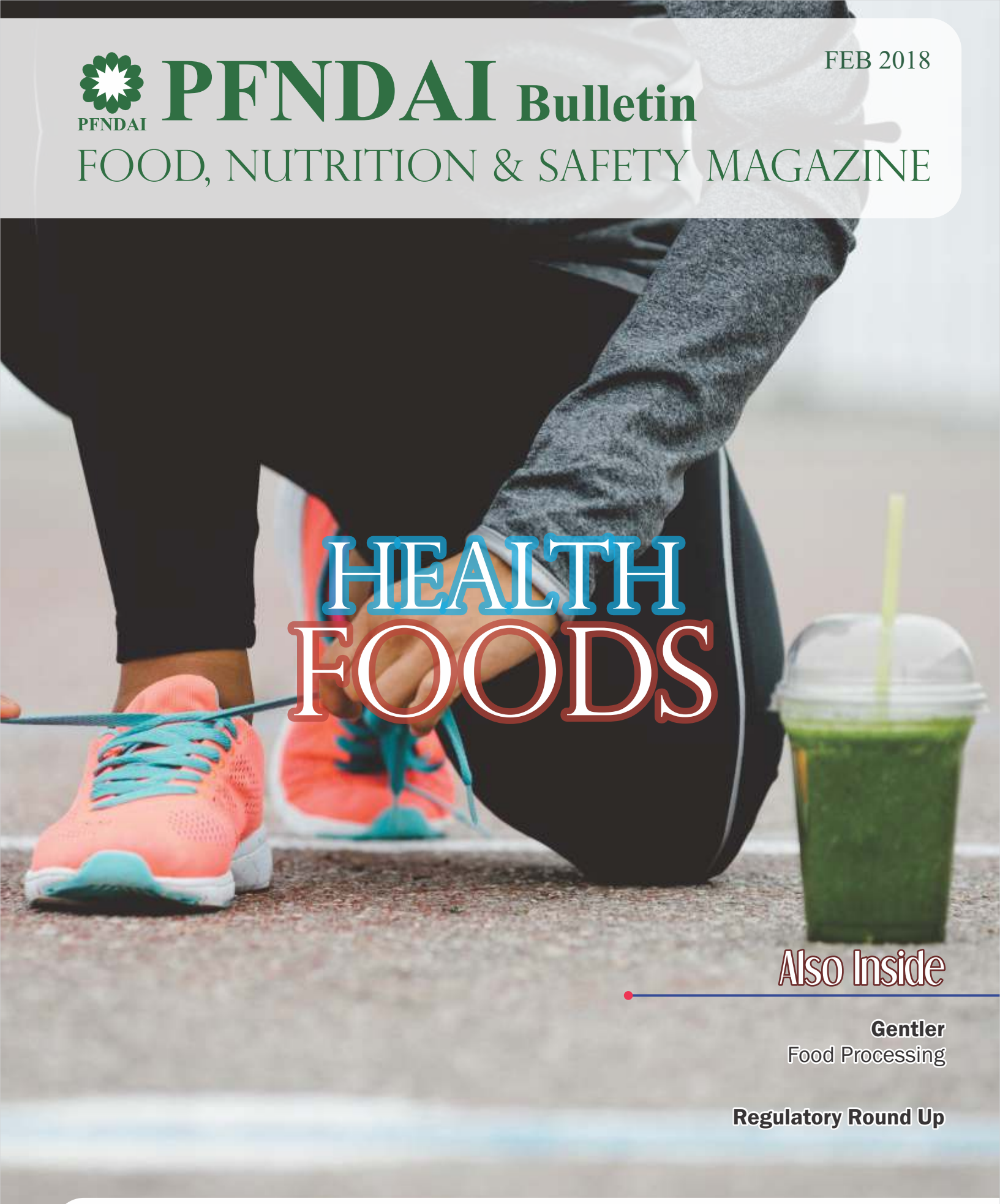
FEB 2018

PFNDAI Bulletin

FOOD, NUTRITION & SAFETY MAGAZINE



HEALTH FOODS

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EDITORIAL

School lunch for children is very important. Children today spend a lot of time in school and also for other activities outside their homes. So when they leave for school in the morning they may or may not have proper breakfast depending on whether they were late getting up or whether their moms had prepared sumptuous breakfast or whether both parents working had little time besides just giving bread and jam and tea or coffee or milk.

It is said that breakfast is the most important meal of the day but for children even lunch becomes equally important. Many children do not come home directly from school as they may go play some sports or older children may have tuition classes to attend before they return home in the evening.

Earlier moms used to pack good lunch-box with roti and vegetables and rice and dal. But it is either becoming difficult for working moms to prepare something nutritious and filling. Even when moms are willing to spend effort and time to prepare a good lunch box, children today want something tasty. They would rather take cakes, cookies and fried snacks instead of traditional lunch items.

Parents also give in easily to their children's demand and give them money to buy something from the school canteens. That would also have items which would be traditional and healthy but then children would have something that would not only be tasty but what they see on TVs. There are also some kids who prefer chaat items which also provide good amounts of salt and fat.

Hence it becomes difficult to ensure good healthy lunch for school children. Western societies have started making it mandatory for schools to provide only healthy and nutritious foods in canteens but children may also have access to vending machines. Some municipal schools have started mid-day meals but these have their own problems because of cost-constraints. Sometimes safety becomes the issue.

The ideal situation would be schools providing lunches in their canteens. There may be a few choices but most children should be able to eat sumptuous, nutritious and tasty food so they would be able to concentrate on studies and help them maintain their health too. When the taste is neglected children will not be interested. They would then try to find some alternatives which would be tasty and probably not very nutritious and safe either with vending machines or outside schools where street food may be available.

Even when there is no fixed menu lunch, where canteens may provide a wide choice of different food items, there must be nutritional considerations in selecting these items to be sold in canteens for schools. Not every item need be balanced in all nutrients but should contribute to a healthy lunch. Some of the popular snack items may also be provided with a small tweak to make them more nutritious. Change over to nutritious menu cannot be sudden but gradual. Old habits and tastes are difficult to change.

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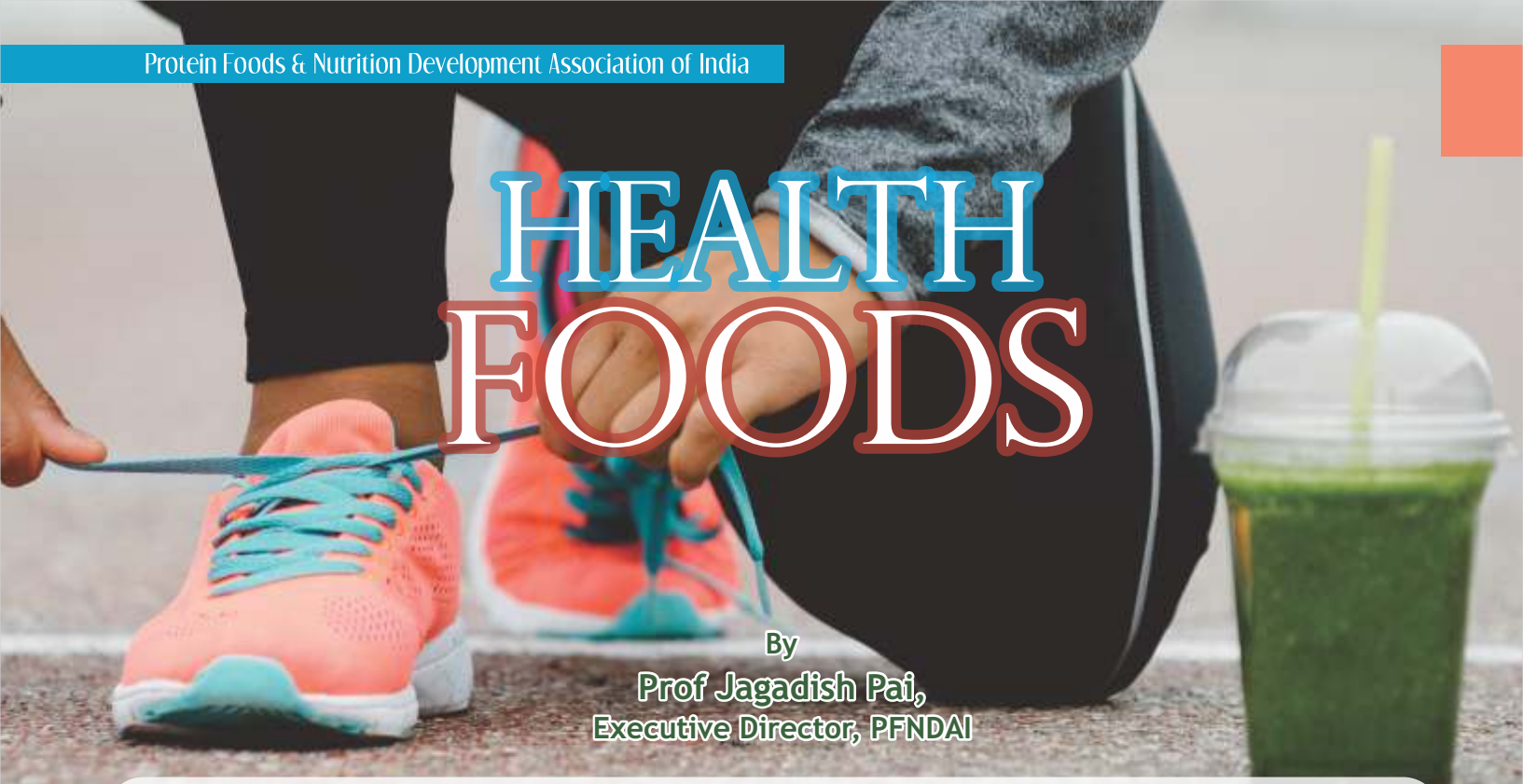

HEALTH FOODS

By
Prof Jagadish Pai,
Executive Director, PFNDAI

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Functional and Health Foods market is increasing quite rapidly. Many new products are seen on the shelf of the supermarkets and also being advertised in media.

People are also quite receptive to the alternative health solutions as medicines and treatment of diseases including hospitalisation has become quite expensive. The proverb "prevention is better than cure" is really getting confirmed as newer ways of prevention of a variety of diseases are being explored. Many botanicals and herbals and their extracts have been shown to have ability to reduce the risk of many diseases which would take a long time and enormous expenditure once the diseases are contracted. There are substances that reduce risk of heart diseases, hypertension, cancer, diabetes, AMD, joint and bone diseases and many others. As many of these diseases are becoming common due to many reasons due to our changes in lifestyle, people are finding such preventive measures quite attractive.

Global market for the foods is estimated at over 8 trillion dollars. Health food industry became significant a few decades ago and may include whole grain products, fortified & enriched foods, high protein foods, foods formulated with fruits & vegetable ingredients and others. This sector is estimated at between 500 billion to 1 trillion dollars.

Functional foods & Nutraceuticals industry is the youngest and has come into prominence just over a decade or so although there were a few products before that. It has been gathering growth speed mostly in Europe, US and Japan and is currently estimated at between 250 and 350 billion dollars. These products may contain ingredients and substances such as omega 3 fatty acids, probiotics, catotenoids, curcumin as well as botanical extracts.

Indian food industry has started showing rapid growth in the last couple of decades when people started having major changes in lifestyle as well as substantial change-over to urbanisation. This necessitated consumption of a lot of packaged food products as well as use of a lot of ingredients in packaged forms. Health food industry is small, very nascent and showing quite rapid growth. Although it is worth only 4 billion dollars, its growth rate has been 20% and is expected to be around 10 billion dollars in 2022 as per one estimate.

India has one advantage which is the legacy of Ayurveda. People are not only familiar with these ingredients, recent research has shown a lot of promise for many ingredients and substances present in many of these botanicals and herbs described in these Indian ancient scientific literature. FSSAI has also included many of these in the new regulation so they could be used in food products that could provide health benefits.

What Are Health Foods

All foods contain nutrients and nutrients promote health. That does not mean that all foods are health foods. There is no universally accepted definition of health foods but it is generally accepted that health foods contain good amounts of nutrients, either naturally present or added as fortificants, or they contain substances that promote health.

Some of the foods recognised as natural health foods may be those

containing proteins like milk, lean meats, egg and fish, those containing vitamins and minerals such as fruits and vegetables, those containing good sources of carbohydrates including whole grain foods etc. There may be foods which are fortified or enriched to make them more nutritious such as those to which vitamins and minerals are added including milk and beverages, bread, biscuits, cereals, etc. Such products were there for decades.

More recently newer products are appearing such as Functional Foods & Nutraceuticals as well as Dietary or Health Supplements. While nutrients including macronutrients like proteins, and micronutrients like vitamins and minerals are needed to maintain health and whose deficiency would cause various deficiency diseases. They have an RDA i.e. Recommended Dietary Allowance. Nutraceuticals and functional foods when consumed in adequate amounts will reduce the risk of certain diseases.

Foods for Special Dietary Uses or Functional Foods or Nutraceuticals or Health Supplements have been defined in the Food Safety & Standards Act 2006 as those that satisfy particular dietary requirements because of physical or physiological condition or specific disease or disorder. They must differ from comparable foods in nature and composition. Health supplements may be used to supplement normal diet. This category may not only appear like common foods but may also be marketed in forms such as powders, granules, tablets, capsules, liquids, jelly and other dosage forms. They are meant for oral consumption and not parenterals.

Benefits of Health Foods

Health foods are targeted to different sections of population e.g. children, sports persons, seniors, patients recovering from a disease or medical procedure as well as those with prolonged diseases and of course general public lacking in adequate nutrients.

Children and especially infants may need additional nutrition when being weaned and there are reports of such substances as omega 3 fatty acids which may be needed to be added. Children may need besides the common vitamins and minerals, additional health providing substances to take care of their growth, immunity, cognition and mental development for their overall development and health.

As sport is becoming an extremely competitive profession, sports persons not only want nutrition during the sports event but also for training, stamina or endurance development and for recovery after the sports event. There are many botanical substances recognised to help them for better performance. Specialised sports drinks and food products are being marketed for specific sports.

More people are now reaching senior years and they have many health issues. They not only need more nutrients from lesser calorie foods, there are age-related problems such as joints and bone health problems, such diseases as Parkinson's and Alzheimer's diseases, macular degeneration, sarcopenia etc. Geriatric products are becoming a rapidly growing sector.

Common people are also experiencing needs for health foods. Because of their lifestyle changes, they find it difficult to have proper home-cooked meals and the regular eating times. They need to eat at times on-the-go from one meeting to another or from one place to another. Their physical activity has also markedly diminished so a combined effect together with increased stress level of work being lifestyle diseases. They need special health foods which not only provide nutrients provided by balanced meals but also containing substances that would reduce the risks of these diseases like heart disease, diabetes, cancer and others. People are becoming more aware of the needs of health foods and are looking for these in the market.

If the diet is inadequate and it is difficult to have balanced meals at proper times, then it is sensible to have fortified and functional food products to support whatever proper meals one can have. As people live and work in a condition where they are prone to many non-communicable diseases, it certainly is advisable to incorporate many of the nutraceuticals in our diet either through meals or through food products that may be consumed which supplement the diet.

Food Safety & Standards (Food or Health Supplements, Nutraceuticals, Foods for Special Dietary Uses, Foods for Special Medical Purpose, Functional Foods and Novel Food) Regulation, 2015 was notified in December 2016 and came into force on 1st January 2018.

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INDIA'S PROTEIN-DEFICIENCY.

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, meat, milk etc. Moreover, the steep cost (per 100 gms of protein) of these sources further makes it 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. Soya contains 52% protein which is significantly above the protein content in eggs, lentils & milk all put together. 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!

FOOD	Approx Protein% /100gm	Approx Price/100gm
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DAL	25	10
MEAT	22	45
PANEER	19	32
EGG	14	12

NUTRELA 0% PROTEIN DEFICIENT INDIA

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*Source: The Times of India, July 2017


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This regulation gave definitions of different groups of food products including foods with probiotics and probiotics ingredients and premixes among other things. It also gives conditions for making various claims for such food products and also some of the ingredients and additives that could be added to such food products. There are some labelling declarations that are necessary for some of them and those for special medical purposes need to have warning that these products are recommended to be used under medical advice only. It also gives a long list of some botanical extracts that could be used in some of these products.

Opportunities

As more people realise the need for healthier food products that would not only provide the daily needs of nutrients but also may reduce the risks of some of the diseases that would take a long time and much cost to cure. As government has also created positive environment for making and marketing these products there is a lot of interest in this sector to add many of the nutrients and nutraceuticals to food products. Some have already marketed products containing soluble dietary fibre, prebiotics, omega 3 fatty acids such as DHA & EPA, probiotics, isoflavones, beta-glucan, oryzanol, lutein and others.

These opportunities have also triggered research in these areas. Many of the traditional herbs and spices have been used in India for centuries for their nutritional as well as their health benefits besides their delectable taste. Many benefits have been given in ancient literature and traditionally these have been used in food preparations. Researchers have found newer applications along with the substantiation of earlier benefits.

Many traditional medicinal ingredients are now being researched for their validation as well as newer applications. One of the most researched is turmeric and its component curcumin. Turmeric has been used in many traditional medicines including Ayurveda, Siddha, Unani and Chinese traditional medicines. Traditional applications have been for treatment of a variety of internal disorders like indigestion, throat infections, common cold or liver ailments as well as topically to cleanse wounds or treat skin sores.

Modern science is able to not only isolate the active substances in whole plant ingredient but also study their benefits. Many researchers have found that curcumin from turmeric could benefit gut diversity and help prevent weight gain, may have Parkinson's promise, helps maintain bone density and slow down tumour growth. It also show heart health benefits and reduces muscle damage after exercise. Such studies provide more opportunities in health care as well as some new products.

Similar benefits are explored for some of the other spices known to have health benefits. Capsaicin from chillies has been found to promote vascular and metabolic health. It also helps in weight loss as it curbs appetite. It has shown promise in diabetes and combined with ginger it could reduce risk of cancer.

Lutein and zeaxanthin have been extensively studied as carotenoids were useful for their antioxidant properties. They have found that above two are extremely useful in eye health and may reduce the risk of progression of AMD (age-related macular degeneration). Lutein is also linked to cognitive health and may reduce the risk of cataract. There has always been emphasis of use of some of the green leafy vegetables such as spinach, Swiss chard with highest being touted in kale. However, Indian scientists have found recently that Moringa (drumstick) leaves contain even more lutein at 25mg/100g.

There are many Ayurvedic herbs that have been used in traditional medicine even today. Ashwagandha has been known to support healthy immune system, calm mental processes and promote healthy sleep patterns, support joints and back health, and promotes sustained energy levels, strength and vitality. These have not yet been adequately researched using modern techniques and there may be active ingredients in it which may have greater activity as well as some other health benefits. Similar lack of research interest has been with some of the other herbs like brahmi, guggulu, shatavari and others. Many new health benefits may emerge out of research studies on these and their isolated active substances as in the case of some of the spices.

One must also remember that many of the ancient herbal medicines used either whole herbs or mixtures with other ingredients. It has been reported in some cases that when these were individually tested they did not show the same health benefits that they showed when they were whole or with other ingredients. During isolation and purification one may lose activators or some complex forming agents making the pure substances ineffective.

Preparation of Products

Developing a food product containing a botanical is not as easy as adding a nutrient to the food product. Although in some way adding a vitamin which undergoes degradation during processing is similar to a phytochemical added for health chemical which may undergo degradation and lose some of its beneficial activity. In actual terms it is much more complex.

First of all adding a botanical to a common food such as bread will create problems of acceptability as it may look, smell or taste different to consumers. Brown bread prepared with whole wheat flour had similar problems initially. Botanicals also have at times sensory qualities not easily acceptable to most consumers. Herbal tea or even green tea is not easily acceptable to people used to black tea.

Secondly, many of the active ingredients in botanicals may lack stability when processed with heat and often react with other ingredients especially minerals. This may result in loss of the activity and health benefits. So processing conditions and formulation should be properly studied and finalised so losses are minimal and ingredients could be protected. Microencapsulation works very well in such cases.

