and get their message across", said the report.
"Arresting and, crucially, simple messaging is vital, particularly as mobile is increasingly the device of choice." Packaging was also identified as a vital part of a positive consumer experience. "For e-retailers globally the most important performance factors remain speed of delivery and quality of products shipped to consumers, along with space-
cient packaging to optimise logistics," it said.
"Space-efficient packaging appeals to consumers particularly in urban areas where living space is often tight: it is viewed as a performance factor and is in demand for consumers in China."

Among the five 'hot factors for 2025' identified for online retail, four relate to packaging.
These include: Augmented reality via smart packaging; Unboxing experience of online grocery packages; Personalised packaging and online-only products and Tactile technology allowing consumers to "feel" the product when searching for and discovering the product.

"Smart packaging, with features that enable digital purchase and enhanced consumer experience, is particularly highly regarded by Chinese shoppers (where scanning QR codes is already commonplace)," it added.

Trends shaping the future of online grocery

The report also identified four major trends that are influencing the growth of online grocery. First of all is Convenience, which is considered 'the main driver of online grocery in all markets'. This includes features like easy replenishment via features like a favourites list and automatic replenishment; as well as super-fast delivery and/or collection within as little as 10 minutes. "The easier brands and retailers can make [the shopping] experience, the more successful they will be," Tetra Pak predicted.

Next is Technology, as supply chains look set to be affected by various forms of new technology like Radio Frequency Identification (RFID) and robotics.
Sustainability is also rapidly gaining traction, a trend which has particular impact on packaging. In this, plastic is undergoing the most pressure especially with many high-profile initiatives in progress to reduce its impact on the environment, as well as decrease its use as a whole. The awareness surrounding recycling and the severity of food waste issues is also on the rise, and it is becoming increasingly important for retailers and brands to pay attention to this.

Last on the list is Personalisation, which are described as a 'major driver' used by online businesses, as a result of increasing customer in niche products that are difficult to find in mainstream stores.
"Looking ahead, e-retailers and brands are expected to appeal to consumers on an ever more personal level. Customisation of products and personalisation in consumer journey and delivery are expected to be key differentiators going forward," said the report.
"This is one of the main trends in play, looking ahead to 2025."

Hemp drink launched in stores across the UK

By James Ridler
01-Oct-2018 Food Manufacture

Food ingredients manufacturer Braham and Murray has launched a new chilled hemp drink under its Good Hemp brand in stores across the UK.

Image © iStock.com/marekuliasz

Billed as a dairy alternative for vegans and vegetarians, the milk was described as having a clean and light taste and is fortified with calcium, Vitamin B12 and Vitamin D. One 250ml glass provides 50% of an adult's recommended daily intake of omega-3, claimed Braham. Launched in Unsweetened and Original varieties, the products are the first chilled launches from the brand and sit alongside Good Hemp's existing ambient range of seeds, oil and protein powders. The milk is dairy-, lactose and nut-free.

Addition to range

Braham and Murray managing director David Shaw commented: "Good Hemp is delighted to announce the addition of these two new chilled hemp milks to our consumer brand range of hemp-based food products. "The launch capitalises on the increasing consumer trend towards healthy plant-based foods which combine these nutritional benefits with environmental credentials."

Good Hemp Milk comes packaged in a clear 750ml recyclable bottle and is available in Waitrose and Asda stores across the UK (rsp £1.99). Meanwhile, vegan food company The Fry Family Food Co's new range of chilled meat-alternatives is set to appear in 500 Sainsbury's stores, as vegan-friendly launches continue to hit supermarket shelves.

Indian food minister calls for Big 3 Asian bloc to plan for food security

By RJ Whitehead 27-Sep-2018 - Food Navigator Asia

Harsimrat Kaur Badal pledges an end to food wastage with the help of the industry.