Some of the botanicals could be improved in acceptability by using extracts instead of whole materials. However, it must be verified that health benefits are available with extract as well. Sometimes, some of the substances work in combination with certain activators in the plant materials and if during extraction they are separated then the substance may not be effective.

There are also many varieties and subspecies of the botanicals and not all have the same activity as far as health benefits are concerned. This also must be checked. Ultimately the final food product must provide the benefit, so that must be studied for the effectiveness of the ingredient. The claims may need to be validated upon consumption of adequate amounts of final product.

Finally

In spite of all the difficulties, the opportunities are plenty with health benefits through food products for many plant materials showing activity in reducing risks of certain diseases and also to provide healthy ingredients. With consumers becoming more aware of link between health foods and good health and demanding such foods, industry can only see of rapid growth in this sector.

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W: www.gramrajasthan.in

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Asia Pacific
June 6-8, 2018
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E: mia.shen@nutraceutical-food.com

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W: Iftevent.org

21st World Congress on Nutrition & Food Sciences
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E: worldnutrition@conferencesworld.org

15th India Hospitality F&B Pro Expo, Goa
August 2-4, 2018
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T: +91 9769555657
E: cmd@trinityworld.biz
W: www.trinityworld.biz

Conference on Recent Advances in Food Processing Technology
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Indian Institute of Food Processing Technology
Thanjavur, Tamil Nadu
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Conference on Recent Advances in Food Processing Technology
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Aahar: International Food & Hospitality Fair
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National Seminar on Indian Dairy & Food Industry
September 14-15, 2018
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World Congress of Food Sci & Tech
October 23-27, 2018
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W: https://www.iufost2018.com/index.php

GENTLER FOOD PROCESSING

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Food is processed to attain the sensory requirements and the needed shelf life and make it safe. Traditionally heat was used for this as it inactivates spoilage organisms as well as pathogens and enzymes that cause deterioration of quality.

However, excessive heat adversely affects nutritional and sensory qualities of food. Many alternatives to heat have been studied to overcome these drawbacks of heat. However, they are inferior to heat in their effectiveness against some spoilage organisms and pathogens. The difference is marked in case of bacterial spores where heat is far superior to alternatives.

More recently combinations of thermal and non-thermal processes are used producing foods meeting both safety and sensory qualities. This approach has been used successfully to produce foods with Extended Shelf Life (ESL). Some processes bordering ESL processes i.e. pasteurisation and sterilisation are discussed with special emphasis on high-moisture low-acid foods.

Commercial Sterilisation

Foods are heat treated at temperatures over 100oC for thermal sterilisation using steam under pressure. Temperature and time combination is maintained adequately to inactivate most heat-resistant bacterial spores of concern. In high-moisture low-acid foods, spores of C botulinum are the cause of safety concern and processes are designed to eliminate them. Process also eliminates other pathogen spores likely to be present in the product. Products receiving commercial sterilisation process are stable under normal storage temperature for up to three years. Harsh thermal processes given degrade heat-sensitive nutrients and also may damage product quality.

Thermal Pasteurisation

This involves use of mild heat which destroys vegetative cells of psychrotrophic and mesophilic bacteria, which cause spoilage or are pathogens. Temperatures used are commonly between 55oC and 80oC holding for time depending on the temperature. Thermophilic bacteria are not killed by pasteurisation. It will also not destroy spores of bacteria and heat-resistant fungi. Process is selected based on susceptibility of most heat-resistant pathogen in a product. Acid foods (pH <4.6) need relatively mild treatment as the acidity makes microbes more susceptible to heat.

Pasteurised product needs refrigeration as surviving cells and spores may grow spoiling the products or rendering it unsafe for consumption. As pasteurisation does not kill spores of psychrotrophic bacteria, the treatment may activate them and increase their possibility to germinate. These then can grow and spoil the product. If some are pathogenic then their growth can be a potential hazard.

Extended Shelf Life (ESL) Foods

While sterilised foods can last for years, pasteurised products last only days or weeks. Short shelf life of pasteurised food is inconvenient as it should be distributed quickly to markets and disposed of properly if not sold by sell-by-date. This causes waste and increases cost of manufacture. Thus ESL category emerged with processes intermediate between pasteurisation and sterilisation with shelf life longer than pasteurised products. This thermal process should be adequate to kill microbes that are responsible for short shelf life of pasteurised foods namely the spores of psychrotrophic bacteria.

Processes used are between 80oC and 100oC that would eliminate spores of psychrotrophic bacteria and also inactivate some enzymes surviving pasteurisation causing spoilage. Typical process may involve heating food at 90oC for 10min. As the process does not eliminate other bacterial spores, ESL foods should be refrigerated. To reduce the process severity and further increase the shelf life, processors may use multiple hurdle technologies using natural antimicrobial agents. They may use modified or controlled atmosphere gas environment with CO2 and N2 in the package which will retard the deterioration and extend the shelf life.

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Maintaining the cold chain is critical for ensuring microbial safety and shelf life of ESL low-acid foods. Any deviation from refrigeration temperature during storage, distribution and at the retail may promote germination of surviving spores. Production of botulinum toxin due to growth of C. botulinum is the main concern for safety of in-pack processed, extended shelf life refrigerated foods especially in vacuum packaged beef, pork & lamb, pasteurised crab-meat and cooked turkey meat. Nitrites can control these organisms but increasing consumer demands for clean label chemical preservative-free food products necessitates their removal, which drives the need for new generation processing and natural ingredients technologies.

US FDA guidance document for Fish & Fishery Products Hazards & Controls identified C. botulinum type E and non-proteolytic types B and F as pathogens of concern for low-acid ELS foods packaged in a reduced-oxygen (such as vacuum packaged or modified atmosphere packaged) environment and stored refrigerated. A process with 6-log reduction of their spores has been accepted by regulators as well as scientific community and industry for safety of chilled ESL foods. Time Temperature combinations may vary from 90oC for 10 min to 100oC for 1 min for 6-log reduction according to US FDA.

Emphasis on Minimal Processing and Clean Label Products

Consumer shopping has always been influenced by taste, price and convenience. Thermal processing has been preferred for last 200 years. Consumers have been demanding health & wellness as well as safety & environmentally friendly processes. This made minimally processed foods quite desirable particularly natural and organic foods. Consumers demand beverages with healthy nutrients paying attention to ingredients in processed foods. They see ingredients wondering whether these are found in their own kitchens. They avoid products seen to contain artificial or chemical sounding ingredients, even though safe. Processors then try to formulate products with "clean label" which avoids or minimises use of artificial additives, colours, preservatives, flavours, and sweeteners. Global market for clean label foods is around $165 billion whereas in the US it is about $62 billion. Processors try to ask following questions to gauge consumer response to their product
1) Can the processed food maintain natural fresh taste? Alternatively, can it be formulated to maintain the "home-prepared" appeal?
2) Can the product be formulated to have cleaner labels without reducing shelf life or elevating food safety risk?
3) Is it possible to reduce the food waste as low as possible during handling, distribution, and at the retail level?

Non-thermal Processing

With increased demand for minimally processed foods, industry is embracing non-thermal processes such as high pressure, irradiation, pulsed electric field and UV treatment. Food irradiation has been most extensively studied non-thermal process since 1960s but still it has limited market share. Commercial use of this for foods in the US has been slow and one of the major hurdles is lack of awareness of benefits.

The National Advisory Committee of Microbiological Criteria for Foods of USDA expanded definition of pasteurisation to include both advanced thermal such as ohmic and microwave heating as well as non-thermal lethal processes like high pressure, UV radiation, and pulsed electric field as part of processes leading to pasteurisation. Pasteurisation is redefined as any process or combination applied to food to reduce the most resistant microorganisms of public health significance to level that is not likely to present a public health risk under normal conditions of distribution and storage.

A high level of vigilance of B cereus, B weihenstephanensis and C botulinum type E is recommended as they are inherently resistant to processing and the innate ability of their vegetative cells to carry on metabolic activities at refrigeration temperatures. Although these processes are effective in reducing non-spore forming bacterial population, they do not inactivate bacterial spores with the exception of gamma irradiation. Hence proper cold chain is very essential.

Action of non-thermal process on microbes and enzymes may be different compared to thermal processing. Unlike thermal, non-thermal have shown variable efficacy against enzymes. Thus at times both thermal and non-thermal processes are combined to achieve the processing objectives.

High Pressure Processing (HPP)

This is essentially a batch process. The prepackaged food is kept in a pressure chamber containing water and is subjected to pressure.

Typically, products are pressure-treated at chilled or ambient temperatures. Microbiological shelf life and quality of foods can be substantially extended by use of HPP and examples are guacamole, seafood, meat, salsa, juices and fruit and vegetable products.

Pressure can be used to modify proteins and carbohydrates providing product development opportunities including new food textures, alteration of water binding capacity and rheological characteristics and developing pressure-induced gel structures. The process at ambient temperatures can preserve bioactivity and various food quality attributes like flavour, colour and nutrients.

Pressure treatment is often used as post-lethality treatment in deli meats, wherein the sealed package of precooked meat is pressure treated. Meat may be formulated with natural antimicrobial agents. The hurdle approach reduces or eliminates pathogen levels resulting from post-lethality contamination.

Similarly pasta products may be cooked before pressure pasteurisation to improve consumer appeal. On the other hand freshly extracted raw fruit juice or a formulated salsa product may be pressure processed to ensure microbial safety with no loss of fresh-like quality. Due to high acidity, pressure pasteurised juices are microbially stable, but are distributed refrigerated to preserve quality during extended shelf life.

Processing Combination to Achieve ESL

Efficacy of pressure-thermal combinations for producing ESL products has been studied. One report stated that log reductions of non-proteolytic C bolulinum spores with combined high pressure and heat treatments were much greater than those subjected to only heat. It has been also reported that a 600 MPa-thermal (60oC-85oC) treatment inactivated B cereus spores suspended in cooked rice by 2.2 to 3.4 log during 30s pressure come-up time and to below the detection limit (>7 logs) after 4- to 8-min pressure holding times. In contrast, a 180 min treatment time was necessary to inactivate B cereus spores to undetectable level at atmospheric pressure (0.1 MPa) and 85oC.

Pressure-thermal processes can provide a variety of benefits beyond food safety and shelf-life extension. It has been reported that they may provide desirable sensory attributes at lower salt, polyphosphates or emulsifier levels. Reduced heat exposure during ESL treatment can help preserve heat-sensitive bioactive compounds. In comparison to thermal treatment of 75oC to 105oC, 0.1 MPa), combined pressure-thermal treatment (75oC to 105oC, 600 MPa) reduced the formation of furan in liquid juices. Systematic process design and development studies are required to understand synergistic, additive or antagonistic effects of pressure and heat on microbes, food quality and nutrients.

Where the ESL Technology Is Headed

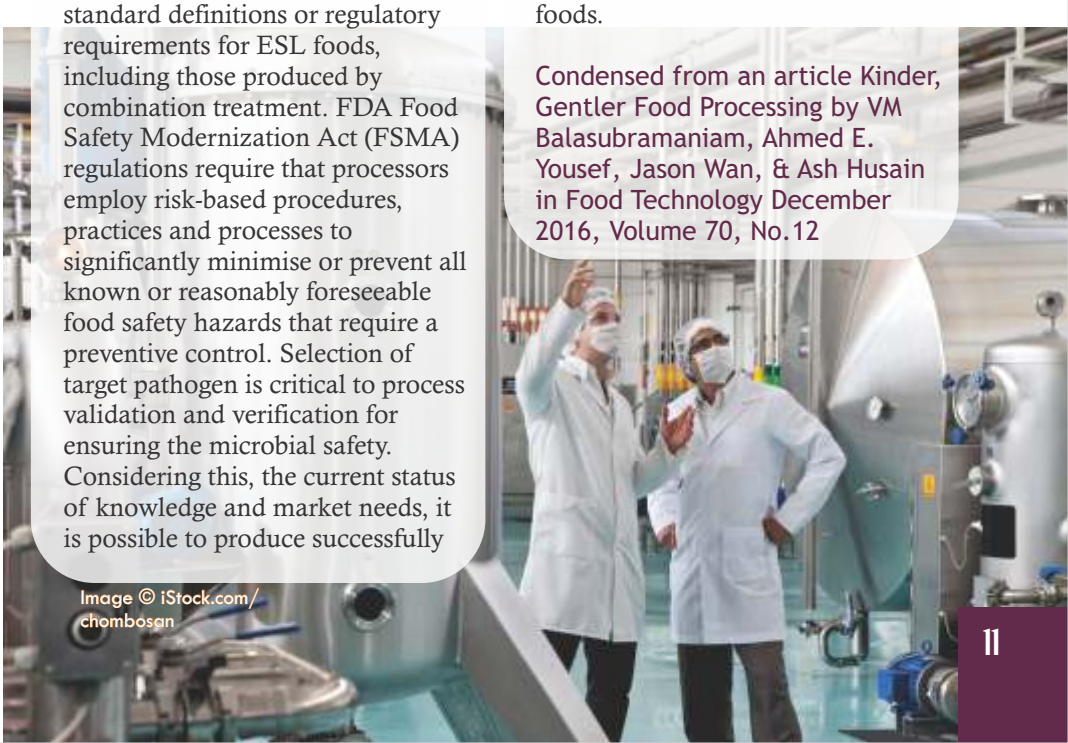
Currently in the US, there are no standard definitions or regulatory requirements for ESL foods, including those produced by combination treatment. FDA Food Safety Modernization Act (FSMA) regulations require that processors employ risk-based procedures, practices and processes to significantly minimise or prevent all known or reasonably foreseeable food safety hazards that require a preventive control. Selection of target pathogen is critical to process validation and verification for ensuring the microbial safety. Considering this, the current status of knowledge and market needs, it is possible to produce successfully safe and wholesome ESL products for new generation consumers.

Concluding Remarks

The ESL term applies to food developed by various technological solutions for enhancing its shelf life under refrigerated storage without compromising microbial safety of processed product. ESL products enable processor to make wholesome, nutritious foods with consumer-desired quality attributes. Thermal processing has been the technology of choice for these foods but in addition to heat, many non-thermal process agents like high pressure, electric field, cold plasma, UV, gases and natural antimicrobials can provide combination process to produce clean label ESL foods. Such treatments also help reduce thermal impact on heat-sensitive nutrients and food quality. Among these, high pressure-based processing is leading the way in many food applications.

To fully utilise the potential of non-thermal and thermal agents, efforts must be made to study mechanisms and kinetics of destruction of microbes, enzymes and nutrients by various combinations. This together with multidisciplinary integration of advances in food and nutrition and allied sciences can accelerate introduction of various clean label, microbially safe and nutritious ESL foods.

Condensed from an article Kinder, Gentler Food Processing by VM Balasubramaniam, Ahmed E. Yousef, Jason Wan, & Ash Husain in Food Technology December 2016, Volume 70, No.12



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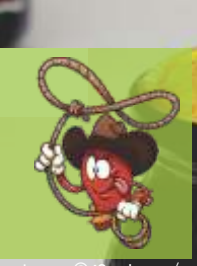

REGULATORY ROUND UP

By
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The much-awaited big ticket regulation on Labelling, albeit draft, is out.

The regulation is christened as "Labelling and Display" with Packaging being spun off as a separate regulation. The regulation, impacting the entire food industry, is going to keep the food professionals on their toes for some time to come. Please find below the salient points of the regulation. All are requested to study it thoroughly, apply to their products and send in their comments and suggestions to the Authority. Food Industry and Professionals are blamed, many time rightly so, for not reacting to the drafts but finding themselves in a bind after the final notification. The "Labelling and Display" regulation is too important to be treated as any other regulation.

Standards

DraftFood Safety and Standards (Labelling and Display) Regulations 2018 is published. The regulation is not gazetted but published as a notice inviting comments and suggestions from the stakeholders within 60 days from 11th April 2018. The notice does not mention any effective date and hope minimum 2 years is given for implementation as it involves major changes. The regulation sets criteria for "High Fat, Sugar and Salt" foods (HFSS). Apparently, such a move is to facilitate the consumers to make an informed choice about the food and reduce the burden of obesity and non-communicable diseases. The move will require input of resources such as new labels, analysis, enforcement, etc. from all the stakeholders including Food Authority. It is hoped that FSSAI will identify key performance indicators and follow them over a period of time whether the set objectives are achieved.

The salient differences or the new aspects in the regulation are as follows.

- New definitions like HFSS foods, Total sugars, Dietary fiber, etc
- Mandatory additional nutrient information includes Sugars, cholesterol and salt as sodium chloride along with Energy, Protein, Fat, Saturated and Trans Fat, Total sugars.
- Front of the pack declaration of Energy, Fat, Total Sugars and Salt as a percentage of RDA per serving
- Front of the pack color coding of the above nutrients if they are above the defined threshold value.
- New shape for vegetarian logo
- Expiry date instead of Best Before
- Both height of numerals and alphabets are related to principal display panel
- Special label declaration with respect to certain ingredients
- Labels of products which are "Not for Retail Sale" have been made simpler

Final notification on the standards of different types of alcoholic beverages. Specifies standards of identity and data value for contaminants for all types of alcoholic beverages including beer.

Final notification amending the microbiological requirements of fruit and vegetable products. Both hygiene and safety standards are given.

Final notification amending the standards of cane Jaggery, Saccharin derivatives, etc

Draft notice amending the standards for Ice lollies

Draft notice amending regulation on Health Supplements, Nutraceuticals, FSDU, FSMP, etc.

Draft regulation restricting the sale of non – iodized salt to the Industrial consumer which was previously permitted.

General

FSSAI vide its letter dated 4th April 2018 has issued clarification regarding the categorization of vitamin and Mineral premixes, Microorganisms and their preparation, functional ingredients which are not directly consumed.

FSSAI has issued notices and circulars with regard to Licensing and Registration in case of Online process, Food safety status in the canteens of educational institutions, Licensing of FBOs at Seaports and Airports, Direct selling guidelines.

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RESEARCH IN HEALTH & NUTRITION

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Eating cheese every day may help to protect heart health

By Honor Whiteman Medical News Today 4 December 2017

If you're a cheese lover, you will welcome the results of this new study with open arms. Researchers suggest that eating around 40 grams (or 1.41 ounces) of cheese every day could help to reduce the risk of heart disease and stroke.

Researchers suggest that eating a small amount of cheese every day may benefit heart health. These new findings come from an analysis of 15 observational studies that looked at the effects of cheese intake on the risk of cardiovascular disease (CVD). Study co-author Li-Qiang Qin — who works in the Department of Nutrition and Food Hygiene at Soochow University's School of Public Health in China — and colleagues report their results in the European Journal of Nutrition.

Cheese is undoubtedly one of our favourite foods. In 2015, the population of the United States consumed the equivalent of 37.1 pounds of cheese per person, with Cheddar and mozzarella being the most popular choices. While cheese contains some nutrients that are beneficial to health — such as calcium, zinc, and vitamins A and B-12 — it is also high in saturated fats, which can increase cholesterol levels and raise the risk of heart disease and stroke. The new study, however, suggests that this popular dairy product could have the opposite effect on cardiovascular health.

CVD risk reduced by up to 18 percent

For their study, Qin and colleagues conducted a meta-analysis of 15 observational studies that investigated how cheese consumption influenced the total risk of CVD, as well as the risks of coronary heart disease (CHD) and stroke. In total, the studies included more than 200,000 participants, and the effects of cheese intake were monitored for more than 10 years. The majority of studies included subjects who were free of CVD at study baseline.

The analysis revealed that people who regularly consumed cheese were up to 18 percent less likely to develop CVD, up to 14 percent less likely to develop CHD, and up to 10 percent less likely to have a stroke, compared with those who had a low cheese intake. The scientists report that these effects were strongest among participants who consumed around 40 grams, or 1.41 ounces, of cheese every day. In conclusion, they write: "This meta-analysis of prospective studies suggests a nonlinear inverse association between cheese consumption and risk of CVD."

Be cautious

The team's findings build on those of a widely publicized observational analysis that was published earlier this year, which linked cheese and other dairy products to a reduced risk of cardiovascular and all-cause mortality. But don't stock up on the Cheddar just yet; both studies have their own limitations. Importantly, they are observational, so they do not prove a causal association between cheese intake and better cardiovascular health.

Your DNA may dictate which diet works for you

Medical News Today 4 December 2017
By Ana Sandoiu

Despite dietary guidelines, public awareness campaigns, and people's genuine efforts to lose weight, the obesity epidemic doesn't seem to be going anywhere. Why is that?

Researchers at Texas A&M University in College Station may have found the answer. Different diets may be appropriate for different people, based on their genetic predisposition, suggests the new study. Whether or not a diet will work may be "written" in our genes. That's the main takeaway of an elaborate study recently published in the journal Genetics.

Image © iStock.com/gmutlu

David Threadgill, Ph.D., of the Texas A&M College of Medicine and College of Veterinary Medicine & Biomedical Sciences, is the senior investigator, and William T. Barrington is the first author of the new paper. Threadgill and his team started out from the observation that, despite national dietary guidelines, the number of Americans living with metabolic syndrome — an umbrella term for a group of cardio-metabolic risk factors — has soared. In Threadgill's opinion, this occurs because dietary guidelines are built on the false premise that one size fits all. "Dietary advice, whether it comes from the United States government or some other organization, tends to be based on the theory that there is going to be one diet that will help everyone," he says.

"In the face of the obesity epidemic," he continues, "it seems like guidelines haven't been effective." Threadgill and his team hypothesized that genetic differences might influence how someone responds to a diet. The researchers tested this hypothesis in mice, which, as the authors explain in their paper, are similar to humans in genetic makeup, as well as in their predisposition to develop cardio-metabolic illnesses, such as heart disease and diabetes.

Different diets for genetically distinct mice

To test their hypothesis, the researchers designed four genetically different strains of mice, to which they fed four different diets. The diets were designed so that they were the equivalent of four historically popular human diets: the American/Western diet, the Mediterranean diet, the Japanese diet, and the Maasai/ketogenic diet. The American diet was high in fats and refined carbs, the Mediterranean one was higher in fibre and included red wine extract, the Japanese diet consisted of rice and green tea extract, and the ketogenic diet was high in fat and protein but consisted of very few carbs.

"We matched fibre content and matched bioactive compounds thought to be important in disease," Barrington explains, in order to get the rodents' diets to be as similar as possible to the human ones. The mice were also fed a control diet consisting of standard chow. The researchers monitored the mice's cardio-metabolic health, measuring their blood pressure, blood sugar, cholesterol levels, and looking out for signs of a fatty liver. Levels of physical activity were also monitored, as well as the rodents' appetite and food intake. Overall, the three "alternative," healthier diets did seem to work for most mice, but the fourth genetic strain responded very badly to the Japanese diet.

Although these mice "performed just fine on all of the other diets, [they] did terrible on this diet, with increased fat in the liver and markings of liver damage," says Barrington. As for the ketogenic diet, two genetic strains responded very well to it, and two very poorly. "One became very obese, with fatty livers and high cholesterol," Barrington says, while the other had more fat and became less physically active, despite maintaining a lean appearance.

"This equates to what we call 'skinny-fat' in humans, in which someone looks to be a healthy weight but actually has a high percentage of body fat," explains the first author. As expected, the American-style diet increased obesity and metabolic syndrome in most mice. The Mediterranean diet, on the other hand, had mixed results, with some mice staying healthy, and others gaining weight.

'Precision dietetics' may yield better results

"What we're finding," Barrington continues, "is that it depends very much on the genetics of the individual and there isn't one diet that is best for everyone." In their paper, the authors conclude: "If similar genetic-dependent diet responses exist in humans, then a personalized, or 'precision dietetics,' approach to dietary recommendations may yield better health outcomes than the traditional one-size-fits-all approach."

The study's first author also shares some hopes for future research, saying, "One day, we'd love to develop a genetic test that could tell each person the best diet for their own genetic makeup." "There might be a geographical difference based on what your ancestors ate, but we just don't know enough to say for sure yet," adds Barrington.

Could a cup of hot tea each day reduce the risk of glaucoma?

Medical News Today 15 December 2017 By Maria Cohut

A new study has discovered that the risk of glaucoma — a fairly common eye condition in the older population that can result in loss of vision — was lower in people who drank hot tea every day.

Glaucoma is an eye condition characterized by damage to the optic nerve, which may result in partial or total loss of eyesight. Risk factors for developing glaucoma include age, a medical history of diabetes, obesity, and hypertension.


Image © iStock.com/Juanmonino

According to recent data from the National Eye Institute, in 2010 alone, 1.9 percent of the North American population aged 40 and over was diagnosed with a form of glaucoma. Coffee consumption has previously been associated with an increased risk of developing glaucoma, due to increased intraocular blood pressure.

However, the results of further research were split, with some indicating that moderate coffee consumption did not affect the risk of glaucoma, and others obtaining mixed results. Furthermore, some studies hypothesized that the consumption of other caffeinated and non-caffeinated drinks could also influence the risk of developing glaucoma. So far, this notion has not been verified, since most of the research addressing the link between drinks and the risk of heightened intraocular pressure referred to small, and thus inconclusive, population samples.

Recently, scientists from Brown University in Providence, RI, and the University of California in Los Angeles have decided to compare how the consumption of various drinks — including hot tea, decaffeinated tea, iced tea, coffee, and soft drinks — influence the risk of glaucoma. "No study to date has compared the effects of caffeinated and decaffeinated coffee, tea, and soft drinks on glaucoma," write the researchers. "The objective of this study," they add, "is to examine the association between consumption of various caffeinated and decaffeinated beverages and glaucoma." The results of the study were published yesterday in the British Journal of Ophthalmology.

Lower risk for tea drinkers

Lead study author Connie Wu and her colleagues analyzed data sourced from the 2005–2006 National Health and Nutrition Examination Survey, which gathered the medical data of around 10,000 people. The survey used a range of tools, including interviews, physical examinations, and blood samples, aiming to give a detailed pictured of health in the United States population.

The team chose the 2005–2006 survey because it also gathered data on glaucoma diagnoses. That year, 1,678 participants agreed to share full eye test results, and of these, 84 adults were found to have a form of glaucoma. As a part of their assessment, the participants were quizzed on their drinking habits, including how much coffee, hot tea, decaffeinated tea, soft drinks, and iced tea they had drunk over the past year, and how often.

The researchers found that the participants who drank hot tea every day had a 74 percent lower risk of developing glaucoma than those who didn't. To ensure the consistency of these results, the team also checked for potential confounding factors, such as a history of diabetes and smoking habits. No links were found between glaucoma risk and any other type of beverage taken into account in the study, including coffee — both caffeinated and decaffeinated — as well as decaffeinated tea, iced tea, and soft drinks.

Is the relationship causal?

The scientists warn that this is only an association noted in an observational study, so no cause-effect relationship should be inferred without further analysis. The study also had other limitations, such as the small number of participants with glaucoma and a lack of detailed information about the timeline of diagnosis. Other missing information refers to how much of the beverage the hot tea drinkers actually had each day, what kind of tea they consumed, and how it was brewed, which may have swayed the findings. Still, the study authors note in their paper that "[t]ea contains phytochemicals and flavonoids [types of active chemical compounds found in plants], which have been observed to have anti-inflammatory, anticarcinogenic, antioxidant, and neuroprotective properties associated with the prevention of cardiovascular disease, cancer, and diabetes."

Thus, the researchers suggest, it wouldn't be so far-fetched to consider that the consumption of tea could have a protective metabolic effect. Wu and colleagues also refer to existing studies that have proposed that glaucoma may, in part, be an effect of oxidative stress and neurodegeneration, which are two processes linked to aging and breakdown at cellular and molecular levels.

Taking into account the potential protective effect of hot tea consumption when it comes to cell aging and damage, the researchers suggest that further efforts should be dedicated to investigating the role of this common, and much-loved, beverage. "Further research is needed to establish the importance of these findings and whether hot tea consumption may play a role in the prevention of glaucoma," the team concludes.

Could this be a better solution to weight loss than calorie counting?

Medical News Today 21 December 2017 By Catharine Paddock PhD

New research suggests that limiting the consumption of protein building blocks known as branched-chain amino acids could be an alternative way to shed

excess weight to restricting calories, which many people trying to combat diabetes and obesity find hard to do.

"We've identified an unanticipated role for dietary BCAAs in the regulation of energy balance," explains co-principal investigator Dudley Lamming, who works as an assistant professor in the Division of Endocrinology, Diabetes and Metabolism. In a study paper that was recently published in The Journal of Physiology, he and his team suggest that, if the findings translate to humans, then "specifically reducing dietary BCAAs" might be an effective way to treat obesity and insulin resistance.

BCAAs' crucial role in vital body functions

BCAAs are a group of essential amino acids that includes leucine, isoleucine, and valine. Essential amino acids are those that the body needs to get from food sources, as it cannot make them to a level that is sufficient for healthy growth. Red meat and dairy products are rich dietary sources of BCAAs. People who follow vegan diets can also get them from vegetable sources such as soy protein. In the body, BCAAs are important for producing neurotransmitters, which are the chemical messengers of the brain and central nervous system. BCAAs are also important for making collagen, regulating insulin and glucose, and the healthy functioning of organs that help to maintain metabolism.

'Rapid reversal of diet-induced obesity'

In their study, Prof. Lamming and his team put pre-diabetic, obese mice on a Western diet that was low in leucine, isoleucine, and valine but otherwise not restricted in amount of calories, fat, and sugar. The mice could eat as much of this low-BCAA food as they desired. During the study, the team monitored the animals' energy usage, glucose metabolism, and body weight and composition.

The results showed that — despite being able to eat as much high-fat and high-sugar food as they wanted — the mice on the low-BCAA diet showed a dramatic improvement in metabolic health. The researchers note that reducing BCAAs in the diet "rapidly reverses diet-induced obesity" and improves glucose control in diet-induced obese mice. "Most dramatically," the study authors add, "mice eating an otherwise unhealthy high-calorie, high-sugar Western diet with reduced levels of BCAAs lost weight and fat mass rapidly until regaining a normal weight."

Increased energy use, not increased activity

The team suggests that an important factor in the "normalization of weight" was that it came about not as a result of "caloric restriction or increased activity," but as a result of increased energy use that involved "the energy balance regulating hormone FG21." The weight loss witnessed was also "accompanied by a dramatic improvement in glucose tolerance and insulin resistance." The study confirms an increasing amount of evidence suggesting that protein metabolism is as important in insulin resistance as fat and carbohydrate metabolism.

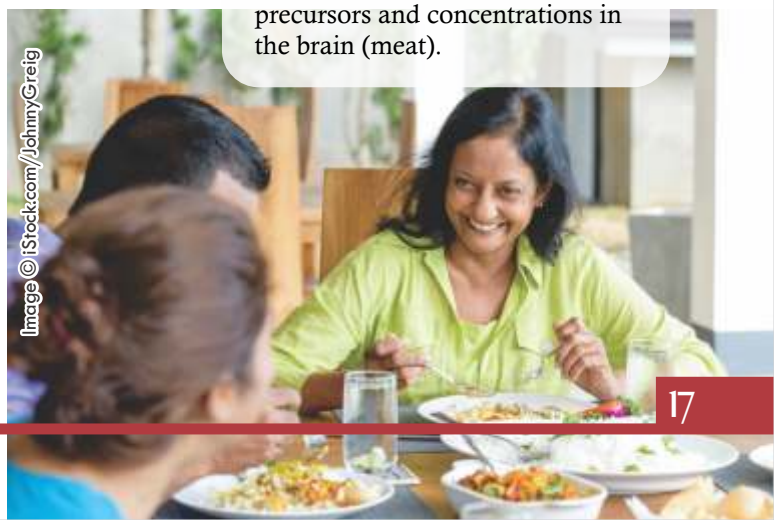
The study authors write that their findings "suggest that specifically reducing dietary BCAAs may represent a highly translatable option for the treatment of obesity and insulin resistance." However, previous evidence on the effect that BCAAs specifically have on insulin resistance is conflicting and has caused some experts to remark that "species difference" might be a factor. This would suggest, therefore, that the results of this study should be treated with caution until the question of "if the results translate to humans" is resolved. "Our results also suggest that the specific amino acid composition of dietary protein — not just how much protein we eat — regulates metabolic health." Prof. Dudley Lamming

Your mood depends on the food you eat, and what you should eat changes as you get older

Science Daily December 11, 2017

Diet and dietary practices differentially affect mental health in young adults versus older adults, according to new research from Binghamton University, State University of New York.

Lina Begdache, assistant professor of health and wellness studies at Binghamton University, along with fellow Binghamton researchers, conducted an anonymous internet survey, asking people around the world to complete the Food-Mood Questionnaire (FMQ), which includes questions on food groups that have been associated with neurochemistry and neurobiology. Analyzing the data, Begdache and Assistant Professor of Systems Science and Industrial Engineering Nasim Sabounchi found that mood in young adults (18-29) seems to be dependent on food that increases availability of neurotransmitter precursors and concentrations in the brain (meat).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However, mood in mature adults (over 30 years) may be more reliant on food that increases availability of antioxidants (fruits) and abstinence of food that inappropriately activates the sympathetic nervous system (coffee, high glycemic index and skipping breakfast).

"One of the major findings of this paper is that diet and dietary practices differentially affect mental health in young adults versus mature adults," said Begdache. "Another noteworthy finding is that young adult mood appears to be sensitive to build-up of brain chemicals. Regular consumption of meat leads to build-up of two brain chemicals (serotonin and dopamine) known to promote mood. Regular exercise leads to build-up of these and other neurotransmitters as well. In other words, young adults who ate meat (red or white) less than three times a week and exercised less than three times week showed a significant mental distress."

"Conversely, mature adult mood seems to be more sensitive to regular consumption of sources of antioxidants and abstinence of food that inappropriately activates the innate fight-or-flight response (commonly known as the stress response)," added Begdache. "With aging, there is an increase in free radical formation (oxidants), so our need for antioxidants increases. Free radicals cause disturbances in the brain, which increases the risk for mental distress. Also, our ability to regulate stress decreases, so if we consume food that activates the stress response (such as coffee and too much carbohydrates), we are more likely to experience mental distress."

Begdache and her team are interested in comparing dietary intake between men and women in relation to mental distress. There is a gender difference in brain morphology which may be also sensitive to dietary components, and may potentially explain some the documented gender-specific mental distress risk, said Begdache.

Anti-stress compound reduces obesity and diabetes

Science Daily December 13, 2017

For the first time, scientists from the Max Planck Institute of Psychiatry in Munich could prove that a stress protein found in muscle has a diabetes promoting effect. This finding could pave the way to a completely new treatment approach.

For some time, researchers have known that the protein FKBP51 is associated with depression and anxiety disorders. It is involved in the regulation of the stress system -- when the system does not function properly; mental disorders may develop. Now, researchers at the Max Planck Institute of Psychiatry have discovered a new, surprising role for this protein: It acts as a molecular link between the stress regulatory system and metabolic processes in the body.

"FKBP51 influences a signalling cascade in muscle tissue, which with excessive calorie intake leads to the development of glucose intolerance, i.e., the key indicator of diabetes type 2," project leader Mathias Schmidt summarizes. An unhealthy diet, rich in fat means stress for the body. If FKBP51 is increasingly produced in the muscle it leads to reduced absorption of glucose -- as a result, diabetes and obesity may develop. If FKBP51 is blocked, diabetes will not develop, even if too many calories are consumed or the body is still stressed. Less FKBP51 in the muscle tissue means reduced glucose intolerance and thus maintenance of normal metabolism.

Antagonist provides novel treatment approach

The protein FKBP51 can be pharmacologically blocked by antagonist compounds that were developed at the Max Planck Institute by Felix Hausch (presently at University of Darmstadt). In

Image © iStock.com/Juanmonino

collaboration with the scientists at the Technical University Darmstadt and funded by the Bavarian State Ministry of Economic Affairs and Media, Energy and Technology, these compounds will be further developed for use in clinical trials. "These findings may provide a completely new treatment approach for diabetes and other metabolic diseases," states Alon Chen, Director at the Max Planck Institute of Psychiatry.

Healthy eating linked to kids' happiness

Science Daily December 13, 2017

Healthy eating is associated with better self-esteem and fewer emotional and peer problems, such as having fewer friends or being picked on or bullied, in children regardless of body weight, according to a study published in the open access journal BMC Public Health.

Inversely, better self-esteem is associated with better adherence to healthy eating guidelines, according to researchers from The Sahlgrenska Academy, University of Gothenburg, Sweden.

Image © iStock.com/fstop123

Dr Louise Arvidsson, the corresponding author said: "We found that in young children aged two to nine years there is an association between adherence to healthy dietary guidelines and better psychological well-being, which includes fewer emotional problems, better relationships with other children and higher self-esteem, two years later. Our findings suggest that a healthy diet can improve well-being in children."

Examining 7,675 children two to nine years of age from eight European countries -- Belgium, Cyprus, Estonia, Germany, Hungary, Italy, Spain and Sweden -- the researchers found that a higher Healthy Dietary Adherence Score (HDAS) at the beginning of the study period was associated with better self-esteem and fewer emotional and peer problems two years later. The HDAS aims to capture adherence to healthy dietary guidelines, which include limiting intake of refined sugars, reducing fat intake and eating fruit and vegetables. A higher HDAS indicates better adherence to the guidelines -- i.e. healthier eating. The guidelines are common to the eight countries included in this study.

The authors found that better self-esteem at the beginning of the study period was associated with a higher HDAS two years later and that the associations between HDAS and wellbeing were similar for children who had normal weight and children who were overweight.

Dr Arvidsson said: "It was somewhat surprising to find that the association between baseline diet and better well-being two years later was independent of children's socioeconomic position and their body weight." The authors used data from the Identification and Prevention of Dietary- and Lifestyle-Induced Health Effects in Children and Infants Study, a prospective cohort study that aims to understand how to prevent overweight in children while also considering the multiple factors that contribute to it.

At the beginning of the study period parents were asked to report how often per week their children consumed food from a list of 43 items. Depending on their consumption of these foods, children were then assigned an HDAS score. Psychosocial wellbeing was assessed based on self-esteem, parent relations, emotional and peer problems as reported by the parents in response to validated questionnaires. Height and weight of the children were measured. All questionnaires and measurements were repeated two years later.

The study is the first to analyze the individual components included in the HDAS and their associations with children's wellbeing. The authors found, that fish intake according to guidelines (2-3 times per week) was associated with better self-esteem and no emotional and peer problems. Intake of whole meal products was associated with no peer problems.

The associations were found to go in both directions; better wellbeing was associated with consumption of fruit and vegetables, sugar and fat in accordance with dietary guidelines, better self-esteem was associated with sugar intake according to guidelines, good parent relations were associated with fruit and vegetable consumption according to guidelines, fewer emotional problems were associated with fat intake according to guidelines and fewer peer problems were associated with consumption of fruit and vegetables according to guidelines.

The authors caution that children with poor diet and poor wellbeing were more likely to drop out of the study and were therefore underrepresented at the two-year follow-up, which complicates conclusions about the true rates of poor diet and poor wellbeing. As the study is observational and relies on self-reported data from parents, no conclusions about cause and effect are possible. Dr Arvidsson said: "The associations we identified here need to be confirmed in experimental studies including children with clinical diagnosis of depression, anxiety or other behavioral disorders rather than well-being as reported by parents."

Health benefits of swapping animal proteins for plant proteins

Science Daily December 20, 2017

Research published in the Journal of Experimental Medicine indicates that a mother's diet can protect nursing newborns against food allergies.

Substituting one to two servings of animal proteins with plant proteins every day could lead to a small reduction in the three main cholesterol markers for cardiovascular disease prevention, a new study suggests.

The health benefits could be even greater if people combined plant proteins with other cholesterol-lowering foods such as viscous, water soluble fibres from oats, barley and psyllium, and plant sterols, said lead author Dr. John Sievenpiper of St. Michael's Hospital.