India, China and Indonesia will set the food agenda for providing energy-dense, nutritious, safe and affordable food to their citizens by 2030, when they will account for three-quarters of Asia's new urban dwellers. To do so, there will be a need for a body that will represent each of the three countries and collectively address the issue of fixing Asia's food systems. That's according to India's minister for food processing industries, Harsimrat Kaur Badal, who called on the food industry to pledge it would take a "zero tolerance" approach to food waste. Today, she said, close to US$3.5tr of food is wasted through wastage in India—equivalent to Indonesia's entire GDP. Yet the country has the capacity to become the food factory of the world once it reaches its potential.

As India grapples with a series of so-called mega-trends, such as rampant urbanisation, the double-burden of under-nutrition and obesity, constraints in technology and political corruption, policymakers and the private sector need to be active in managing their trends, Badal said in reaction to a major report by the Economist Intelligence Unit on ways to fix Asia's food supply chain. By the EIU's assessment, they have their work cut out. It called on everyone involved to take a "more holistic" approach to defining food security to cope with structural changes in demand and supply. It also urged lawmakers to come up with brisk and thorough policy development to find ways to improve food production by making it more efficient.

The research shows that business leaders overwhelmingly agree that Asia's food security is giving a cause for alarm. They are calling out for more collaboration to enforce food safety standards, educate farmers and improve supply chain infrastructure, it said. Yet a number of other factors, including differing regulations, border policies, import duties and taxes, food tastes, self-sufficiency programmes and uneven economic development require more robust thinking and policy solutions for Asia's food system to make the progress needed.

Asian cities are set to expand by 578m people by 2030, while up to 85% of the increase in the global middleclass is also expected to come from Asia. To this end, urbanisation will have a significant effect on food production and demand in the region, the EIU said. China, India and Indonesia alone will account for 75% of Asia's total population, and 60% of its real GDP by 2030. Income growth across the continent will continue to drive the transition away from direct consumption of cereals and towards a more diverse diet. Dairy and eggs will account for a larger proportion of calories consumed in India (6%) and China (4%) than in Indonesia (1%). India has a strong vegetarian culture, but projections estimate that India's meat consumption (mainly chicken and fish at 63%) will rise to 9kg by 2050, from a base of 3kg.

The government can extend the progress made through policy changes, regulatory measures and encouraging public investments to


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make food systems more responsive to nutritional needs, the report said. Improvements in nutritional status will not happen unless the incomes of rural households increase, prices of nutritious foods are kept affordable, and households are better informed about nutritional content of food and the need to diversify their diets.

Study: Virtual reality provides immersive environment for food testing

By Mary Ellen Shoup 01-Oct-2018 - Food Navigator USA

Food sensory judgements – taste, texture, and aroma perception – can be influenced by the surrounding environment, and virtual reality (VR) technology can be an effective and affordable way of replicating various environments when conducting consumer food testing, a study out of Cornell University found.

A critical part of the food eating experience is the environment or "sensory context" that affects our perception of a certain food item, according to researchers of the study. Past research has demonstrated that identical food served in a gourmet restaurant setting vs. a sensory booth with a plastic tray resulted in different perceptions of food quality (Garc ı a-Segovia, Harrington, & Seo, 2015).

In another study, tests of crackers, sparkling water, and a fermented milk beverage yielded higher ratings when consumed at home vs. a central testing location (Boutrolle, Delarue, Arranz, Rogeaux, & Koster, 2007). "We consume foods in environments that can 'spill over' into our perceptions of the food. Thus, we consider some foods 'unsuitable' for certain settings,

with others deemed more suitable for this locale," researchers wrote in the report.

Researchers also noted that using VR technology can provide a cost-effective and convenient way for food manufacturers and brands to conduct product testing among a larger test sample with more immediate results than traditional consumer sampling methods. In a pilot test using a VR headset, 50 participants were asked to taste three identical samples (participants were unaware the three samples were identical) of blue cheese in three virtual contexts: a booth in the Cornell Sensory Evaluation Center (operating as the control condition), a park bench (in the Cornell Botanic Gardens), and a feed trough at the Cornell Dairy Barn.

An additional training video was presented immediately before sampling, to orient the panellists with the VR environment asking panellists to rate a variety of imagined stimuli (e.g. brightness of sun, loudness of a lawnmower). Respondents rated their liking of the cheese sample on 9-point scale, as well as the perceived saltiness and pungency of the three samples.