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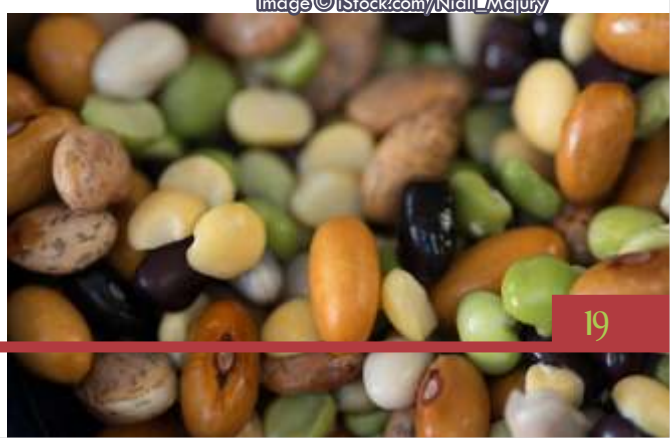

Dr. Sievenpiper led a systematic review and meta-analysis of 112 randomized control trials in which people substituted plant proteins for some animal proteins in their diets for at least three weeks. The results were published online in the Journal of the American Heart Association.

Dr. Sievenpiper said the review indicated that replacing one to two servings of animal proteins with plant proteins every day -- primarily soy, nuts and pulses (dried peas and beans, lentils and chickpeas) -- could reduce the main cholesterol markers by about 5 per cent. "That may not sound like much, but because people in North America eat very little plant protein, there is a real opportunity here to make some small changes to our diets and realize the health benefits," said Dr. Sievenpiper, a clinician scientist with the hospital's Clinical Nutrition and Risk Modification Centre.

Dr. Sievenpiper said previous studies have shown the cholesterol-lowering benefits of individual foods or food groups, but that this paper looked at the benefits of substituting any plant proteins for animal proteins. Most of the randomized control trials they studied used soy (plant) proteins to replace dairy (animal) proteins. "We are seeing a major interest in plant-based diets from Mediterranean to vegetarian diets in the supermarket and the clinic, and this comprehensive analysis of the highest level of evidence from randomized trials provides us with more confidence that these diets are heart healthy," said Dr. Sievenpiper.

The study looked at the impact of replacing animal protein with plant protein of three key markers for cholesterol: low-density lipoprotein cholesterol (LDL or "bad" cholesterol, which contributes to fatty build-ups in arteries and raises the risk for heart attack, stroke and peripheral artery disease); non-high density lipoprotein cholesterol (non-HDL-C, or total cholesterol minus HDL or healthy/good cholesterol) and apolipoprotein B (the proteins in bad cholesterol that clog arteries).

Struggling to get your kids to eat healthy? 'Don't give up!' researchers say

Science Daily December 20, 2017

Varied diets and persistence in exposing infants and children to healthy foods, even when they don't like them at first, are key to promoting healthy eating behaviours, a new review paper has concluded.

Published on Dec. 20, in Obesity Reviews, the lead author is Stephanie Anzman-Frasca, PhD, assistant professor in the Department of Pediatrics in the Jacobs School of Medicine and Biomedical Sciences at the University at Buffalo. Anzman-Frasca is a researcher in the Department of Pediatrics' behavioural medicine division. "The goal was to review the literature in order to make recommendations to parents and caregivers on how they can best encourage children's healthy eating starting as early as possible," said Anzman-Frasca.

Like mother, like baby

The researchers based their recommendations on data gathered from more than 40 peer-reviewed studies on how infants and young children develop preferences for healthy foods, especially vegetables and fruits. Healthy eating starts during pregnancy, the authors point out. "Flavours of Mom's diet reach the child in utero," said Anzman-Frasca, "so if she's eating a healthy diet, the fetus does get exposed to those flavours, getting the child used to them." After birth, if the mother breastfeeds, the baby also benefits from exposure to flavours from her healthy diet through the breastmilk. These early exposures familiarize the baby with specific flavours as well as the experience of variety and set the stage for later acceptance of healthy flavours in solid foods.

Serve healthy foods, repeat, serve healthy foods, repeat

Even after infancy, repeatedly exposing children to foods that they previously rejected can help them to accept and like the food. "This method of simply repeating the child's exposure to healthy foods has a robust evidence base behind it," Anzman-Frasca said. "There are many studies with preschoolers who start out not liking red peppers or squash, for example, but after five to six sessions where these foods are repeatedly offered, they end up liking them." However, the review pointed out, one study has found that in low-income homes, parents do not serve previously rejected foods because of the desire not to waste food. The authors call for interventions to promote repeated exposure to healthy foods in these environments, while addressing challenges parents face.

Other conclusions are:

• Vary foods during the prenatal period, early milk feeding and toddlerhood, taking advantage of periods when neophobia -- the rejection of novel things -- is lower.

• Strategies besides repeated exposure, such as rewarding the intake of healthy foods, might work in some situations, but there is some evidence that these strategies could also dilute the power of repeated exposure to healthy foods.


Image © iStock.com/szefei

Researchers suggest starting with simple approaches like repeated exposure -- or caregivers and siblings modelling the consumption and enjoyment of healthy foods -- reserving other strategies for cases where they are needed to motivate initial tasting.

• Larger-scale changes to make healthy choices easy choices in children's everyday environments can help caregivers to use recommended strategies to increase acceptance of healthier foods successfully. For example, making healthy side dishes and beverages the default accompaniments in kids' meals in restaurants can increase children's exposure to these items.

"Overall, based on all the studies we reviewed, our strongest recommendation to parents and caregivers is 'don't give up!'" Anzman-Frasca emphasized.

Whole eggs better for muscle building and repair than egg whites

Science Daily
December 20, 2017


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People who consume 18 grams of protein from whole eggs or from egg whites after engaging in resistance exercise differ dramatically in how their muscles build protein, a process called protein synthesis, during the post-workout period, researchers report in a new study.

Specifically, the post-workout muscle-building response in those eating whole eggs is 40 percent greater than in those consuming an equivalent amount of protein from egg whites, the team found.

The discovery, reported in the American Journal of Clinical Nutrition, suggests that the widespread practice of throwing away egg yolks to maximize one's dietary protein intake from eggs is counterproductive, said Nicholas Burd, a University of Illinois professor of kinesiology and community health who led the research. The yolks also contain protein, along with key nutrients and other food components that are not present in egg whites, Burd said. And something in the yolks is boosting the body's ability to utilize that protein in the muscles.

"This study suggests that eating protein within its most natural food matrix tends to be more beneficial to our muscles as opposed to getting one's protein from isolated protein sources," he said.

In the study, 10 young men engaged in a single bout of resistance exercise and then ate either whole eggs or egg whites containing 18 grams of protein. Researchers administered infusions of stable-isotope-labelled leucine and phenylalanine (two important amino acids) to participants. This allowed the scientists to maintain and precisely measure amino acid levels in participants' blood and muscles.

The U. of I. Poultry Research Farm developed eggs for the study that also were isotopically labelled with leucine. This allowed for precise tracking of where the food-derived amino acids ended up after participants ingested them. The team took repeated blood and muscle biopsy samples to assess how the egg-derived amino acids were appearing in the blood and in protein synthesis in muscles before and after the resistance exercise and eating.

"By using those labelled eggs, we saw that if you ate the whole egg or the egg whites, the same amount of dietary amino acids became available in your blood," Burd said. "In each case, about 60 to 70 percent of the amino acids were available in the blood to build new muscle protein. That would suggest that getting one's protein from whole eggs or just from the whites makes no difference, as the amount of dietary amino acids in the blood after eating generally gives us an indication of how potent a food source is for the muscle-building response."

But when the researchers directly measured protein synthesis in the muscle, they found a very different response.

"We saw that the ingestion of whole eggs immediately after resistance exercise resulted in greater muscle-protein synthesis than the ingestion of egg whites," Burd said.

Previous studies suggest this difference has nothing to do with the difference in energy content of whole eggs and egg whites -- whole eggs containing 18 grams of protein also contain about 17 grams of fat, whereas egg whites have no fat. Studies from Burd's lab and others show that simply adding fat to an isolated protein source in the diet after exercise does not boost protein synthesis.

“There's a lot of stress on protein nutrition in modern society, and research is showing that we need more protein in the diet than we once thought to maintain health," Burd said. "As world population grows, we need cost-effective and sustainable strategies for improving the use of protein in the diet. This work is showing that consuming egg protein in its natural matrix has a much greater benefit than getting isolated protein from the same source."


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Weekly fish consumption linked to better sleep, higher IQ

Science Daily December 21, 2017

Children who eat fish at least once a week sleep better and have IQ scores that are 4 points higher, on average, than those who consume fish less frequently or not at all, according to new findings from the University of Pennsylvania published this week in Scientific Reports, a Nature journal.

Previous studies showed a relationship between omega-3s, the fatty acids in many types of fish, and improved intelligence, as well as omega-3s and better sleep. But they've never all been connected before. This work, conducted by Jianghong Liu, Jennifer Pinto-Martin and Alexandra Hanlon of the School of Nursing and Penn Integrates Knowledge Professor Adrian Raine, reveals sleep as a possible mediating pathway, the potential missing link between fish and intelligence. "This area of research is not well-developed. It's emerging," said Liu, lead author on the paper and an associate professor of nursing and public health. "Here we look at omega-3s coming from our food instead of from supplements."

For the work, a cohort of 541 9- to 11-year-olds in China, 54 percent boys and 46 percent girls, completed a questionnaire about how often they consumed fish in the past month, with options ranging from "never" to "at least once per week." They also took the Chinese version of an IQ test called the Wechsler Intelligence Scale for Children-Revised, which examines verbal and non-verbal skills such as vocabulary and coding.

Their parents then answered questions about sleep quality using the standardized Children Sleep Habits Questionnaire, which included topics such as sleep duration and frequency of night waking or daytime sleepiness. Finally, the researchers controlled for demographic information, including parental education, occupation and marital status and number of children in the home. Analyzing these data points, the Penn team found that children who reported eating fish weekly scored 4.8 points higher on the IQ exams than those who said they "seldom" or "never" consumed fish. Those whose meals sometimes included fish scored 3.3 points higher. In addition, increased fish consumption was associated with fewer disturbances of sleep, which the researchers say indicates better overall sleep quality.

"Lack of sleep is associated with antisocial behaviour; poor cognition is associated with antisocial behaviour," said Raine, who has appointments in the School of Arts and Sciences and Penn's Perelman School of Medicine. "We have found that omega-3 supplements reduce antisocial behaviour, so it's not too surprising that fish is behind this." Pinto-Martin, who is executive director of Penn's Center for Public Health Initiatives, as well as the Viola MacInnes/Independence Professor of Nursing and a professor of epidemiology in Penn Medicine, sees strong potential for the implications of this research.

"It adds to the growing body of evidence showing that fish consumption has really positive health benefits and should be something more heavily advertised and promoted," she said. "Children should be introduced to it early on." That could be as young as 10 months, as long as the fish has no bones and has been finely chopped, but should start by around age 2. "Introducing the taste early makes it more palatable," Pinto-Martin said. "It really has to be a concerted effort, especially in a culture where fish is not as commonly served or smelled. Children are sensitive to smell. If they're not used to it, they may shy away from it."

Given the young age of this study group, Liu and colleagues chose not to analyze the details participants reported about the types of fish consumed, though they plan to do so for work on an older cohort in the future. The researchers also want to add to this current observational study to establish, through randomized controlled trials, that eating fish can lead to better sleep, better school performance and other real-life, practical outcomes.

For the moment, the researchers recommend incrementally incorporating additional fish into a diet; consumption even once a week moves a family into the "high" fish-eating group as defined in the study. "Doing that could be a lot easier than nudging children about going to bed," Raine said. "If the fish improves sleep, great. If it also improves cognitive performance -- like we've seen here -- even better. It's a double hit."

PSA from your gut microbes: Enjoy the holidays, but don't forget your fibre

December 21, 2017

Anyone watching their waistline this holiday season may want to pay attention to what their gut bacteria are eating. It's not just calories that matter in a healthy diet -- it's fibre that resists digestion by the body but is readily eaten by bacteria in the gut.

The amount of fibre in someone's diet can influence weight gain, blood sugar, insulin sensitivity, and colon health.

Two studies with mice, publishing December 21 in the journal Cell Host & Microbe, help shed light on how and why fibre has such a powerful effect on the entire body. "Once the mechanism is understood, it can be exploited in different ways to promote health," says Andrew Gewirtz, who studies the intestinal epithelium at Georgia State University's Center for Inflammation Immunity & Infection and is senior author of one of the papers. "This will allow ways to modify diets to maximize those benefits."

Fibre in its various forms is found in fruits, legumes, vegetables, and whole grains. So-called Western diets, which are high in fats and sugars but low in fibre, have been linked to an increased risk of inflammatory bowel diseases, weight gain, and diabetes. "It is becoming increasingly clear that the average person's fibre intake in a Western country has drastically reduced over the past few decades," says Fredrik Bäckhed, who studies the role of the normal gut microbiota in metabolic diseases at the University of Gothenburg, Sweden and is a co-senior author of the other paper.

Both studies started by feeding a group of mice a diet that was extremely low in fibre. The low-fibre diets rapidly led to weight gain, high blood sugar, and insulin resistance in the mice. The Bäckhed study found that mice developed problems with the protective mucus layer in the colon after just 3-7 days of eating the low-fibre diet: this mucus layer became more penetrable and bacteria encroached upon the epithelial cells of the colon. The Gewirtz study observed that the colons of mice on the low-fibre diet shrank significantly in thickness. And not only did large amounts of gut bacteria die off after mice ate a low-fibre diet, mice developed unhealthy imbalances of different gut bacteria strains.

"These papers show the importance of the inner mucus layer in separating bacteria and human host. It nicely illustrates how dynamic and quickly this responds to diet and bacterial alterations," says Gunnar C. Hansson, a co-senior author with Bäckhed and a professor in the Mucin Biology Group at the University of Gothenburg, Sweden. "Both our paper and the Bäckhed paper are essentially reaching the same conclusion that the lack of fibre results in bacteria encroaching into the mucus layer, and those bacteria are promoting low-grade inflammation, contributing to metabolic syndrome," says Gewirtz.

After the fallout from the low-fibre diet, the two research teams tried different treatment approaches. Bäckhed, Hansson, and colleagues found that a transplant of gut bacteria from a healthy mouse could undo some of the harmful changes to the colon mucus layer. Supplementing the mice with Bifidobacterium (a beneficial bacteria) helped colon mucus growth issues, but not mucus penetrability issues. Supplementing the mice's diet with inulin (a type of fermentable fibre) lowered the mucus penetrability but did not help mucus growth issues.

By switching mice to a diet comprised of 20% inulin, Gewirtz and colleagues found that they could reverse some aspects of metabolic syndrome in the mice -- like promoting weight loss and greater blood sugar control -- but not others, such as elevated triglycerides levels. The fibre inulin also helped restore colon mass, increased the number of intestinal absorption cells enterocytes, and restored some number and diversity to the gut bacteria. However, the fibre supplements could not completely return the mouse gut bacteria to its original bacterial diversity after eating the low-fibre diet. This may mean using supplements as a treatment could cause complications if a person doesn't have a healthy mix of gut bacteria.

"Diets that lack fibre alter the bacterial composition and bacterial metabolism, which in turn causes defects to the inner mucus layer and allows bacteria to come close [encroach], something that triggers inflammation and ultimately metabolic disease," says Hansson. "It is not enough just to add fibre to your diet; it also depends on which bacteria you carry." This likely means more study is needed before fibre supplements can be used as a treatment. "Simply enriching processed food with purified fibres might offer some health benefits, but we're not ready to recommend it until we understand more of the very complex interplay between food, bacteria, and host," Gewirtz says. Bäckhed and Hansson agree.

Sleeping aids: Nutritional solutions supplement a good night's rest

Nutrition Insight 21 Dec 2017

In stressful times, getting to sleep is sometimes not the simple task that it should be. Luckily, companies in the nutritional space are ready to step in with solutions to improve consumers' relaxation and ensure long, productive nights of sleep.

Insomnia aids on the rise

The moment certainly seems to be a good one for sleeping aids. In 2016, global Innova Market Insights statistics show that 2.8 percent of all supplement launches tracked had insomnia aid claims. Over the past five years, the number of supplement launches tracked with an insomnia claim has grown steadily and impressively, with the compound annual growth rate (CAGR) increasing by around +51.1 percent annually from 2012 to 2016.

When it comes to sleeping aids, there are several ingredients on the rise. Melatonin is among the fastest-growing ingredients in supplement launches tracked with an insomnia aid claim with high CAGRs from 2012 to 2016. Magnesium continues to lead the way as an ingredient, boasting a 16.7 percent share of supplement launches tracked with an insomnia claim, though it has fallen a little since 2012. Silica has also seen a large drop-off in share, going from 13.6 percent in 2012 to 6.1 percent in 2016.

Extra claims in sleeping aid supplements

It seems like for an increasing number of manufacturers, an insomnia claim isn't enough. Innova statistics show that two in five products with an insomnia claim also feature a brain-mood health claim, with a CAGR of +115 percent between 2012 and 2016. Launches with a weight management positioning have a CAGR of +98.4 percent, while energy and stamina have a CAGR of +93.4 percent.

Products with a brain health positioning include Bloem Dormafleur Extra Forte, which promotes magnesium's benefits to the nervous system. Metagenics Menohop Soy Extract Dietary Supplement helps with menopause symptoms and contains a hop extract that it notes helps with mood swings and to promote sleep. When it comes to weight management, an example is Nutra Rise Pure Forskolin Extract, which claims that it helps to burn belly fat and promotes healthy weight loss along with its help with insomnia. Natures Plus Herbal Actives Valerian Extended Release Standardized Botanical Supplement promises energy that supplements its support for the normal sleep process.

Potential food-based solution

Those who are looking for better sleep may not need to consider supplements; they could consider looking to cherries instead. Montmorency tart cherry juice was recently found to help extend sleep time by 84 minutes among eight study participants, ages 50 and older, who suffer from insomnia, in a pilot study. Montmorency tart cherries are the most common variety of tart cherries grown in the US, and are available year round in dried, frozen, canned, juice and concentrated forms.

"Insomnia is quite common among older adults, and it can lead to a range of health issues if left untreated," says lead researcher Jack Losso, Professor in the School of Nutrition and Food Sciences at Louisiana State University Agricultural Center in Baton Rouge, who has conducted previous studies on tart cherry juice and sleep. "However, many people are hesitant to resort to medications to help them sleep. That's why natural sleep remedies are increasingly of interest and in demand."

Procyanidins and anthocyanins – the major compounds, or polyphenols, in Montmorency tart cherries – were found to be key in their sleep-enhancing effects. Looking at the space as a whole, there are many different options for aiding sleep, both in the supplements industry and in food.

As sleeping aids continue to develop in the future on a seemingly upward trend, it will be interesting to see which new ingredients and applications come into play to assist those who need to improve the quality and frequency of their rest.
By Paul Creasy

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Gut microbiota: Transient effects found for a preservative

Nutrition Insight 19 Dec 2017

Antimicrobial compounds added to preserve food during storage are believed to be benign and non-toxic to the consumer, but there is "a critical scientific gap in understanding the potential interactions" they may have with the hundreds of species of microbes in our intestines, say David Sela, a nutritional microbiologist at the University of Massachusetts Amherst, and colleagues.

Sela and co-authors in the food science department at UMass Amherst have reported results of their study conducted in mice of one of these preservative compounds, food-grade epsilon (ε)-polylysine, in the Nature Springer journal, Science of Food. Unexpectedly, they found that the polylysine compound temporarily perturbed the diversity of microbes in the mouse gut, but this change was transient and over the 15-week study period, the mouse gut microbiome resolved and returned to conditions similar to those at the start of the study. While the mouse gut microbiomes differed by the animals' gender, Sela notes, the observed treatment changes to the antimicrobial ε -polylysine were experienced the same regardless of gender.

Sela says, "This is a very interesting phenomenon that we haven't seen before, to our knowledge. We're certainly interested in looking into it further. We do not know enough about what preservatives do to the microbiomes in the gut." Food not only nourishes the body but it also nourishes the beneficial bacteria, the microbiome living in the intestines, he points out. Food scientists and microbiologists are increasingly interested in these less-studied inhabitants, which may number as many as our own human cells, and the "prebiotic" foods that nourish them. Microbes in the gut make molecules and compounds that help the body or help some of the hundreds of other beneficial members of the community.

For this study, Sela and UMass Amherst co-authors Hang Xiao and Julian McClements divided 40 female and 40 male mice into four groups of 10 animals each. They fed 10 female and 10 male mice the food-grade biopolymer ε -polylysine as found in food preservatives, while control groups of 10 animals each received food without the additives. Two other groups received ε -polylysine plus pectin or ε -polylysine plus maltodextrin, common food additives that might be expected to interact with the ε -polylysine. As the authors explain, both ε -polylysine and pectin are not dissolved or absorbed in the upper gastro-intestinal tract and may interact with resident microbial communities there.

For their analysis of gut microbiota, the researchers sampled mouse fecal pellets at three points: baseline, five weeks and nine weeks. Sela says, "The concentrations of gut microbes changed in response to polylysine as we fed the mice throughout the study. Surprisingly, the microbiome snapped back to the original concentrations despite continuous feeding of the polylysine, but we don't understand how or the potential relevance to health." "Starting at about week five it changed," he adds, "but by about week 9 it was back. The microbes' functions shifted, which is really interesting that you can have different populations doing different things. Typically the microbiome will stay shifted when you give antibiotics, for example, so our results suggest that somehow there is an adaptation to the food-grade preservative.

Sela says, "We think this is going to be of interest to food manufacturers who use food-grade antimicrobial compounds and to people researching anti-microbial resistance." The work was supported by the USDA's National Research Initiative and its National Institute for Food and Agriculture. David Sela and co-authors at UMass Amherst found unexpectedly that a preservative compound, food-grade epsilon (ε)-polylysine, temporarily perturbed the diversity of microbes in the mouse gut, but this change was transient and over the 15-week study period.

Life Extension turns to under-the-radar Asian herb for weight loss product

By Hank Schultz 15-Dec-2017
NutraIngredients Asia

An Asian herb that has been researched for weight loss effects forms the basis of a new Life Extension product launch.

The new product is called AMPK Metabolic Activator. The formula is based on Gencor Pacic's ActiveAMP, an extract of the herb Gynostemma pentaphyllum, a forest understory plant that is native to southern China, northern Vietnam and other regions in East Asia.

Image © iStock.com/emer1940

While the herb has been known for centuries, and was first described by Chinese herbalists in the 1500s, it reportedly has not formed a big part of Traditional Chinese Medicine. The herb has been on the market in niche fashion as a bulk tea by firms such as Grandville, MI-based Immortalitea. Gencor has developed the herb into a dietary ingredient that has some research behind it. An 80-subject, placebo-controlled study published in the journal Obesity in 2014 found the extract had positive effects on abdominal fat area, body mass and weight.

Mimicking physical activity

Gencor has stated that its ingredient works by mimicking to some degree the effects of physical activity. The company says the ingredient stimulates the AMPk pathway by up regulating the production of a family of proteins called sestrins, which are normally produced via exercise. AMPk is an enzyme that the company says, " Switches on the same fat-burning and energy products metabolic pathways that exercise does. " The Life Extension formula teams Gencor's ingredient with a citrus flavonoid called hesperidin. A study published this year in the Journal of Translational Medicine using human mesanchymal stem cells found that hesperidin restricted fat accumulation by inhibiting " genes involved in the three phases of adipogenesis (c/ebp β , srebp1c and perilipin). "

Life Extension said the flavonoid also helps inhibit circulating hsCRP levels, a major inflammatory factor. It is also said to help maintain already-healthy cholesterol levels and promotes healthy vascular function. Life Extension said that AMPk activity degrades with age, which could be postulated as one of the ways that people tend to put on weight as they age. Thus the product could potentially have a healthy aging positioning as well as a place at the weight management table. "Belly fat can speed up natural aspects of the aging process throughout the body, because abdominal fat can create compounds that can cause inflammation and oxidative stress," said Dr Michael Smith, Life Extension's chief health scientist.

Ashwagandha, ginseng found to mimic off-label anti aging effects of two drugs

By Hank Schultz 01-Dec-2017
NutraIngredients

A computer modelling study has identified ashwagandha and ginseng as among the top dietary ingredient candidates that mimic the anti-aging effects of two common drugs.

The study, titled "Towards natural mimetics of metformin and rapamycin", was published recently in the journal Aging. It is an in silico investigation the gene-level action of metformin and rapamycin when used in an off-label anti aging scenario. Both drugs are mTOR inhibitors that, according to the authors, offer significant anti-cancer and anti-aging properties beyond their current clinical applications Metformin is prescribed as a blood glucose control agent for patients with Type 2 diabetes, whereas rapamycin is used to help prevent organ rejection for transplant patients, in particular for kidney transplant recipients. The goal of the study was to identify natural compounds, or combinations thereof, that work on similar gene expression pathways.

Need for Anti-aging Interventions

The researchers, who are associated with English universities and a Russian institution as well as with a biotechnology company and a dietary supplement firm, noted the US Census Bureau says that by 2030, more than 20% of the US population will be over the age of 65. With that impending demographic bulge, the search is on for interventions that can ameliorate a wide range of conditions associated with aging, including metabolic disorders and dementia. New drug development, they noted, is slow, expensive and fraught with risk, leading to the push to find off-label uses in this arena for already-approved drugs. The researchers said rapamycin has been shown to mimic the effects of extreme calorie restriction, which while showing spectacular effects in mice has proven to be impractical in humans. Metformin, another mTOR inhibitor, has a more complicated story whose mode of action is not entirely understood. The goal of the study was to find an approach using candidate natural compounds that is even lower risk and less expensive.

The mTOR pathway is a cellular signalling network important in cell growth and proliferation, but can cause problems later in life. The mTOR pathway is a particularly important growth pathway essential for early development but also potentially detrimental in later years if not suppressed, contributing to geroconversion, cellular senescence, disease and decline," the authors noted.

Compounds scored in pathway similarity

The screened compounds, which were restricted to those with GRAS status, were scored for their

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similarity to, or better put, their ability to mimic, the effects of the two drugs. On this ranking, withaferin A, an active constituent of the Ayurvedic herb ashwaganda (Withania somnifera) came out on top. "Withaferin was the top-scoring compound for gene-level similarity to metformin using the conventional statistical approach and also displayed significant pathway- and gene-level similarity to rapamycin," the researchers said.

Other top performing compounds included ginsenoside, the active component of ginseng, allantoin, a compound found in yams, the omega- fatty acid gamma linolenic acid (GLA) apigenin, a compound found in many plants including chamomile, celery and EGCG, or epigallocatechin gallate, a compound found in green tea. The researchers also used their bioinformatics approach to evaluate combinations of some of these compounds, to see if they exhibited synergistic effects. They found that some combinations outperformed the single compounds in their statistical analysis, with a combination of withaferin A, ginsenoside and GLA showing promise.

Low Cost Tool Still Needs Validation

The researchers emphasised that this statistical approach is a tool for identifying promising candidates, but the compounds themselves and the combinations thereof would still need validation via in vitro and in vivo studies. Thus, while it cannot be overstated that our results will require validation, this work reduces a list of over natural compounds to a manageable shortlist of a few strong candidates for metformin and rapamycin mimicry, substantiated by their similarity to the target drugs in transcriptional response, they said. The researchers said their analytical approach capitalises on publicly available data and is relatively low cost. The methods we employ combine and outperform previous methods for pathway activation scoring and capitalise on vast, valuable but underutilised public repositories of microarray data, overcoming significant analytical challenges that have previously hindered their wide-scale use, they maintained.

A 'vaccine' for vision? DHA and metabolites may offer vision protection

By Nathan Gray 06-Dec-2017
NutraIngredients

The omega-3 fatty acid DHA and its metabolites, known as docosanoids, could help to pre-condition vision cells to survive when injured, suggest researchers who liken the effect to a form of vaccine or immunity.

Writing in the journal Cellular and Molecular Neurobiology, the team behind the study report that the omega-3 components not only protect cells critical to vision from potentially lethal initial insults, but also from those that occur in the future. "Our findings support the proposed concept that DHA and docosanoids (molecules made in the brain at the onset of injury or disease) are responsible for activating sustained cellular mechanisms that elicit long-term preconditioning protection," said Professor Nicolas Bazan, MD, PhD, Director of LSU Health New Orleans Neuroscience Center of Excellence.

According to the authors, this pre-conditioning (PC) stimulus is a sub-lethal or pharmacologic stressor that activates a protective response to a future lethal stimulus. This can occur, for example, if the blood supply to an organ is interrupted for a short time and then re-established. In this case, there is a protective response from that first injury which would carry over to a subsequent blood supply shortage –much like the immunity a vaccine confers against future exposures to disease, suggested Bazan and colleagues. "This happens in the heart, brain and retina, as well as other organs," he said. "To harness the therapeutic potential of preconditioning, it is very important to identify the molecules directly involved."

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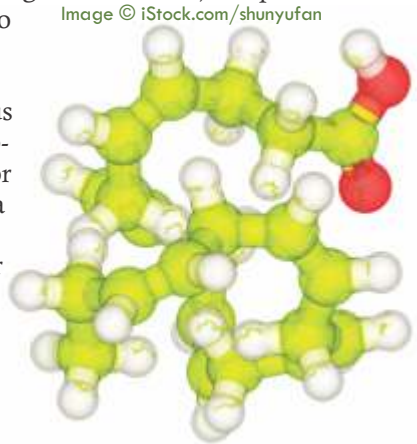
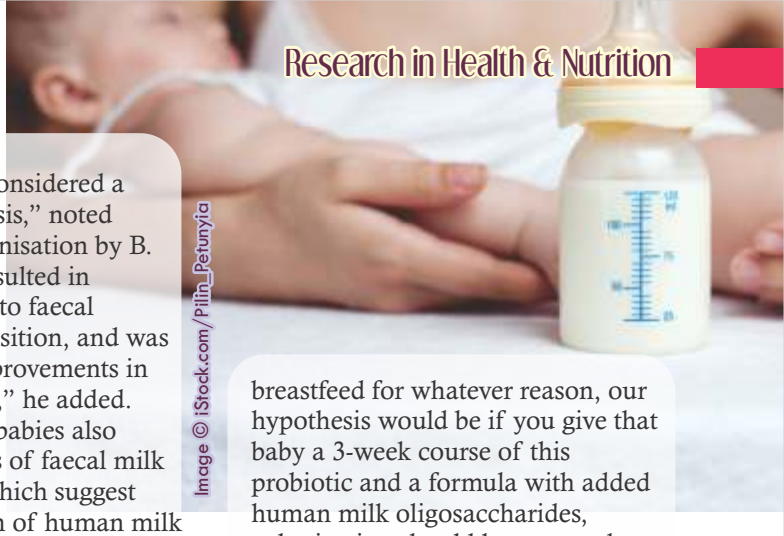


Is DHA the key?

The team noted that sh oil contains two types of polyunsaturated fatty acids (PUFAs) which have distinctly different actions: Omega-3s, such as docosahexaenoic acid (DHA) and omega-6s like arachidonic acid (AA). DHA and its metabolic derivatives, docosanoids, have been shown to possess potent anti-inflammatory and pro-resolving properties, said the team. Meanwhile omega-6 fatty acids and their derivatives have been widely suggested to be pro-inflammatory. Bazan and his team found that although they are often released in tandem, DHA can alter the action of AA.

Furthermore, when they supplemented DHA prior to an oxidative stress insult, the synthesis of protective DHA derivatives increased while AA synthesis decreased over time. "Our findings demonstrate that DHA and the induction of docosanoid synthesis is necessary for preconditioning protection, and thus daily survival, of photoreceptor and RPE cells," the lead researcher commented. "Since omega-3 impairments are associated with neuro-inflammation, which contributes to photoreceptor cell dysfunction and death, enhancing the synthesis of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docosanoids may provide an opportunity for halting or ameliorating debilitating retinal degenerative diseases, such as the dry form of age-related macular degeneration," he concluded.

Probiotic works with breast milk to colonise 'good' bacteria, new study finds

By Tim Cutclieff 07-Dec-2017
NutraIngredients

Babies supplemented with a proprietary probiotic strain maintained high numbers of the species in their gut, even after supplementation had ceased, reports a new study.

Week-old infants who were given the proprietary EVC001 strain of Bidobacterium longum subsp. infantis (B. infantis) for three-weeks retained the bacteria as the dominant species in their gut for a further 30 days after supplementation finished, say researchers from the University of California (UC), Davis. "Even though we stopped giving the probiotic on day 28 of life, the particular organisms we gave stayed in their faecal community out to 60 days and even longer," commented lead researcher Professor Mark Underwood, Chief of the Division of Neonatology at UC Davis Children's Hospital. "They were surviving and dominating, and that's something we really have not seen before."

Supplemented infants also had lower faecal pH and less abundant numbers of harmful Proteobacteria, a pathogenic bacterial type which is recognised to be a marker of dysbiosis. Compared with controls, supplemented infants also had four times lower endotoxin levels and higher concentrations of lactate and acetate, the team wrote in mSphere. "We found that a low faecal pH was negatively associated with Proteobacteria, whose presence in a gut community is considered a signature of dysbiosis," noted Underwood. "Colonisation by B. infantis EVC001 resulted in significant changes to faecal microbiome composition, and was associated with improvements in faecal biochemistry," he added. The supplemented babies also showed lower levels of faecal milk oligosaccharides, which suggest higher consumption of human milk oligosaccharides (HMO) by the probiotic B. infantis. This finding strengthened previous evidence that B. infantis works with HMO in breast milk to help create a beneficial microbiome in infants. "Compared to all the bugs we've tested, this one is a really good consumer of milk oligosaccharides," said Underwood. "It's able to use the sugar molecules in mom's milk better than any other gut microbe, including commensal and pathogenic bugs."

Significance

Previous research has shown strong links between imbalances in gut bacteria (dysbiosis) and disease. Such disruptions to the microbiome may be particularly important in early life, suggests Underwood. Colonising an infant's gut with beneficial bacteria might therefore lower the risk of allergies, asthma, irritable bowel syndrome and diabetes later in life, he hypothesised. Nevertheless, Underwood cautioned, "Future studies will be necessary to elucidate the durability of this effect through later childhood and whether these effects have an impact on overall health later in life." Combining the probiotic into a formula milk containing HMO might also extend the benefits to non-breastfed babies, he proposed.

"The combination of human milk and an infant-associated Bidobacterium show, for the first time, that durable changes to the human gut microbiome are possible and are associated with improved gut function. "If mom can't breastfeed for whatever reason, our hypothesis would be if you give that baby a 3-week course of this probiotic and a formula with added human milk oligosaccharides, colonization should happen and persist as long as they're on that formula," he added. Previous research has found that a high level of B. infantis is associated with healthy infants.

Study details

The Infant Microbiota and Probiotic INtake Study (IMPRINT) included the infants of 66 mothers who were breastfeeding. Starting at age one-week, in the supplement group, mothers fed their babies with Bidobacterium longum subspecies infantis EVC001, for three-weeks. Infants in the control group were not supplemented. The researchers analysed faecal samples during the first 60 days of life to measure gut bacteria composition variations, short-chain fatty acids, faecal oligosaccharides content and faecal pH.

The probiotic strain used in the trial, Bidobacterium longum subspecies infantis EVC001 is manufactured by Evolve Biosystems Inc. For Evolve, the absence of adverse effects, safety and tolerability of the strain was also an important outcome of the study. "This study shows that supplementation with activated B. infantis in combination with breast milk is safe and well tolerated in infants," said David Kyle, CEO of Evolve BioSystems. "The initial clinical safety and tolerability results from the IMPRINT trial are very encouraging and pave the way to restoring the infant gut microbiome to a more healthy state much like that of our ancestors," added Underwood.

FOOD SCIENCE & INDUSTRY NEWS

Which sweet potato variety makes the best French fries?

A study published in the Journal of Food Science investigates the relationship between chemical components of different sweet potato varieties and textural characteristics of french fries made with sweet potatoes.

The researchers evaluated 16 genotypes of sweet potatoes for their chemical constituents, the sensory textural properties of sweet potato french fries, and the relationship between the chemical components and sensory attributes. They quantified the dry matter, alcohol-insoluble solids, starch, sugar, oil content, and the α- and β-amylase activities in raw sweet potatoes and sweet potato french fries. The researchers measured the hardness and textural properties of sweet potato french fries using a texture analyzer. They then conducted a descriptive sensory analysis on 10 attributes with a trained panel.

The researchers found that the dry matter, alcohol-insoluble solids, and starch content in raw sweet potatoes were significantly correlated with overall hardness and with sensory surface roughness, hardness, fracturability, and crispness. In addition, total sugar content in raw sweet potatoes was positively correlated with sensory smoothness and moistness, and negatively correlated with overall hardness. Instrumental measurements were positively correlated with sensory attributes of hardness, fracturability, and crispness, and negatively correlated with oiliness, smoothness, moistness, and cohesiveness. The researchers concluded that dry matter, alcohol-insoluble solids, starch, and total sugar content could be used as indicators to evaluate sweet potato genotypes for sweet potato french fry processing.

Evaluation of sodium alginate in the encapsulation of Lactobacillus plantarum

Food News LATAM

Lactic acid fermentation has been used within the dairy industry for a long time to provide sensory characteristics to the products, such as increased acidity and viscosity.

The main responsible for carrying out said fermentation are lactic acid bacteria (LAB), which consume lactose and produce lactic acid, which is secreted into the medium reducing the pH of the product. This acidification facilitates the digestion of the products due to the reduction of lactose, reduction of triglycerides to shorter peptides and reduction of amino acid chains.

All dairy products, by their nature, contain BAL, but to accelerate the process, specific microorganisms are added, depending on the characteristics that are sought to be produced (Zhang and Cai 2014). Generally the concentration of these microorganisms is reduced after acidification, due to the decrease in lactose. The microorganisms that manage to survive and reach the gastrointestinal tract of the consumer generate several benefits to the health of the same, these microorganisms are known as probiotics.

Probiotics are beneficial to health because they improve the intestinal flora, establishing a balance in the intestinal microbiota similar to that which exists in newborn infants. At birth, the intestine is colonized mainly by bifidobacteria, for this reason lactic acid bacteria are a good alternative to try to reestablish the balance of the intestinal microbiota. The BALs that reach the intestine consume much of the residual lactose that is found inside the gastrointestinal tract, helping lactose intolerant people to be able to digest milk products more easily. Inside the colon you can find pre-carcinogenic enzymes, these enzymes are removed more quickly thanks to the action of probiotics, consequently reducing the incidence of colon cancer. When there is a higher concentration of probiotics than other microorganisms, the incidence of intestinal pathogens is

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reduced by generating competition and production of antimicrobial compounds. The benefits are so important that this has generated a great boom in the dairy industry to increase the production of products with high concentrations of probiotics. To be able to generate these benefits to the consumer, the BAL must not only reach the intestine but also do it in a viable concentration. This viable concentration is 106-107 CFU / g of product. Most products with probiotics do not have the viable concentration when consumed, this is because the changes in pH and temperature from their preparation to consumption accelerate the mortality of microorganisms. These pH and temperature changes are mainly caused by frequent losses of the cold chain. The significant reduction of the probiotic population generates a serious failure in the purpose of its dosage within the product, since the consumer consumes the product mainly for the benefits it will generate, and without the proper dose these benefits do not occur.

For efficient micro encapsulation, the encapsulating materials must be substances capable of forming structures around the bioactive compounds (nucleus), called walls, which protect the nucleus against deterioration and subsequently release occurs under desired conditions. Likewise, one of the most used polymers in this technique is alginate, which forms a highly versatile, biocompatible and non-toxic matrix for the protection of active components, cells or microorganisms sensitive to heat, pH, oxygen, light, among others, factors that food is exposed during processing and storage (González et al., 2012). Whereby, the present investigation will focus on improving the survival of Lactobacillus plantarum in yogurt using an encapsulating medium based on gelled sodium alginate by spray drying, to subsequently evaluate the stability of the capsules. The objectives of this study were:

• Determine the size of sodium alginate capsules with Lactobacillus plantarum and its resistance to simulated gastrointestinal tract conditions.
• To compare the viability of Lactobacillus plantarum free and encapsulated with sodium alginate in unflavoured yogurt.
• To evaluate the physical-chemical and sensory characteristics of the yoghurt inoculated with sodium alginate capsules containing Lactobacillus plantarum.