As researchers hypothesized, the participants perceived a more pungent odour in the virtual dairy barn setting compared to the other two virtual environments. The rating for saltiness was rated slightly higher in the sensory booth and barn settings. In addition, female participants reported a higher perception of pungency and saltiness in all three virtual environments compared to male panellists.

The participants' general liking of the sample did not change across the three contexts and researchers attributed this finding to participants not particularly liking the blue cheese sample to begin with, regardless of the sensory context. Most panellists rated their liking of the three identical blue cheese samples as "5" on a 9-point scale meaning they neither disliked nor liked it.

"At this level of liking, it may be more difficult to pick up small changes in liking induced by contextual shifts, as the 9- point hedonic scale performs somewhat unpredictably around the neutral category," researchers reported. A lack of familiarity with the 9-point rating scale could have also contributed to the study's outcomes, researchers added. "Despite panellists completing scale training, it does remain a possibility that a lack of familiarity with the scales masked some alteration to flavour attributes or to liking in the study."

Proof of concept for VR and food sampling

Consumer testing is an important step for many new brands and products before going to market, but it can be an expensive and tedious process to set up multiple physical settings for panellists to sample food and/or beverage items.

"Our results establish a proof of concept that virtual reality immersion can provide context to sensory evaluations sufficient to alter panellists' perception of a food product," researchers noted.

"This approach offers clear advantages in terms of convenience and versatility compared with an artificially constructed physical environment. Results may be useful in sensory and consumer testing of foods in more realistic concepts, and in food appropriateness evaluation."

Texture is 'the next big thing' in food & beverage marketing in the US, Latin America, Mintel predicts

By Elizabeth Crawford
01-Oct-2018 – Food Navigator USA

Often overshadowed by flavour and colour in marketing, texture plays a pivotal role in how consumers experience food and beverages, and research firm Mintel predicts that it is "the next big thing" companies should focus on as they try to keep up with demand for new products and experiences.

"Texture is really a key element of how we experience food, but it's not something that tends to get as much attention as flavour does, " and yet according to consumers it can be a deciding factor when choosing between brands said Sarah Theodore, research manager for Mintel Food & Drink in the Americas. For example, she told attendees at the Food Tech Summit & Expo in Mexico last week, 81% of adults in France say they choose ice creams that have different textures in them, and 52% of consumers in China say they expect indulgent biscuits not just to have a great flavour but also layers of texture. With this in mind, playing up texture can make existing products more exciting – and give manufacturers another tool to renovate iconic brands, which in turn can ease the pressure to constantly innovate entirely new concepts, Theodore said.

For support, she pointed to data showing that 81% of consumers in France said that ingredients with contrasting textures make familiar products more exciting – a sentiment that was echoed by 74% of consumers in Poland, 73% in Spain, 69% in Italy and 59% in Germany. Despite this high demand, very few products globally actually talk about texture on their packaging – especially in Latin America where only 19% of products in 2017 made texture claims, versus 23% in North America and 20% in Europe, the Middle East and Africa.

In addition, of the 25 texture attributes that Mintel tracks on product packaging, three-quarters of product introductions that address texture focus on only five attributes: crunchy, smooth, soft, carbonated and chunky. "That means those 20 other textures are out there to be taken advantage of and really aren't being mentioned on products at all," Theodore said. In addition, she noted, texture currently is only really addressed on pack in two categories – bakery and snacks – and even those have low penetrations for launches between Sept. 2017 and August 2018 at 16% and 15% respectively. This low use but high demand signals that texture can provide a strong point of differentiation for brands in a competitive category. Theodore added.


Image © iStock.com/Mercedes Rancaño Otero

How can brands innovate with texture?