Sodium alginate capsules with L. plantarum provided protection to the conditions of a simulated gastrointestinal tract. The encapsulation significantly improved the survival of the probiotic L. plantarum, maintaining the concentration of said microorganism within the viable concentration (6.03 Log CFU / g) during the whole life of the unflavoured Zamorano yoghurt. The panellists managed to detect the capsules, promoting the early release of the probiotic when chewing them, decreasing their probability of survival during passage in the gastrointestinal tract. Some important recommendations are to reduce the size of the capsules to be below the detectable range of 100 μm in diameter. Study how the regular consumption of this product improves the intestinal flora of people. Use other dairy products such as ice cream and cheese to evaluate if the capsules can be detected.

"Taste" number one driver of Nutrition & Performance purchases

Nutrition Insight 20 Dec 2017

Comax Flavors has released new primary research on consumers' behaviour, usage and attitudes towards Nutrition & Performance products, which focused on Protein Powder, Ready-To-Drink (RTD) Protein Drinks and Protein Bars.

Key findings included a strong focus on "Taste" as the number one driver of nutrition & performance purchases among all generations, and "Plant Protein" as one of the top five "active ingredients" respondents look for in nutrition & performance products.

This is the fourth study of the company's primary market research program.
"Once reserved for athletes and heavily dominated by whey protein, the protein market across applications including protein powder, ready-to-drink (RTD) and bars is continually evolving. Nutrition & Performance products are now readily available and marketed to people with active lifestyles, and we are seeing activity in plant protein. We wanted to better understand habits and usage among the general population in this market," states Catherine Armstrong, Vice President of Corporate Communications for Comax Flavours.

Nutrition & Performance Findings:

• "Taste" is the number one driver of nutrition & performance purchases among all generations with (47 percent) of respondents citing it as the most important attribute.
• "Flavour" is the second most important attribute driver of nutrition & performance purchases with more than a third (35 percent) of respondents citing it.


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• "Healthy" is the number one reason respondents use nutrition & performance with almost half or more citing it (45 percent) "Protein Powder Users," (50 percent) "RTD Users" and (55 percent) "Bar Users."
• "Organic/Non-GMO" is one of the top five "active ingredients" respondents look for in nutrition & performance products – (44 percent) "Protein Powder Users," (46 percent) "RTD Users" and (41 percent) "Bar Users."
• "Plant Protein" is one of the top five "active ingredients" respondents look for in nutrition & performance products – (34 percent) "Protein Powder Users," (20 percent) "RTD Users" and (41 percent) "Bar Users."
• "Chocolate" and "Vanilla" flavours are top performers among all respondents who consume nutrition & performance products.
Protein Powder Findings - Among respondents who consume "Protein Powder":
• 37 percent find "formula content" an important attribute in purchase intent.
• 44 percent use it in "Dairy/Non-Dairy Preparations" while 31 percent use it in "Sweet Preparations" and 19 percent use it in "Savoury Preparations."
• About a quarter (26 percent) of respondents consume "Berry" flavours while 21 percent consume "Tropical" flavours.
• "Apple," "Coffee" and "Peanut Butter" flavours are equally consumed (19 percent) by respondents.

RTD Findings - Among respondents who consume "RTD":
• More than a quarter (29 percent) of respondents drink "Berry" flavours, which is most popular among the Silent Generation (38 percent), Gen X (35 percent) and Gen Y (30 percent).
• More than a quarter (28 percent) consume "Coffee" and "Tropical" flavours.
• Shy of a quarter (22 percent) of respondents drink "Citrus" flavours; Gen Y (31 percent) and Gen X (27 percent) are the heaviest users.

Bar Findings - Among respondents who consume "Protein Bars":
• More than half (54 percent) of respondents consume "Peanut Butter" flavours; the Silent Generation (71 percent) are the heaviest consumer compared to Gen Y (38 percent).
• Shy of a third (32 percent) of respondents consume "Indulgent" flavours.
• More than a quarter of respondents consume "Apple Pie" (29 percent), Berry (27 percent) and Coconut (27 percent) flavours.
• 8 percent of respondents eat "Savoury" bars.

The Nutrition & Performance study was conducted in May 2017 with 1,000 US respondents aged 18-70+; half were female, and the other half were male. In this study, Gen Z is defined as those born 1996 and later; Gen Y born 1977 to 1995; Gen X born 1965 to 1976; Baby Boomers born 1946 to 1964; Silent Generation born 1925 to 1945.

Booming Indian food service sector to grow by $30b over five years

By RJ Whitehead 20-Dec-2017 Food Navigator Asia

India's food service industry will increase in value to Rs5.5tr (US$84.5b) in the next five years, representing an annual growth rate of 10%.

This is according to an authoritative analysis by Technopak Advisors for Indian business group FICCI, which took the industry's current wealth of Rs3.5tr as its baseline.
The report also predicted that the number of Indians directly working in the segment would rise to 9m — an increase of 3.5m by 2022. "The Indian food industry is poised for huge growth," it said. "It has emerged as a high-growth and high-profit sector due to its immense potential for value addition, particularly within the food processing industry."

Growth driven by trends and policies

Growth is being driven by the increasing number of young and affluent Indians, many with double incomes, who are more accustomed to eating out than the generation before them. Meanwhile, order-in services have been growing quickly to "emerge as a key contributor to the Indian economy, including employment generation, skill development, growth in allied industries and entrepreneurship".

"India's overall retail opportunity is substantial and, coupled with a demographic dividend and rising Internet penetration, strong growth in retail and e-commerce is expected ," said Sanjaya Baru, FICCI's secretary general, adding that government policies such as Make in India and Digital India have successfully provided stimulus to the food service sector. Mumbai and Delhi NCR account for 22% of the market, followed by Pune, Ahmedabad, Bengaluru, Chennai, Hyderabad and Kolkata, which together make up a 20% share.

Still issues to iron out

Yet while food service's growth has resulted in a knock-on effect on agriculture, equipment manufacturers, the supply chain and employment, the analysis warned that the segment still faces issues. "Certain challenges such as availability of quality manpower,

high attrition rate, high real estate cost, fragmented supply chain and over-licensing act as headwind for the growth of the industry." Saloni Nangia, president of Technopak Advisors, voiced hope that the state and central governments will support food service's rise through policy and fiscal measures. "For the rapid growth of the sector, the government should grant it industry recognition and facilitate the easy availability of working capital loans to players through policy formulation," she said.

The FICCI report also criticised the lack of involvement by industry bodies, such as the National Restaurant Association to lobby governments for favourable policy moves. "Efforts have to be made to remove the various factors that are impediments to the growth of the industry and impacting the smooth functioning of business operations," it added.

Quinoa milk, coconut milk and evaporated milk in cream ice cream

Food News Latam December 14, 2017

What is the effect of the concentration of quinoa milk, coconut milk and evaporated milk on overrun, apparent viscosity, melting, titratable acidity and general acceptability in ice cream type? Quinoa is the only vegetable food that has all the essential amino acids, trace elements and vitamins required by humans.

The essential amino acids are found in the core of the grain, unlike other cereals that have them in the exosperm or husk, such as rice or wheat. In 1996, quinoa was classified by FAO as one of the promising crops of humanity not only for its great beneficial properties and its multiple uses, but also for considering it as an alternative to solve the serious problems of human nutrition.

The fruit of the coconut is well known in Peru, where it is abundant, especially in the north coast and the jungle, places where it grows wildly, as well as, in plantations dedicated to the cultivation of this product, the juice that it has is generally consumed, inside, and the endosperm is used in multiple preparations of artisanal and industrial pastry.

Conservative and very traditional, this is how the Peruvian consumer can be described. However, this has not been a barrier for Peruvians to "launch" for new trends and allow the ice cream market to show greater growth in recent years and continue its trend until 2017.

Thus, new tastes and flavours have allowed the number of ice cream parlours in Peru to have gone from 470 in 2007 to 811 at the end of 2012, which represented a growth of 72.6%, according to a study conducted by Euromonitor International. And for 2017, the market research firm, projected that the Peruvian plaza has 1133 ice cream parlours, which would mean an increase of 39.7%.

In the investment presented by the Private University Antenor Orrego found significant effect in ice cream type overrun with coconut milk; on the apparent viscosity with coconut milk; on the titrable acidity with milk of quinoa and evaporated milk; on the fusion with evaporated milk and on general acceptability with quinoa milk, coconut milk and evaporated milk.

The best formulation had 7.4% of quinoa milk, 26.64% of coconut milk and 39.96% of evaporated milk, with responses of 54.32% of overrun, 1784 mPa.s of apparent viscosity, 86.56% of fusion, 0.07% expressed in acid lactic acidity titratable and 7.36 points of general acceptability.

Perform a rheological characterization of ice cream type cream since viscosity is one of the main characteristics of product quality. Carry out a study on the texture of ice cream type, taking as reference handmade ice cream.

It is recommended to use some dye allowed to improve the colour of ice cream type. Compare cream type of quinoa milk cream, coconut milk and evaporated milk with commercial handmade ice cream. Measure the solids content of quinoa milk and coconut milk.

Single or multi-strain probiotics: Where is the industry going?

By Tim Cutcliffe 0-Dec-2017 - NutraIngredients

The question of whether a single probiotic strain is more efficacious than a mixture of strains continues to be a subject of intense debate, says one expert. e by 2.5% per annum to 2020.

As part of an expert panel at the recent European Microbiome Conference, Professor Denise Kelly provided some insights.

Kelly is a specialist in research on the human microbiome and a Venture Partner with Seventure, a private equity company specialising in investment opportunities in the field of the microbiome. A key benefit of using a single strain product makes it easier to understand the mechanism of action, even if the effect of it was pleiotropic, suggested Kelly. Currently the trend appears to be more towards the complex mixtures of strains, although the importance of notable species should not be ignored, she argued. "I don't believe that single species if they are keystone species won't have an impact, I think they will. The reason why there has been a move to complex mixtures is basically there's a real belief in the ecological approach to controlling an ecosystem", Kelly continued.

"Dysbiosis is a term no one likes, but if you have not got a healthy gut then the idea is that the only way to support a very diseased unhealthy gut is to bring in a nice healthy consortium. A bug doesn't live in isolation and the real functionality comes from the ability to interact not only with its neighbour but also with the host If you look at the metabolome of a consortium, its completely different from bugs acting in isolation.

"There are some phenomenal companies who are working at platform level and they look at cross talk and cross feed between bugs. So I think the consortia ecological approach will work. The issue is which consortia will work." Kelly nevertheless believes that based on evidence from recent meta-analyses, the efficacy of two or three single strains look very promising. Independent of whether single or multi-strain solutions are pursued, hard science is critical argues Kelly, concluding that "The opportunities in the microbiome field are really massive out there."

Insects and lab-grown meat prove testing times for food quality services

By Will Chu 05-Dec-2017
Food Navigator

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The rise of 'new' raw materials such as insects and lab-grown meat has placed further demands on food safety testing services already wrestling with improving current analytical methods to offer faster turnaround times. These services have to balance food industry freedom to innovate and experiment with consumer and regulatory agency expectations to maintain a safe food product.

But with the rise of plant-based meats, GM ingredient use and even edible packaging is the pace of innovation overtaking the development of techniques designed to detect contaminants and impurities in these complex food matrices? "I think the innovation is there," said Dr Jan Knight, managing director of contract testing firm Knight Scientific. "There are also the handheld devices that are getting much more user friendly."

"People that are using this for one field should be looking at applying this to this emerging market. The technology is there, they probably haven't realised that there is a market there."

"Traceability equals reproducibility. You may get an exciting product but can you repeat it? Standards right from the beginning when doing anything and this is really what it's all about."

With lab meat in particular, emerging testing technologies such as in-line viable kits that recognise specific strains of cell lines could well play a more prominent role to make it easier to verify new organisms and track the product through the food supply chain. Likewise Dr Knight has developed a range of ABEL test kits that can be used to measure the antioxidant potency of different antioxidants in food when challenged by a range of different free radicals and other oxidants.

Adapting toxicity testing

The novelty of these raw materials gives rise to an alternative approach that aligns them with other foods already recognised as safe – a course of action that Dr Knight thinks may involve a collaborative effort. "You'll find that different labs test for the same thing in different ways. There are an awful lot of toxicity testing in environmental monitoring that could be adapted," she said.

"Likewise, you would have to be looking at the processes involved in the preparation of this material. For example, in the preparation of insects they will need to undergo freeze drying or grinding or making into extracts, there may be some properties on the skin that need to be looked at. So I think you need to keep thinking of where these contaminants could come in and how to deal with them."

"In developing insects, you'll want to decide when you'll be harvesting them. You would also need to ensure that they are also t and healthy to start o with. Make sure you've got the organism in the fittest condition possible, for when you start your next process. The growth of lab grown meat has placed a spotlight on how the EU will regulate this emerging field of agriculture. From a lab-testing

perspective, questions have been posed as to what safeguards are appropriate to best ensure or verify the safety of this raw material."With any sort of culture containing living cells, you must ensure that you haven't got any mutations," said Dr Knight. "You want to be able to monitor the cell line as they will change over subsequent generations." "There are also biocompatibility issues," she added. "You would need to ensure that the materials you have selected to grow this culture in is appropriate and does not interfere with the growing culture."

Future EU considerations

On future EU regulation Dr Knight, a scientist involved in developing research methods into inflammatory diseases, biocompatibility of medical devices and antioxidants and diet, hoped the regulatory authorities would keep an open mind.
"Like the medical device sector, it's the best test available at that time, which means that if something better comes along, you can substitute it," she said. "In drug testing, we're stuck with mandatory animal testing." "Let's hope in this new emerging field that the tests evolve to help you get these products on the market and that the regulations allow these new tests to be introduced and improve on whatever you're looking to attain."

"Regulators need to be informed that the innovations that need to be controlled will best be done if innovations are permitted in the testing phase, like they do with the medical device directives. Here, you say this is an actual group of tests, which you can select from. If a new test comes, obviously it will have to go through a lot of processes to prove that it is better. What we want though is to avoid inferior tests that are available now when you've got innovative food materials, so let's hope that they evolve at the same time."

'Efficiency and Quality' critical to Indian poultry success

By Aidan Fortune 28-Nov-2017 Food Navigator Asia


Image © iStock.com/ferozeea

The Indian poultry industry is at a crossroads and needs to embrace efficiency and quality to thrive according to the chairman of the Compound Feed Manufacturers Association (CLFMA).

In his keynote address during the knowledge Day held at Poultry India 2017, B Soundararajan said: A strong focus on improving efficiency and quality is critical for the next wave of growth for India's livestock industry. India's poultry industry is one of the most efficient globally and is a well-recognised contributor towards the nation's food and nutrition security, employment and, most importantly, poverty alleviation. He explained how important the poultry industry was to the country. It is the source of livelihood for millions of farmers mainly, smallholders and is the foundation of rural India's prosperity. India's poultry industry has been growing at over annually in the last few years and I am optimistic about the growth accelerating in the near future. Apparently, next five to 10 years are extremely critical for the sector to maintain its growth and strengthen its competitiveness.

Exciting economic transformation
Soundararajan said that in fast-growing developing economies like India, south-east Asia and parts of Africa, demand for protein is increasing and consumers preference and food consumption patterns are evolving. "As India is going through exciting demographic and economic transformation, consumers increasingly seek better health through food. They are getting more demanding and their preferences are changing much faster than the previous generations. Issues such as food safety and quality, judicious use of inputs such as antibiotics and adoption of best practices are, nowadays, more important for them and the industry must do more to not only meet but exceed those expectations. Consumption of processed foods including dairy products and meat is bound to go up significantly as currently, only about - of the chicken meat consumed in India is processed. India's dynamic meat sector is up for the challenge, being one of the highly efficient producers of meat, milk and eggs in the world.

Soundararajan also urged that more be done to help those in need. In his speech, he highlighted that India was ranked 100 out of 11 in the recent Global Hunger Index (GHI) report from the International Food Policy Research Institute (IFPRI). It revealed that one-fifth of the children in the country under the age of five are underweight and at least a third of the children are stunted. "Not just in the financial ratings, we must also look at the s of food- i.e. availability, accessibility and affordability, he said. The country needs a renewed focus on enhancing agricultural productivity, food safety and quality. All inefficiencies and roadblocks in the food value chain that stand between the poor, hungry and malnourished population and its due share of safe and nutritious food are to be removed with a great sense of urgency.


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More than half of Singapore's food waste could be avoided

By Lester Wan 05-Dec-2017 Food Navigator Asia

Food makes up half of the waste thrown away by each Singaporean household each day and, out of that, more than 50% of the food waste could have been prevented.

A four-month study of 443 households and waste samples from 279 of them revealed that more than half of the food waste could have been saved by not over-ordering, over-buying or over-cooking. The National Environment Agency (NEA) said that the amount of avoidable food waste was equivalent to each household throwing away a 2.5kg bag of rice each week. Staple foods such as rice, noodles and bread are the most commonly wasted. The study also found, 27% of households had leftovers after a meal at least half the time, while 24% said they often threw away spoilt or expired food. The top two reasons were buying too much and food items being hidden at the back of the fridge. In the past 10 years, food waste in Singapore has risen by 40%. It was said that, in 2016, the amount of food waste generated was equivalent to the weight of over 3,500 MRT trains — about 791,000 tonnes. Furthermore, as Singapore imports a large proportion of its food, many different resources are required to produce, transport and store food, including energy and fossil fuels.

Dr Amy Khor, senior minister of state for the Ministry of Health and Ministry of Environment & Water, said, "If everyone does their part to reduce food waste, we also save on the resources needed to produce the food, as well as to dispose of it."

At the current rate, the NEA estimates that Singapore will require a new waste-to-energy plant to be built every seven to 10 years, and a new landfill every 35 years. This is even more alarming considering Singapore's land scarcity.

The role of food producers and businesses

Among the households, 54% felt food producers and retailers could help. Suggestions included packing food into smaller portions at supermarkets and having different portion options at food establishments. The NEA's food waste minimisation guidebooks encourage businesses to engage consumers to reduce food wastage and to donate their unsold or excess food to food distribution organisations. "Many businesses fail to realise that by donating their excess food, they are actually helping the environment by giving the food a new lease of life, and being mindful of the other natural resources like paper and energy that go into producing food," said Nichol Ng, chief officer of The Food Bank Singapore.

Novel ways to address an old problem

Since the NEA's Food Waste Reduction Outreach Programme was launched in 2015, it has trained more than 400 ambassadors to share food-saving tips such as buying, cooking or ordering only what you need. Other tips include making a shopping list to avoid impulse buys, asking for less rice or noodles based on one's appetite, and using leftovers to cook the next meal. The NEA guide on the Clean & Green Singapore website contains more food waste reduction tips, as well as recipes to make use of leftovers. The campaign has also led to more than 150 schools having organised food waste reduction activities this year. Greendale Primary School reduced food waste from 17.9kg to less than 10kg per day, and Admiralty Primary School from 24kg to 17.5kg per day. Food waste and loss is a huge issue throughout Asia. Previously, it was reported that the total amount of food lost and wasted in China amounts to more than 35 million tonnes — enough to feed more than 100 million people.

Special report: As incomes increase, why are organic food sales in Asia not yet soaring?

By Gary Scattergood 05-Dec-2017 Food Navigator Asia


Image © iStock.com/valentinrussanov

Despite the fact that disposable income is growing and the middle class expanding, sales of organic food in Asia still lag far behind that in the rest of the world.

Although it is home to 8% of the world's organic farmland, organic food sales in Asia account for just 6% of the global total of US$82bn. And despite being projected to grow by 10% year-on-year to 2020, organic sales today account for less than 1% of total food sales in across Asia — even in the top three markets of China, South Korea and Japan. Factoring in the high GDP of countries such as Singapore, Hong Kong and Macau, as well as strong per capita income growth in emerging markets such as Indonesia, China and the Philippines, it is strange that sales are not growing exponentially. According to Amarjit Sahota, president and founder of Ecovia Intelligence, the main hindrance to the organic industry in Asia is a lack of consumer understanding.

"I believe consumers want organic and will increasingly want organic, but at the minute, I'm not sure they really understand what organic agriculture is, and what it is in relation to claims such as natural and green," he said. "Only by better educating consumers will we build demand."

Food scandal scares

It is also interesting to note what is driving current organic sales in the region. Unlike North America and Europe, where consumers trust the perceived health benefits of organic food, the Asian market is primarily driven by food safety fears, especially in China. So in a sense, consumers are not seeing the inherent benefits of organic food but are instead comparing it to products involved in food scandals. Sahota said: "We don't want people buying organic just because they are scared of conventional products."

Health food hurdles

In addition to problems at the consumer level, suppliers, manufacturers and retailers must overcome certain hurdles if organic food is to establish a strong foothold in Asia. Joost Hamelink from Tradin Organic said that when it comes to ingredients, the organic market is still relatively immature and subject to considerable supply fluctuations.

This is compounded by the three-year conversion period farmers need to switch from conventional to organic agriculture, and climate change contributing to erratic rainy seasons, which affect subsequent harvest times. However, Hamelink does see signs of hope, both globally and regionally. "We are seeing some rapid improvement in organic technology around fertilisers and pest management," he said.

"Investment in farmer field schools is also growing, and we are seeing this pay o as better practices lead to higher yields. Meanwhile, the diversification (of ingredient sources) is also helping steady supplies."

While there may be improvements for suppliers, there are still significant challenges for the region's manufacturers.
Apart from a few notable exceptions, a large proportion of organic finished products sold in Asia are manufactured outside of the continent, with firms in the region concerned about ingredient prices and low consumer demand. But if manufacturers can still make decent returns while producing in Europe's higher wage economies and exporting to Asia, one does wonder why more regional producers don't take the plunge. One likely reason is the absence of developed retail channels for organic products in Asia. While European and US manufacturers have access to dedicated organic and natural retailers — or at least, mainstream supermarkets with sufficient shelf space for organic goods — in much of Asia, this is not the case.

Sahota said: "Most of the retail opportunities are in individual, independent stores and that's a big problem for producers. How do they target them all? Furthermore, if you go to Indonesia or Vietnam, you will not see organic foods on many supermarket shelves."

Asia's manufacturers and consumers are also hampered by the vast array of organic accreditation schemes in the region. Not only does this cause consumer confusion, it also undermines the potential for exports due to the time and effort required to full the varying standards. Indeed, in China alone, there are 26 logos, with countless more across the region. Many supermarkets in Asia lack shelf space for organic produce and products

Not all doom and gloom
The nal problem for Asia's manufacturers is that they do not have the option of producing organic own-label products for retailers — because they simply don't exist yet. Compare this to Europe, where some of the biggest organic brands are own-label, and it is easy to understand why Asia's manufacturers struggle to see the scope for major opportunities. Despite this, Sahota says it's not all doom and gloom for Asian manufacturers who invest in organic food. He rightly points out that there are organic supply shortfalls, with demand threatening to outstrip supply, especially in North America. "That's why exports are going in," he said, adding that "the US has trade agreements with many countries to facilitate this, and there are large and well-established businesses across the supply chain to help with market access."

Hamelink also sees many opportunities for Asian suppliers and manufacturers both regionally and globally, arguing it is only a matter of time before the organic sector scales up. The market here is still pretty small, but if European manufacturers can sell to Asia, then there have to be opportunities for local manufacturers too," he said.

Preserve of the Rich?

It is often said, rightly or wrongly, that organic food is the preserve of the rich. Sahota disagreed, saying that even if that were true, it would not prohibit organic food from taking off in Asia. "All too often, people say price is a barrier and many people in Asia can't afford it. But even if you believe organic is only a phenomenon for rich countries, seven out of 10 of the richest countries will soon be in Asia, and they will only get richer. This is a false argument and we will see organic continue to grow."
Sahota and Joost were speaking at the Sustainable Foods Summit in Singapore.

Individual snacking category hits $33 billion, Nielsen data

By Stephen Daniells 30-Nov-2017 Food Navigator USA

Image © iStock.com/flyparade

Snack products with specific healthful claims have experienced the strongest uptick in sales, say a new insights from Nielsen, as the category reaches 33 billion in the US.

Consumers are increasingly picking up snacks to curb their hunger between meals or to replace meal completely, with 98% of American households purchasing snacks at least once for quick and convenient consumption. Annual household spending on individually-packaged snacks has increased 1.1% over the previous year, according to the Nielsen data. All snacking categories have seen increases in their sales, with bars experiencing the strongest absolute dollar growth, followed by jerky, and cookies/crackers. Sales for those three categories alone have increased $1.6 bn in just three years (2013-16).

Dairy snacks account for 22% of individual snacking dollars, but the highest year-on-year growth have been seen for salty snacks (+6%), cookies/crackers (+6%), jerky (+5%) and produce (+5%), says Nielsen.

Label claims

The strongest uptick in sales are being driven by products with healthful clams, particularly snacks making non-GMO claims (+18.2% for each of the past five years), free from artificial colours/flavours (+16.2%) and no/reduced sugar claims (+11.3%). For comparison, the average snack product has seen an increase of only 1.2%.

"Yet as consumers strive to make healthier life choices, convenience is still king," states the Nielsen Insights. "When shoppers make quick trips to the convenience store, they are purchasing less healthy options, possibly because the healthy assortment they are accustomed to at conventional stores are not available

"However, with 44.2% of consumers willing to pay premium prices at convenience stores, there is an opportunity to grow healthier snacking options in this channel. Additionally, 33% of convenience store shoppers plan to purchase fresh food at convenience stores in the future, opening up the opportunity for innovation to reach the consumer on this trip type"

This milk tea which looks like water is taking Japan and Singapore by storm

By Lester Wan 0-Dec-2017 Food Navigator Asia

It might look like a bottle of water but this latest offering from Suntory actually tastes like and has the texture of milk tea. Released in Japan in September, Suntory Tennensui Premium Morning Tea (Milk) has now also found its way to some Singapore supermarket shelves - before quickly selling out.

Suntory revealed the product is made by boiling water and infusing the vapour with the aroma of tea as it passes through loose tea leaves. It then rests and cools in a condenser as a clear liquid, which appears much like water. While this process allows the water to retain the aroma and flavours of the black tea, the water and tea do not come in to direct contact, thus no colour is transferred into the water. Furthermore, by utilising lactose and milk minerals, which are transparent, the flavour of milk is carried into the drink, yet allowing it to remain clear.

Suntory said that this process achieves "the richness of milk" - and the "smooth yet rich flavour of milk tea". The product is primarily sold in Japan at the recommended retail price of ¥131 for a 550ml bottle and ¥115 for a 280ml bottle, which is only available from a vending machine. The 550ml bottle was sold in Singapore for S$2.60 (US$1.90) at FairPrice Finest supermarkets and S$2.50 at ChocoExpress.

The Japanese drinks giant said the tea was primarily marketed in Japan. In Singapore, Tanesei Trading Pte Ltd, a wholesaler in Japanese food, confectionery and sake products, directly imported the drink from Japan. FairPrice expects new stock of Suntory Tennensui Premium Morning Tea (Milk) to arrive within a few weeks.

According to the store, it started selling the colourless milk tea in October. It was launched in Japan on Sep 26 and has become a social media sensation, with some YouTube videos receiving hundreds of thousands of hits.

Image © nylon.com.sg

This latest product follows the launch of Suntory Tennensui Premium Morning Tea (Lemon) in April. Said Suntory:"e select and use Assam tea leaves, which are perfect for mil tea sing the same production method as Premium Morning Tea (Lemon), we luxuriously extract and use the vibrant aroma of the tea leaves to create a rich aroma (in the drink)"

'Encouraging': Study explores ways to boost healthier vending purchases on campus

By Stephen Daniells 01-Dec-2017
Food Navigator USA

Healthier food choices at college vending machines can be achieved by using principles of choice architecture and point-of-purchase labelling, without affecting financial performance, says a new study from CL.

The study's findings, published in the journal Appetite, shows that approaches such as branding vending machines with a Healthy Campus Initiative sticker, identifying healthier products as with "Eat Well" stickers, and simple reorganization of food items in the machines can lead to much higher purchase rates of healthier products.

"To our knowledge, this study evaluated sales data from a larger number of vending machines than any previous evaluation of healthier vending machines in a university setting, contributing to the growing evidence that healthy vending policies can support healthier eating choices on university campuses," wrote the researchers. "These results are encouraging, and the intervention serves as an example for large institutions considering making similar changes to their food environments."

Location, location, location

The healthier vending space continues to grow, with receptive locations being a key factor in its potential success. Speaking to FoodNavigator-USA earlier this year, Luke Saunders from Farmers Fridge which closed a $10 million funding round led by Danone Ventures, PowerPlant Ventures and Cleveland Avenue earlier this year noted that multiple locations work for healthy vending, but the economics of each are different.

"Our location strategy is pretty diverse, so were in retail stores with our own POS, but were also in offices, hospitals, airports, train stations, museums, and colleges," he said. "The economics arrangements vary, so for offices were seen more as an amenity and sometimes subsidised by employers, whereas in retail, well do a revenue share."

The UCLA team focused on college campuses, and investigated how to boost the purchase of healthier products at vending machines, without losing revenue. "The intervention was part of a larger interdisciplinary effort by the university, called the Healthy Campus Initiative, to promote healthy choices among students, faculty and staff, and was designed in collaboration with leadership from the campus Housing and Hospitality, which operates all vending machines on campus," they explained.

Actions

In addition to the Healthy Campus Initiative stickers and Eat Well labelling, the researchers also positioned the healthier products together in cohesive groups, and arranged large healthier product at eye level in dedicated rows. A third of all smaller snack products were healthier products. Purchase habits were compared to vending machines with their original inventory of healthier and other products. The price of popular candy bars were increased by 25 for all vending machines.

"In a university setting, the redesign of vending machines using principles of choice architecture and point-of-purchase labelling resulted in much higher rates of healthier products purchased without compromising financial performance," reported the researchers.

"The expected count of healthier items purchased from an intervention machine is 8 times higher than that of a comparison machine, and undecided customers who purchased from intervention machines were significantly more likely to buy a healthier product than undecided customers who purchased from comparison machines.

"The findings of this study suggest that health-promoting interventions can influence vending machine consumers without compromising revenue or profit. We encourage institutional leaders to use this study as an opportunity to engage public health and business partners to lend their respective expertise in establishing healthy and viable food environments."


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REGULATORY NEWS

USDA seeks public input on child nutrition food crediting

IFT Weekly Dec 20, 2017

The U.S. Dept. of Agriculture (USDA) has invited the public to submit ideas on food crediting, the system that defines how each food item fits into a meal for the National School Lunch Program and other federal child nutrition programs.

The information collected will help USDA officials better understand its diverse stakeholders' perspectives on navigating today's evolving food and nutrition environment.

To claim federal reimbursement for food served through one of USDA's child nutrition programs, program operators must serve meals and snacks that meet each program's specific meal pattern requirements. The USDA is especially interested in understanding both the possible benefits and any negative impacts associated with possible changes to how certain foods may or may not credit. This would affect USDA's Child and Adult Care Food Program and Summer Food Service Program in addition to the school meals programs.

"Serving meals to kids that are wholesome, nutritious, and tasty is a top USDA priority, and we can best accomplish that goal by listening to the voices of our many stakeholders," said Brandon Lipps, acting deputy under secretary of USDA's Food Nutrition and Consumer Services. "This is an opportunity to improve customer service by helping our agency gain a better understanding of America's thoughts, as well as gathering innovative ideas from all who care about our children's nutritional needs."

Food fortification plans struggling as Indian companies ignore regulatory requirements

By Cheryl Tay 12-Dec-2017
NutraIngredients Asia

Few companies are heeding the Food Safety and Standards Authority of India's (FSSAI) mandatory instructions to fortify edible oils and packaged milk products.

The FSSAI issued the guidelines in October 201, instructing milk and edible oil producers to add vitamins A and D to all their products, but the regulatory body has found that only 12% of the milk products sold in India full the FSSAIs fortification requirements. These include popular brands such as Cream Line Dairy, Dailycious and Mother Dairy. When it comes to edible oils, fewer than half 3% of the companies in the sector are adhering to the FSSAIs directions.

The guidelines dictate that milk brands add 770 IU of vitamin A and 550 IU of vitamin D per litre of all milk products. Edible oil brands are required to add 800 IU of vitamin A and 550 IU of vitamin D per litre of product.

Slow in speed, low in nutrients FSSAI CEO Pawan Agarwal told Indian media: "We came up with the guidelines to address the lack of essential micronutrients in large numbers of the population. Though companies have started following the directions over past few months, the speed has been slow." He added that the purpose of these guidelines was to ensure that at least 40% to 50% of the daily recommended intake of vitamins A and D were met.

India's Ministry of Health and Family Welfare, and the National Institute of Nutrition have pegged 70% of the country's residents as vitamin D-deficient, while 30% are vitamin A-deficient. In addition, vitamin A deficiency is estimated to be the highest among pre-school children % to 50%.

Minor costs, major penalties?

Agarwal said such fortification will incur only a minor escalation in the production cost, about paisa per litre, and as such, shouldn't be a problem for big companies. Partha Mazumdar, a Mumbai-based public health expert said, "Fortification of foods started in 1918, and this led to near eradication of diseases like goitre, rickets, beriberi and pellagra in many countries. "It's good that authorities are coming up with such directions, but there should also be a mechanism to penalise the companies that don't follow the norms. That will improve the compliance rate."

Indian authorities have been trying to introduce more fortified foods to the general public in order to tackle the country's double burden of malnutrition, but have had limited success so far.

Nutritional rating systems encourage healthier choices and boost retailer revenues, study finds

By Elizabeth Crawford 07-Dec-2017
Food Navigator USA

On-shelf nutritional rating systems, such as Guiding Stars, not only help consumers make healthier purchases, but they can boost retail sales by encouraging larger baskets with more expensive items, according to new research.


Image © iStock.com/Natali_Mis

According to data published in The Milbank Quarterly journal from three supermarket chains and interviews with nearly 800 shoppers in Canada, the introduction of the Guiding Stars system "translated to measurable nutritional benefits" by motivating consumers to choose healthier options.

Specifically, investigators led by Erin Hobin of Public Health Ontario, found the implementation of Guiding Stars' three-star rating system to signal good, better and best nutritional choices, prompted consumers to buy 2% and 1.9% more one and three star products, and 0.7% and 1.9% fewer zero or two star products.

"Overall, the mean star rating per product purchased significantly increased by 1.4% in intervention supermarkets relatives to control supermarkets, translating to a change in mean star rating of 1.22 to 1.24 stars per product purchased," the report notes. Analysis of the nutritional value of the products purchased revealed that after the program was implemented, consumers chose on average products with 3.5% and 1.5% less trans fat and sugar and 0.6% and 4.5% more fibre and omega-3 fatty acids, respectively, according to the report.

A closer look at product selection by category also reveals that once the star-rating system was implemented, consumers were more like to purchase healthier products in categories which generally are already considered healthy, such as whole grains and breakfast cereals, dairy and eggs, produce, animal protein and legumes.

Overall, the changes in nutritional value of purchases were "pretty small, but a significant positive change nonetheless, especially looking at the timing of the study," and that the Guiding Stars program was only about a year old in the participating Supermarkets in the study, said Elizabeth Caton, the client services manager for Guiding Stars.

She explained to FoodNavigator-USA that at the time of the study, "Guiding Stars was very, very new at Loblaws [a retail chain in the study], so to see that much change within this study is pretty amazing because it wasn't well known or that robust of a program at that time. So, I think, if they were to do it again, they would see even more interest, knowledge and education of their customers because it is an impressive program up there" in terms of marketing support and consumer education.

Higher Revenues

In addition to leading to more nutritious food choices, the study was the first of its kind to also find that stores with Guiding Stars had higher revenues. "After Guiding Stars was implemented in intervention stores, the mean number of products per transaction increased by 1.6% and the mean price per product purchased also significantly increased by 1.3%, leading to a total revenue increase of 4.2% relative to the control stores," the study reported.

Caton acknowledged that the boost in revenues is "a wonderful thing," but she added the program provides more than just financial returns – it also generates consumer loyalty because consumers "feel that this company is about more than the bottom dollar, and they are about actually helping and supporting the consumer as well."

More Consumer Education Needed

The results from the study also suggest the benefits of Guiding Stars could be boosted if retailers educated consumers more about the program, including which products are rated and how they are evaluated. This recommendation is based on the finding in exit surveys that 47% of shoppers were confused about why some products did not have any stars on the shelf tag and whether that meant the product had not been reviewed or was not included in the Guiding Stars program.

"We have battled internally and externally about trying to decide whether to label products that don't meet our criteria for a star. We made a very conscious decision not to label items that don't earn stars so only items that are good, better, best nutrition for the calories actually get a star on them," Caton said, adding that the decision was based in part on not wanting to come across as "food police," or a diet program.

"Unfortunately, by doing that we do find the consumers are confused. They think these items without stars have never been rated by us or not included in our program," so Guiding Stars and retailers need to do a better job of explaining this aspect to consumers, Caton added. Despite this weakness, Caton said the research supports the notion that overall front of pack or on-shelf nutritional rating systems are helpful for consumers of all backgrounds.

"It is a helpful tool whether you are Maine or Colorado, are of a higher socioeconomic subgroup or lower. Using a system like this is really key for grocery stores and dining facilities because it actually does make a significant change in consumers choosing the best food for their dollar and diet," she said.

Confusion over wholegrain consumption

By Noli Dinkovski 08-Dec-2017 Food Manufacture

Confusion over which foods contain wholegrain is leading to misunderstanding over how much of it people needed to consume, a survey has found.

The vast majority of UK consumers (95%) admitted they didn't know how much wholegrain they should eat – despite 70% acknowledging it was important for their diets – according to the survey of 2,000 people in the UK by Cereal Partners Worldwide (CPW).

Highlighting consumer misconceptions, 7% of people thought bananas contained wholegrain, 10% believed it was typically found in white bread, while 7% said it was contained in white rice. There was also a strong contingent who thought that wholegrain could be found in seeds (20%) and nuts (13%).

Did not understand the benefits

The survey also found that 38% of people don't eat enough wholegrain because they did not understand the benefits. More positively, 63% of participants acknowledged that wholegrain could be high in bre, while 58% said it was good for digestion. However, the broader benefits were not as widely known. Just 50% said it was good for the heart and only 13% thought it could help reduce the risk of type-2 diabetes.

Image © iStock.com/Snappy_girl

Only three countries

Despite the benefits, only three countries – the Netherlands, Denmark and the US – have a quantitative recommendation for wholegrain. The US recommended a minimum of three servings a day (equating to at least 48g), while Denmark recommended between 64–75g a day, depending on gender. The introduction of guidelines in Denmark, alongside a government-backed campaign, resulted in a 72% increase in wholegrain intake.

Scientists develop 'quick, accurate' method to prove palm oil country origin

By Niamh Michail 07-Dec-2017 Food Navigator USA

Identifying the geographical origin of palm oil is now quicker and more accurate thanks to a method developed by Spanish researchers, who claim it could help fight palm oil fraudulently labelled as certified sustainable.

Image © iStock.com/Snappy_girl

The researchers from the Department of Analytical Chemistry at the University of Granada say the method could be used by both governments and industry, responding to a growing consumer demand for proof of palm oil origin.

Palm oil is cheap, easy to obtain and has low production costs so the number of industrial palm plantations has recently been increasing. This increase in the number of plantations, however, has brought with it the destruction of the rainforest, the expulsion of the indigenous population and serious environmental problems such as deforestation and air pollution," the researchers write, and while certified sustainable palm oil is one solution, it can fall foul to fraud.

"The term 'sustainable palm' oil has sometimes been used to make an illicit profit. The labels of some products state that they contain certified sustainable palm oil when in fact the oil used comes from unknown forest plantations. Consequently, customers are increasingly demanding some sort of proof of the geographical origin of products."

According to this novel method they first analysed palm oil samples by liquid chromatography and then applied chemometric and data fusion strategies. By combining these methods - the first time this has been carried out, they claim - they were able to extract the information required to determine the geographical origin of the sample with a low margin of error of around 5%.