There are two main ways that brands can use texture to market their products, according to Theodore. They can either play up existing or inherent textures in a product, or use texture as a key point of distinction in a new product launch. An example of highlighting existing texture is the way Yoplait Oui describes the yogurt as being poured and set in a glass container. The brand also incorporates texture in the packaging by designing the foil lid to mimic the cheese cloth that would go over a traditional pot of yogurt, Theodore said. Mondelez's limited edition Fireworks Oreos in the US, which included popping candy in the cream filling, is an example of innovating with texture as a primary feature, said Theodore, adding that many consumers told Mintel that it looked like a fun product they would buy.

Consumers are drawn to textures for experiences

A fun, new or novel experience is one of the driving reasons shoppers – especially young ones – are attracted to textures in products, Theodore explained. "We see another example of that in the 32% of US coffee shop consumers who say they would be interested in bubble teas from a coffee shop," in part because "they are fun to look at, fun to drink, often they are in unique colours so you really incorporate those things that attract younger consumers," she said.

Fun doesn't have to be unhealthy though, she noted. In Mexico, Yoplait Disfruta yogurt drink contains natural flavour chunks that come in a see-through bottle that allows consumers to "see the flavours," Theodore said. Itambe Aerated Chocolate UHT Milk in Brazil also uses texture to engage consumers and create an experience by instructing shoppers to shake the product to create a shake-like consistency that is thicker than if they drank it without shaking it first.

Because experiences are more fun when shared, food and beverage companies also should incorporate texture to enhance a product's appearance in photos that can be posted on Instagram, Theodore said. One way companies do this is by using thin layers. "Something we see all over social media is a lot of photos with cakes in very thin layers, things between different coloured layers," which can create an impression of indulgence, she explained.

In Argentina, the brand Chocolinas uses Instagram to market its thin cookies by sharing posts that show consumers how to use the product to create decadent layered desserts that blend the crisp cookie with a filling that is creamy or a different temperature. Ultimately, Theodore said, using texture is an important way to keep consumers engaged with products in different ways and because not many brands are using it yet, it can also be a point of differentiation in crowded categories.

Tradition taking on malnutrition: Indian region reintroduces cultivation of traditional crop

By Cheryl Tay 03-Oct-2018 - NutraIngredients Asia

The Agriculture Department of Odisha, India, has rolled out a programme to promote the cultivation of mandia (finger millet) as part of its efforts to fight malnutrition among tribal peoples in the state – especially women and children.

Mania, an annual herbaceous plant commonly grown as a cereal crop in parts of Asia and Africa, used to be consumed widely by tribes in India. However, cultivation dwindled when government initiatives to boost overall nutrition resulted in the widespread supply of rice under the Public Distribution System (PDS). This led to the tribes selling the cereal for pittance and turning their attention cultivating other cash crops for a living.

Cultivation reintroduction
Now, with the help of modern technology, the Odisha state government is aiming to reintroduce the cultivation of mandia in the Rayagada district, starting in the municipalities of Gudari and Gunpur. The district administration began what is dubbed the Millet Mission in these towns last year, with five more blocks now chosen for the cultivation of mandia this year. According to sources close to the Agriculture Department, the goal is to produce a minimum of 708,500kg of mandia — which is rich in calcium, iron and vitamins — in Rayagada this year.

In a bid to achieve this goal, the department will organise a sensitisation and training camp for farmers, where they will be educated on modern cultivation techniques, quality production, and fare average quality (FAQ). Ashok Kumar Patra, GM of the Tribal Development Cooperative Corporation of Odisha, said the minimum support price for mandia had been set at US$40 (Rs2,897) per 100 kg, adding that the Primary Agriculture Cooperative Society (PACS) would collect FAQ mandia from across the district.

Tuku Barik, project administrator of the Integrated Tribal Development Agency (Rayagada), said the cultivated mandia would be used to make cakes, biscuits and other such snacks, with the aid of self-help groups in Rayagada.

Eschewing the common
Unlike many other Indian states and districts — such as Haryana , and the 118 districts under the national government's direction — which have opted for food fortification to fight malnutrition, Odisha's state government has instead opted to help local farmers to cultivate a traditional crop.

This is likely because such an initiative will not only help to combat the prevalence of malnutrition, but also encourage employment and self-sufficiency. In July, we reported on a similar project being conducted in India, albeit on a considerably larger scale and in the private sector — to tackle the double burden of malnutrition, the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) had developed a bio-fortified variety of sorghum, named Parbhani Shakti, for farmers to cultivate.

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REGULATORY NEWS

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Drug-nutrient interaction: Scientific backing is key to quelling concerns

17 Oct 2018 Nutrition Insight

Growing consumer and industry awareness of potential drug-nutrient interactions is creating both challenges and opportunities for dietary ingredients companies. With chronic diseases on the rise and consumers keen to boost their diets with supplementation, suppliers have the opportunity to take a key position in providing the right scientific backing and information.

Drug-nutrient interactions are defined as physical, chemical, physiological or patho-physiological interactions between a drug and a nutrient. In some cases, the use of medication can cause certain deficiencies, which necessitate the supplementation of nutrients, but in other examples, dietary supplementation may bring about adverse effects to medication use.

"Drug-nutrient interaction is an important area, both for patients and doctors. Today we are experiencing a dramatic rise in the number of chronic [disease] patients, because big pharma was innovating over the past 30 years, creating a lot of life-saving drugs," Araksya Topchyan, DSM Global Marketing Manager Pharma, tells NutritionInsight at CPhI Global in Madrid, Spain.

"A lot of patients have taken the same medicine day after day for 20 years, sometimes even 30 years. Some of the actions of these drugs, such as [creating] a deficit of vitamins and other nutrients, are only now reaching their clinical manifestation. This means that doctors are only now starting to observe these effects," she adds.

A pertinent example are anti-diabetic products that can create vitamin B12 deficiencies. Following the first scientific publication of this effect in 2010, the scientific community has seen a sharp rise in the number of publications and clinical case studies.
"The US Diabetes Council paid attention to this problem for the first time last year and even revised their guide stating that patients taking metformin should also be observed for B12 deficiency.

This is important because when we talk about diabetes and the low level of vitamin B12, we talk about diabetic neuropathy, a serious complication," she notes.
"Spreading awareness of the prophylactic use of vitamin B12 or chronic use of anti-diabetic medications is important as this is how we prevent serious complications of this disease."

Case examples of launched products building on the positive aspects of drug-nutrient interactions include Beyaz, which comprises contraceptive and folic acid, key to avoiding folate deficiency. However, she notes, such examples as Beyaz are not that great in number and thus a fertile ground for industry cooperation and innovation.

"DSM today has a chance to use its cooperation with leading clinics and researchers, and pool these into vitamin research. Our focus is on vitamins and the interactions between common drugs and vitamins. We look forward to partnering with leading pharmaceutical players, [in health areas] where you have stated and proven science that the chronic use of the drug brings on a vitamin deficit," she concludes.

Scientific backing

Speaking to NutritionInsight at CPhI Global, Cosimo Palumbo, Marketing Director at Indena, explains that suppliers must provide adequate information and scientific backing on their ingredients to support consumers looking to use supplementation while on medication.

"There is growing concern among consumers, particularly regarding those supplements that need to be taken on a continuous basis. An example would be turmeric, which is among the top five categories worldwide in terms of dietary supplement consumption," explains Palumbo.

"The first question [for many consumers] is, if I am taking medications, will it be a concern? Can I take my medications and turmeric? In the case of Indena's Meriva, since we claim a superior efficacy, we also wanted to create scientifically-based proof that you can take it in conjunction with the top classes of medications, such as anti-platelet agents as well as anti-coagulant agents, replacement therapy for hormones and some anti-diabetic medications. We are probably the first company, and the first brand with Meriva, to add particular evidence for our consumers and partners, to introduce this new element of substantiation," he explains.

For particular classes of compounds that need to be taken on a continuous or prolonged basis to have an effect, supplement manufacturers should ensure additional safety documentation and guarantees, he notes. "We believe it's important for supplement manufacturers to continue creating evidence of efficacy with human studies and evidence on safety. Safety needs to be taken a step ahead," he concludes.
By Lucy Gunn

Food for the elderly in China: Authorities to regulate definition, labelling, and ingredients for the first time

By Tingmin Koe
11-Oct-2018 – NutraIngredients Asia

China's National Health Commission and the State Administration for Market Regulation have introduced draft regulations that standardise the manufacturing and labelling of food for the elderly.