Australians want better labels on 'unhealthy' foods, but not sin taxes

By Gary Scattergood 07-Dec-2017
Food Navigator Asia

Almost 80% of Australians want clearer labels on unhealthy foods, but far fewer support taxation as a tool to deter consumption.

In a survey of 2,474 adults in New South Wales, Cancer Council NSW researchers found that 86% of people supported a colour-coded food labelling system, 79% supported displaying health warning labels on unhealthy food, and 73% supported a ban on unhealthy food advertising that targets children.

The research, in the latest edition of the journal Public Health Research & Practice, also found that the most unpopular policy was a tax on unhealthy foods, with only 42% of people supporting such a move. "Restrictions on food marketing to children should remain a priority, given the high public acceptance and evidence of effectiveness," said study co-author Clare Hughes, who is the Nutrition Programme Manager at Cancer Council NSW.

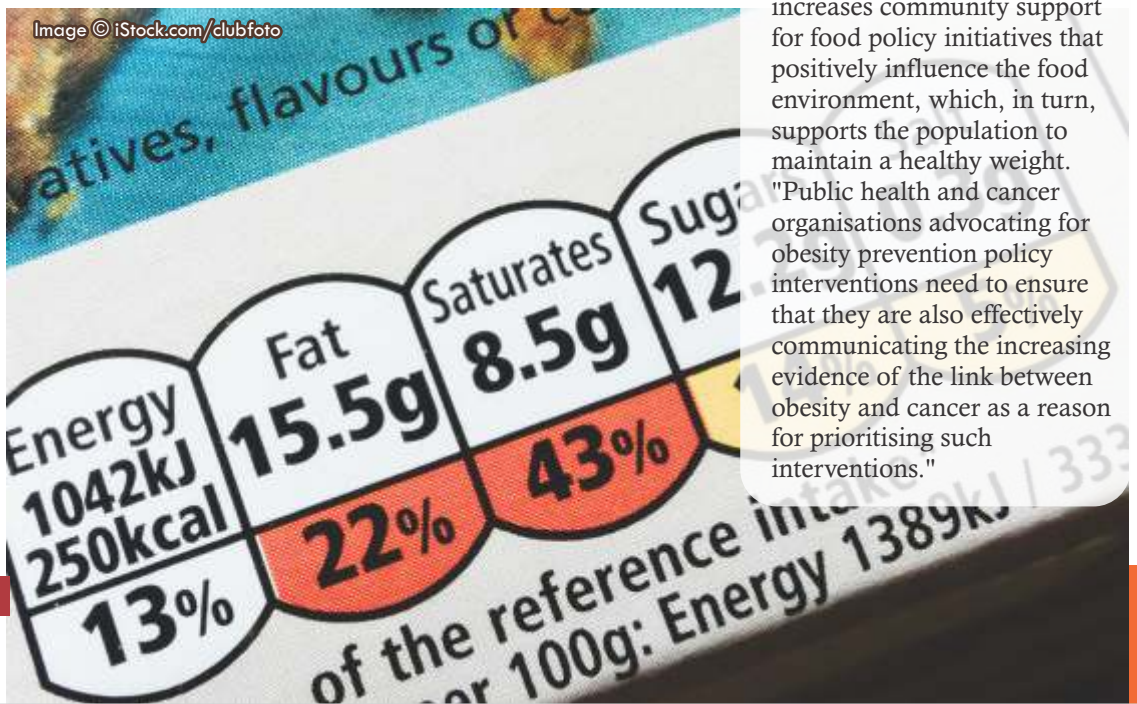
"It is also important to strengthen food labelling laws to ensure only healthy foods can carry claims about nutrition content. This would boost confidence in food labelling and better support consumers to make healthier food choices."

Cancer Cost

The study aimed to identify whether there is a relationship between support for food policy initiatives and awareness of the link between obesity-related lifestyle risk factors and cancer. Recent estimates in Australia show that more than 3,900 cancer cases (3.4% of all cancers) diagnosed in 2010 could be attributed to overweight or obesity, 7,089 (6.1%) to inadequate diet and 1,814 (1.6%) to inadequate physical activity.

The study found support for food policy initiatives was higher among those who were aware of the link between cancer and obesity-related lifestyle factors than among those who were unaware of this link. It concluded " Our finding that people who now about the links between obesity and cancer are more supportive of evidence-based policies than those who are not aware of the obesity-related cancer risk factors is useful to inform public information and framing messaging for advocacy efforts.

"This has good synergy for future social marketing campaigns increasing awareness of the link between lifestyle factors and cancer increases community support for food policy initiatives that positively influence the food environment, which, in turn, supports the population to maintain a healthy weight. "Public health and cancer organisations advocating for obesity prevention policy interventions need to ensure that they are also effectively communicating the increasing evidence of the link between obesity and cancer as a reason for prioritising such interventions."



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India releases product recall guidelines for food businesses

By Lester Wan 06-Dec-2017 Food Navigator Asia

The Food Safety and Standards Authority of India (FSSAI) has released a set of guidelines to make sure that food firms have a proper and clear plan to recall a food product if it is found to be unsafe. This puts the onus of a recall and required procedure on food firms. The guidelines follow the launch of the Food Safety and Standards (Food Recall Procedure) Regulation2017, launched in January this year.

Around mid-2015, the FSSAI had proposed a draft regulation on food recall procedure. The draft regulation was made available to the public for their comments suggestions and objections. The guidelines released include clear roles and step-by-step procedures to be taken. According to the guidelines, the FSSAI will monitor the progress of the recall and assess the adequacy of the action taken by the Food Business Operator (FBO). "After a recall is completed, the Food Authority will make sure that the product is destroyed or suitably improved," it says.

Meanwhile, the FBO carries the main responsibility of implementing the recall, and for ensuring compliance with the recall procedure, including follow-up checks, to ensure that the recalls are successful and that the subsequent batches of food products are safe for consumption.

The FSSAI also said it may review the food license of the firm involved if the recalled food product is related to serious health issues found in consumers. According to the Food Safety Helpline website by the FSSAI, should the FBO not recall the products, consumers can inform the CEO of FSSAI or the Commissioner of Food Safety of the state or territory, who will take steps to determine the need for a recall and instruct the FBO, which will be bound to comply.

Depending on the extent of the recall, the FBO involved should also inform and update consumers through written communication and the media. "Sufficient telephone hotline service should be made available to deal with enquiries," the guidelines state. The FSSAI, as the country's food industry regulator, has been trying for some time to speed up the process of putting in place a national framework for India on the recall of food products if they are found to be unsafe or defective.

Hemp foods in Australia and New Zealand: Legal, on the shelves and set for boom

By Lester Wan 06-Dec-2017 Food Navigator Asia

A new wave of products containing hemp are starting to filter into Australian and New Zealand markets, after the long-banned product was finally permitted for food and nutritional use. In the past few weeks, food products containing hemp seed or oil, such as chocolate, brownies, cereal and even beer, have been launched.

Examples include Western Australia's Rocky Ridge Brewing Co., which has collaborated with hemp grower Chris Blake to make a hemp beer, Dr. Weedy's Hemp Ale. Meanwhile, Melbourne-based The Wild Food Group has launched 'Hemp-nola', a hemp-based cereal blend containing goji berries and diced dates.

More to come

And according to Jeff Clements, marketing manager of Hemp Foods Australia, consumers will soon see a greater variety of hemp food products on the shelves. "Hemp is more versatile and delicious than chia seeds or soy. Australia can expect to see hemp cookies, cereals, beer, butter, breads, burgers, dips, spreads and mil," he said. "Hemp seeds, protein, oil and flowers are highly nutritious sources of plant-based protein and omega-3 and essential fatty acids," he added.

Paul Benhaim, CEO of Hemp Foods, was one of the driving forces behind the campaign to get the product approved for food and nutritional use. He told us earlier this year:


Image © iStock.com/egal

"We've seen how the chia industry has grown we believe that the potential for hemp is significantly larger than that due to its versatility (and) easy protein digestibility, containing all the amino acids and of course, the wonderful omega-3 and omega- essential fatty acids."

Hemp day

The firm currently has an approximately 80% market share of the industry, which is currently valued in the tens of millions of dollars. It sells hemp our, hulled hemp seeds, hemp protein powder and hemp oil in its online store. However, the firm now expects the market to grow exponentially, especially as consumers become more educated about hemps benefits. Clements said: "You will see hemp foods everywhere, from cafes to high-end restaurants, caterers, chefs (restaurants), juice and smoothie bars, and your friends' kitchens."

The Australia and New Zealand Ministerial Forum on Food Regulation gave hemp seeds the tick of approval during Aprils Council of Australian Governments (COAG) meeting. Derived from the cannabis sativa plant, hemp that is permitted for use in food has an especially low level of tetrahydrocannabinol (THC), which eliminates the psychoactive effects present in the drug strain of cannabis. Industry regulator Food Standards Australia New Zealand (FSAN), which recommended that ministers approve the use of hemp, has made it clear that any association between hemp-based products and the drug strain must be avoided.

Hemp product packaging cannot use an image or representation of the plant and word cannabis cannot be used. Benhaim also praised hemps impact on Australian farmers, saying it would create new job opportunities and boost sustainability, while industry trade body Complementary Medicines Australia (CMA) was also in favour of the rule change. Its CEO Carl Gibson told us:"CMA has strongly supported that low-THC hemp be legally designated as a food. The ability to include nutritious hemp-based foods in our diets is a positive step forward for Australians."

Indian governments pro-organic stance welcomed new logo and traceability tracking website launched

By Lester Wan 05-Dec-2017 Food Navigator Asia

India now has one unified organic logo and a new online portal that has been setup for consumers to track the provenance of products with one industry veteran welcoming the pro-organic stance from officials.

Launched by the Food Safety and Standards Authority of India (FSSAI), the new online database (www.jaivikbharat.fssai.gov.in) helps consumers to verify the authenticity of organic foods and allows them to access all the information about the food products maker, the certification system used for the organic labelling and the availability of the products.

The new regulations recognise two existing certification systems by the National Programme for Organic Production (NPOP) and the Participatory Guarantee System for India (PGS-India). Until now, there were two separate logos for these two systems, which was also confusing for some people.

The new Jaivik Bharat logo and new standards will build consumer confidence in organic foods, and will accelerate the growth of trade and commerce in organic foods both locally and in export, said Shri Pawan Agarwal, Chief Executive of FSSAI. The FSSAI was given the authority to combine the previous systems and to regulate the certification of organic food in India.

Image Source: https://jaivikbharat.fssai.gov.in

Sustainable Production

The work on the new regulations began about a year ago. Extensive consultation was undertaken with various groups of people involved in the process of organic certification, including related ministries and agencies, NGOs and farmer organisations. One of India's industry pioneers Raj Saleem, founder at CEO of Sresta, said there had been a change in mindset from officials when it came to organic.

They went from discouraging organic production because of fears it would hit yields, to now accepting it can contribute to sustainable production. "This has been a huge journey. Today the central government and many state governments even provide financial incentives for organic farming," he said.

The firm, which sells organic ingredients and finished products under the 24 Mantra brand, works with 45,000 farmers cultivating 225,000 acres in 11 provinces.

"And our goal is to expand this circle of sustainability by reaching 500,000 acres under organic farming by 2020," he said.

UK takes on food waste with fresh labelling guidance

By Katy Askew 01-Dec-2017 Food Navigator

UK food regulators and food waste campaigners have issued new guidance on food labelling in a bid to tackle the 2m tonnes of food wasted in homes each year. UK food regulators and food waste campaigners have issued new guidance on food labelling in a bid to tackle the 2m tonnes of food wasted in UK homes each year.

The Food Standards Agency, the Department of Environment, Food and Rural Affairs and sustainability NGO WRAP have joined forces to promote best practice in the choice and application of date labels as well as providing storage advice. According to the groups, one-third of food waste is the consequence of how shoppers interpret existing gate labels.

The voluntary guidance targets food manufacturers and retailers. It aims to bring together recommendations that ensure food is safe and meets legal requirements as well as promoting effective storage and use. In particular, confusing labelling is being highlighted as a chief cause of food waste in the home.


Image © iStock.com/vgajic

Environment Minister, Therese Coffey said: "We know that confusing labels can contribute to food waste by suggesting that edible items need to be thrown away sooner than is necessary. "This new guidance will make packaging much clearer for consumers, saving them money and reducing waste."

Changes include a call to use logos alongside text to advance consumer understanding of storage requirements. WRAP suggested the use of a snowflake label to show food can be frozen and a little blue fridge icon for foods that should be chilled.

"I encourage all food businesses, large and small, to use this guidance to help them put the right date mark on food and help to guide people on the refrigeration and freeing of products which are crucial to reducing the amount of edible food thrown away, Coffey noted.

The guide builds on WRAPs 2015 retailer survey, which found an overall mixed-bag in food labelling and storage advice. WRAP reported that changes to products, packaging and labelling made in response to earlier recommendations avoided nearly 150,000 tonnes of food being wasted in 2015, saving families an estimated 400 million. Today's publication carries forward this work in standardised industry guidance.

"A key way to help reduce household food waste is to give people as long as possible to use the food they buy. Labelling information can help with many aspects of this. Telling people clearly how long a product can be consumed once opened, and giving consistent and simple information about storing and freeing, will help people keep their food fresher for longer, and give more options to freeze the food and use it later rather than binning food that could have been eaten," Marcus Gover, CEO at WRAP explained.

WRAP is currently working with some of the UK's largest food companies and manufacturers to help them implement changes across own brand and branded items. Early signs of success include pasteurised fruit juices and hard cheeses switching from the use of use by to best before labels. WRAP also highlighted the use of freeze on day of purchase is being replaced by best practice advice to freeze before the date shown, particularly on fresh meat. Businesses are also examining whether the open life of bagged salads can be extended as part of WRAPs Courtauld Commitment 2025.

Food redistribution

WRAP also highlighted research that found food redistributed from retailers and manufacturers would be increased four-fold. The organisation said its new labelling guidance contains recommendations that could help increase the likelihood that food surpluses are redistributed. It stresses, for example, that Use By dates should only be included on foods where there is a risk of food becoming unsafe in a short period of time and for no other reason.

Increasing the use of Best Before dates is important as foods carrying this date label can be redistributed, even after the date has passed as long as the food is still fit to eat, while 'Use By' items cannot. The guidance also helps demonstrate that it's perfectly legal to do so, which WRAP suggested currently not all organisations are clear about.

HEALTH BITES

Image © iStock.com/cassp

What are the possible benefits of MCT oil?

Medical News Today 6 December 2017
By Lana Burgess

Medium-chain triglycerides are a type of fat that is found in certain oils and dairy products. MCT oil is a supplement made of these fats. But what are the potential health benefits of MCT oil? Many articles in circulation recommend the use of MCT oil. They claim that it can help people lose weight and that it has several other benefits. This article explores the health benefits of MCT oil, as supported by scientific evidence. It also considers the risks around the use of MCT oil, as well as where to source it and how it can be used.

Overview

MCT oil can be derived from coconuts, and is often used to aid weight loss or improve stamina. MCT oil is a dietary supplement that is made up of MCT fats, which are fats that can be found in coconut oil, palm kernel oil, and dairy products. MCT oil is mainly used by people looking to lose weight, or boost their endurance during a workout. Some supporters of MCT oil also claim it can improve the ability to think, as well as help with various forms of dementia.

What are MCTs and why are they different from other fats?

Fats are made up of chains of carbon atoms, and most of the fats in a person's diet are made up of 13 to 21 of these atoms. These are called long-chain fatty acids. In contrast, short-chain fatty acids are made up of 6 or fewer carbon atoms. MCTs refers to medium-chain triglycerides that sit in the middle of the other two types. They are of medium length and made up of 6 to 12 carbon atoms. MCTs are found in coconut oil and are processed by the body in a different way to long-chain fatty acids.

Unlike other fats, they go straight from the gut to the liver. From here, they are used as a source of energy or turned into ketones. Ketones are substances produced when the liver breaks down a lot of fat, and they can be used by the brain for energy instead of glucose or sugar. As the calories in MCTs are used straightaway, they are less likely to be stored as fat. This principle is the basis of the ketogenic diet, which many people believe is an effective way to lose weight.

Potential health benefits of MCT oil

There are several potential health benefits of MCT oil. Some of these are supported by scientific evidence, while others are yet to be proven. Each potential benefit and its available evidence is explored below:

1. Better brain and memory function

The Alzheimer's Drug Discovery Foundation have reported the pros and cons of MCTs in respect of brain and memory function, as well as their potential benefits for those with Alzheimer's disease. But to what extent are the claims surrounding MCTs backed up by scientific evidence? A 2016 review notes that in three studies, the brain's take-up of ketones in people with Alzheimer's was the same as in healthy people. In contrast, the brain's take-up of glucose was poorer in those with Alzheimer's than healthy people. The reviewers also note that ketosis has a slight beneficial effect on thinking ability for those with Alzheimer's. Ketosis is when the brain uses ketones for energy instead of glucose. More research is needed to say with certainty that MCTs or MCT oil can improve brain and memory function. That said, initial research is promising, and there is growing interest in the use of MCTs in this area.

2. Energy boost and increased endurance

MCT oil may help to improve endurance, and provide energy for intense exercise. Supporters of MCT oil claim that it can help boost a person's energy and improve their endurance when they are working out.

A 2009 study found that consuming food rich in MCTs, rather than longer-chain fats, improved the time that recreational athletes could endure high-intensity exercise. This evidence is encouraging but too limited to conclude for certain that MCTs or MCT oil can improve exercise endurance, as one 2010 study notes.

3. Weight loss and improved weight management

A popular claim that supporters of MCT oil make is that it helps with weight loss. This area has been studied the most by scientists. A 2003 study found that MCTs increased the calories and fat that overweight men burned. It concluded that MCTs might be helpful in the prevention of obesity and to stimulate weight loss. A 2014 study found that MCTs led to a greater increase in the hormones that reduce appetite and make a person feel full. This was in comparison with longer-chain fats.

The evidence suggests that MCTs may play an important role in weight loss and management. However, it is important to note that studies have looked at MCTs as a type of dietary fat rather than MCT oil supplements specifically.

4. Lowered cholesterol

MCTs may also have a part to play in helping to protect heart health by lowering cholesterol. A 2009 study that looked at 40 women found that consuming coconut oil reduced bad types of cholesterol and improved good ones. The comparison was to soybean oil and taken alongside a calorie-controlled diet.

As MCT oil is high in the MCTs found in coconut oil, it is also likely to improve cholesterol levels. However, as the study did not look at MCT oil specifically, this cannot be said with certainty.

5. Lowered blood sugar levels

MCTs may also help to improve blood sugar levels and play a potential role in diabetes management. A 2007 study found MCT improved diabetes risk factors, including insulin resistance, in a small group of participants with type 2 diabetes.

Risks and considerations

MCT oil should not be used for cooking. Solid coconut oil should be used instead. MCTs from dietary sources and MCT oil may have some health benefits. However, it is important to remember that when a person consumes these, they are consuming fats. Taking MCT oil adds extra fats and calories to a person's diet. As such, excessive use of MCT oil may not be beneficial and could lead a person to gain weight.

MCT oil supplements are created from versions of food oils, and so are not considered a natural product. It is important to remember that MCT oil has a low smoke point, so it is not suitable for cooking. However, solid coconut oil, which is high in MCTs, can be used in cooking and may be used to replace olive oil or other cooking oils.

Sources of MCTs

MCT oil supplements are available in many health food stores online. Some people prefer to consume MCTs in their diet, which may be more natural than taking supplements. MCTs are found in:

- coconut oil
- palm kernel oil
- milk
- butter

Takeaway

MCTs have many potential health benefits, and taking MCT oil supplements may also be beneficial. While MCTs may not lead to dramatic weight loss, they may be able to play a role in overall weight management. They may also help boost energy and endurance, although more research is needed to prove this benefit.

A growing body of research also suggests that MCTs may improve a person's ability to think and fight the effects of conditions such as Alzheimer's. Again, this is an area that needs further study. It is worth noting that consuming MCTs from dietary sources may mean that a person gets more nutritional benefit than taking MCT oil supplements.

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