It requires the definition, categorisation, and stating the nutrition make-up of elderly food and this is reportedly the first time that authorities have drafted such regulations. The draft regulations are available for viewing and the public can provide relevant feedback on the China National Centre for Food Safety Risk Assessment website.

According to the draft, elderly food should 1) aid the elderly in chewing and/or swallowing of food and/or 2) satisfy dietary or nutrition needs of malnourished elderly. Elderly food will be categorised into three groups, namely 1) easily ingested food – which is catered to elderly suffering from dysphagia; 2) elderly nutrition food – which satisfy basic nutrition needs of the elderly; 3) elderly nutrition supplement – which provides unmet nutrition needs.

The drafting committee includes members from the School of Public Health at Qingdao University, the National Institute for Nutrition and Health at the Chinese Centre for Disease Control and Prevention, Nutrition Centre at Huadong Hospital, China National Centre for Food Safety Risk Assessment, and Chinese Nutrition Society. The drafting committee said it has referred to international guidelines, national standards, and food categorisation practices adopted by the other countries during the drafting process.

According to the blue book "Survey report on the living conditions of China's urban and rural older persons 2018" published by the China Ageing Research Centre, high blood pressure or malnutrition was the leading cause of death for more than half of the Chinese elderly. The blue book cautioned that health scams and fake products have seeped into the elderly supplement market, urging authorities to introduce stricter market regulations.

Lack of products for dysphagia
The Chinese market has a lack of food products catered to elderly suffering from dysphagia, the committee noted. When manufacturing an easily ingested food, the committee stated that manufacturers should 1) reduce the hardness of solid food, 2) increase the viscosity of the food so as to aid swallowing and prevent choking.

According to the committee, easily ingested food can be grouped into the following: 1) soft food 2) food chopped into small pieces 3) puree, and food that display 4) high degree of viscosity 5) medium degree of viscosity and 6) low degree of viscosity. The committee has also specified methods to test if a particular food fits into a particular category. In China, there are about 2.5 million of new stroke patients each year, of which about 30% to 65% suffer from dysphagia. Last year, Nestlé Health Science and the Chinese Stroke Association entered into a collaboration , aimed at improving the screening, diagnosis, and management of dysphagia in stroke patients.

on food for the elderly should be made of 1) dairy 2) dairy proteins 3) soy proteins and 4) grains fortified with an appropriate amount of vitamins, minerals and/or food for special dietary use, according to the draft.
Manufacturers should also limited the amount of saturated fat and sodium used. For instance, the ratio of saturated fat should not exceed 10%. On the other hand, the draft suggested to make the addition of dietary fibre, EPA and DHA compulsory.

Elderly nutrition supplement
According to the drafting committee, elderly nutrition supplements refer to food which includes dairy ingredients, dairy protein, and/or soy protein as the basic component. These supplements should prevent malnutrition diseases commonly seen in the elderly, and are targeted at elderly who do not have a balanced diet. The committee suggested that supplements should contain calcium, iron, zinc, selenium, vitamins B1, B2, B12, C, D, and folic acid – micronutrients that elderly lack in their diets. They also suggested that manufacturers to add in ingredients that are beneficial to elderly health at their discretion. These substances include biotin, choline, dietary fibre, nucleotide, phytosterol, and lutein.

Labelling
The committee also came up with suggestions on how to label elderly food. For instance, the packaging should clearly bear the term "elderly food" and specifies the product category, for instance, elderly nutrition supplements or elderly nutrition food. It should also include the nutrition contents for every 100kJ, daily serving size, and the information that the consumer should take note of when consuming similar supplements at the same time.

India's fortification drive: 'Chicken and egg' situation could be eased by manufacturer marketing

By Gary Scattergood
02-Oct-2018 – Food Navigator Asia

Food manufacturers that have backed India's fortification drive could do more to effectively market their products and the wider benefits of the scheme, according to an official from regulator FSSAI.

FSSAI has been implementing a nationwide fortification scheme since 2016, where folic acid, iron and vitamin B12 are added to rice and wheat flour, vitamins A and D are added to milk and iodine and iron are added to salt. Much of this is delivered through government or state-run distribution schemes, but FSSAI has also made a concerted ort to encourage food firms to fortify their products for the open market.

So far, 21% of the organised milk sector adheres to the fortification standards, while 47% of the edible oil industry does the same. And while these numbers have grown in recent months, the regulator is keen for industry to more. When asked by NutraIngredients-Asia following her presentation at the FI and HI India Pre-Connect Conference in Delhi how food firms could do more, the deputy lead of the fortification programme at FSSAI Rohini Saran said: "With fortification the challenge we often face is a chicken and egg situation. The businesses say that there isn't enough demand and the people say there isn't enough supply. "This is a battle we are facing, so we are asking businesses to proactively start their own marketing campaigns."


Image © iStock.com/PeopleImages

Additional vitamins and minerals? While she praised the companies that had been early-adopters of fortification, Saran said there had not yet been sufficient consumer communication about its benefits coming from brands. “We have had companies that came on board as soon as the standards were issued, but I personally haven’t seen ad campaigns from them,” she said. “I believe fortification is a great USP for the businesses and a great market. If marketing teams could get specific budgets to popularise these products, then people will recognise them more. Government is doing a lot, but industry needs to invest in marketing too.”

In response to another question from National Healthcare and Food spokesman Sandeep Gupta, Saran also said the regulator was open to assessing the fortification of products with additional minerals, after her urged FSSAI to consider the benefits of magnesium and vitamin K7. We recently reported that FSSAI has updated its dosage guidance for fortified products. By January 1 2019, all products must provide 30% to 50% of each individual's daily requirements.

The range allows for an additional 10% of micronutrients above the dosage recommended by the panel, though the figure is 20% for vitamins A and D. Saran added: “Fortification is a cost-effective way to tackle malnutrition and micro nutrient deficiencies, which remains a big problem in India, with the majority of vulnerable sectors still suffering.”

‘Malnutrition-free India': Government sets standards for pearl millet fortification

By Cheryl Tay

24-Oct-2018 - NutraIngredients Asia

The Indian Council of Agricultural Research (ICAR) has announced the minimum levels of iron and zinc that growers of national varieties of pearl millet should include in their produce.

This was announced in light of the Indian government's vision for what is called a kuposhan mukt bharat , or malnutrition-free India, by 2022. The All-India Coordinated Research Project (AICRP) on Pearl Millet — also called the ICAR-AICRP on Pearl Millet — has been actively encouraging National Agricultural Research Systems to start breeding programmes for micronutrients since 2014. ICAR-AIRP on Pearl Millet coordinator Dr C. Tara Satyavathi said, "At the 52 Annual Meeting of the Pearl Millet Improvement Project in 2017, it was agreed that all pearl millet varieties would be bred to contain a minimum 42 ppm (parts per million, or mg/kg) of iron and 32 ppm of zinc."

This was based on a joint 2016 publication by the International Crops Research Institute for the Semi-Arid-Tropics (ICRISAT), ICAR and AICRP on the status of zinc and iron content in the three bio-fortified hybrids and varieties of pearl millet introduced since the start of the programme. Three other hybrids have also been identified for impending release in the country.

The benefits of bio-fortification
Bio-fortification utilises conventional breeding to raise micronutrient levels in food crops, including essential vitamins and minerals such as vitamin A, iron and zinc. One of the companies involved in the programme is US-based HarvestPlus, which develops and distributes biofortified varieties of staple crops via partnerships with other organisations.
In an official statement, India country manager said: "Including bio-fortified pearl millet in the Public Distribution System's (PDS) mid-day meal scheme for pregnant and lactating women, as well as the Integrated Child Development Services' school feeding programme, will both further trigger the demand for these nutritious grains and improve nutritional outcomes." So far, the programme has looked into the varying levels of iron and zinc among the different bio-fortified varieties of pearl millet, with HarvestPlus helping to develop varieties containing greater quantities of iron.

A nutrition efficacy study published in the Journal of Nutrition found that the intake of bio-fortified pearl millet helped to eradicate iron deficiency in 65% of school-aged children in a mere six months.
In addition, the study reported improvements in the children's cognitive abilities, including attention and memory.

Pearl millet in particular can well withstand dry climates, which explains its status as a staple crop for over 90 million people globally, usually in the form of bread or porridge. In India alone, approximately nine million hectares of farmland are used for the cultivation of pearl millet, which produces an annual yield of 8.3 million tonnes.


Image © iStock/numbifer

Ongoing effort

Governments at both the national and state level in India have been rolling out fortification programmes over the years to combat widespread malnutrition in the country, where 59% of children below the age of five and 54% of pregnant women are anaemic. Additionally, 38% of children under five are stunted. These statistics are the result of iron and zinc deficiencies, which both the public and private sector have attempted to tackle, to varying degrees of success. Fortified pearl millet would be especially beneficial to resource-poor farming families or rural communities, whose diets feature staple crops like pearl millet prominently. The fortified crops would make for a cost-effective, sustainable solution to the problem of malnutrition among these communities.

Product claims are treading a fine ethical line, sports nutrition industry warned

By Nikki Cutler 04-Oct-2018 - NutraIngredients USA

Manufacturers must try harder to be credible, or the sports nutrition industry is in danger of becoming one built on 'coercing' sales, warns a sports science professor.

John Brewer, pro vice-chancellor and professor of applied sports science at St Mary's University, London, told Nutraingredients he thinks manufacturers are the main cause of consumer confusion, and the industry is treading a fine ethical line. "The causes of consumer confusion, if I'm really honest, are in the ways manufacturers exaggerate their products' ability to improve performance and health. Often their claims are based on supposition and one-off studies rather than realistic science.

"I would like to see manufacturers be more credible, rather than creative. It is a challenge to encourage them to do this but the question manufacturers have to ask themselves is, do you want an industry based on trying to coerce people with claims that aren't always genuine?

"Of course, there is this continual desire to have sales and so there's always that temptation to push the boundaries as far as they can with claims but that leads to confusion as consumers will find these products won't have the desired affects."

He asserts that it needs to be made clear that sports nutrition products are only a supplement to a healthy diet as there's a danger that people will not eat the right diet and try to make up for it with supplements. He added: "There's also a danger that people will read that a product can provide a 20% boost in something so they will take five of them in order to increase that benefit by 100% when that is actually leading to them overdosing on other ingredients which is very dangerous."

Myth-busting

Two examples Brewer used to describe how easy it is for people to be mislead are sports energy drinks and energy gels. He pointed out that these will, on average, contain around enough carbs and calories to sustain energy for a one-mile run. "If you ask someone taking these how much longer they think that product will sustain them for, many of them will think it's much longer than one mile. "Everyone has enough energy, without supplements, to sustain exercise for around an hour, to an hour and a half. The biggest challenge in that time is actually dehydration, not lack of energy."

The professor says he's pleased to see sports drinks now containing more electrolytes and less sugar in order to better meet people's rehydration needs. The other sports nutrition myth that Brewer wants to dispel is the notion that eating lots of protein can make a person muscly when, in fact, more than 2g of protein per kg of body eight won't have a major impact on muscle mass and could actually lead to an increase in fat, therefore scuppering any six pack dreams.

Credible claims

Brewer would like to see manufacturers making it more clear when their product should be consumed – before, during or after a workout – how many calories they provide and how much exercise that number of calories translates into. "For example, if you are taking in a sports drink at the beginning of a 30 minute workout, the drink is only going to provide enough energy to sustain you for the first 10 to 15 minutes."

He would also like to see manufacturers describing their benefits in work rate as opposed to endurance capacity as this is what people actually want. "You don't finish a marathon and think, I want to be able to do 10% of that again. You want to be able to do it 10% quicker. You want to improve your work rate which is a harder task."

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