MAR 2017

PFNDAI Bulletin

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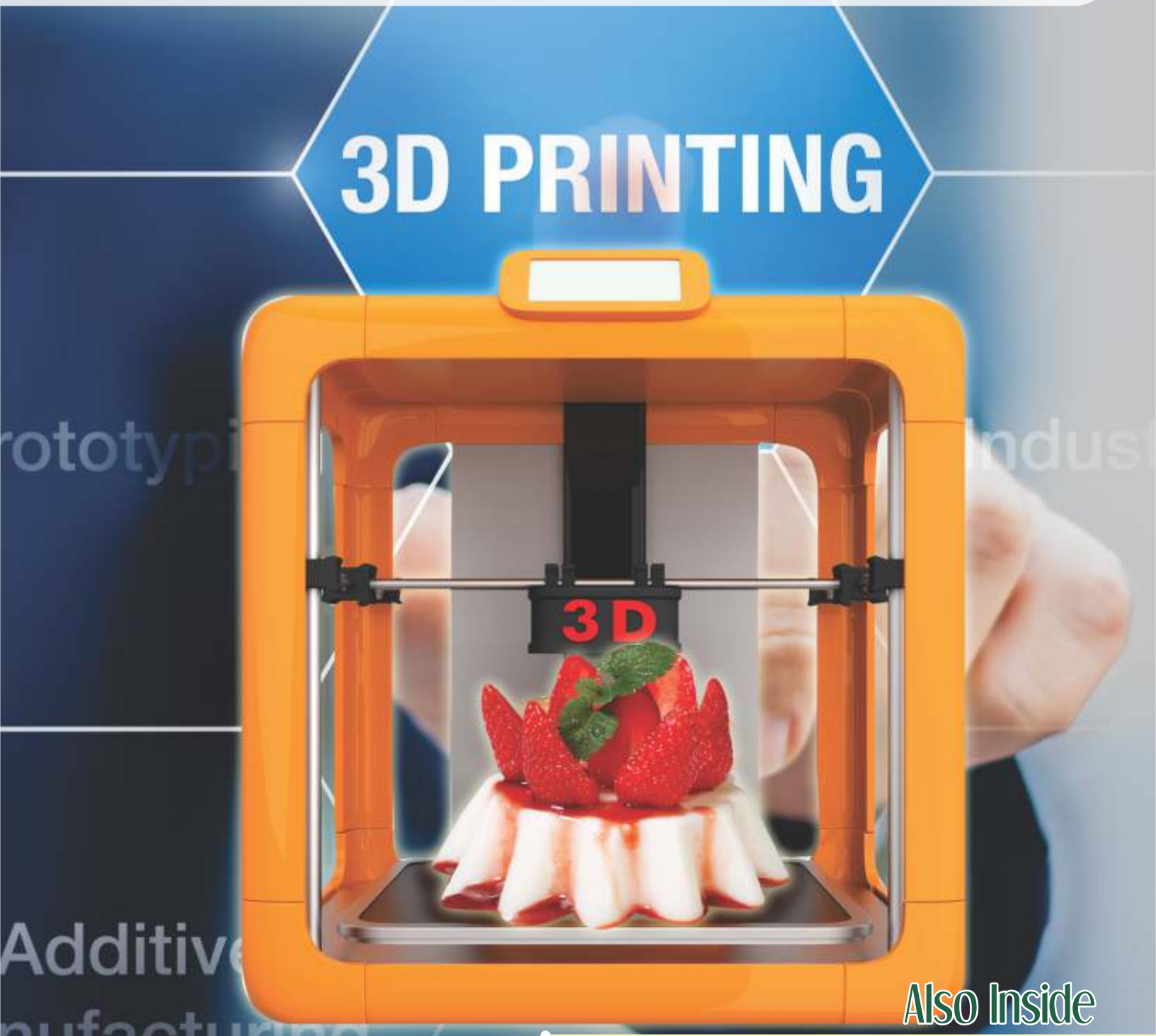
FOOD, NUTRITION & SAFETY MAGAZINE



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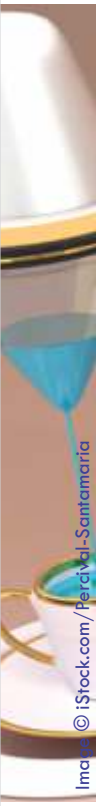
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EDITORIAL

Industry and FSSAI have taken up an important project namely training the Public Analysts by industry. This was never heard of. The cooperation between industry and regulatory body? We feel that this is a very good beginning. Ultimately both of them have the same final objective: providing the consumer safe and nutritious food. This will ensure that consumers will buy the products again and again which is what industry wants and it is the authority's responsibility entrusted by the government to ensure safety of foods. Thus it would be a win-win situation.

For many decades there was always a complaint from industry that public analysts are not trained properly for the job and the analytical procedures they use are either outdated or incorrect. Thus there was always the criticism of analyses not being carried out properly leading to wrongly implicating industry for unsafe or lesser quality food products. This would result in many actions including prosecutions which either would tarnish the industry and leading to a lot of time, money and efforts being spent on these proceedings on both sides.

There would certainly be some unscrupulous individuals trying to make quick buck, would indulge in producing and marketing lower quality and/or unsafe food products. Such practices should be curtailed. However, most of the industry would be interested in running their operation of producing and marketing safe food products. If the analyses were carried out properly this would become evident and much of the unnecessary harassment due to faulty results would disappear.

We welcome this step and congratulate both industry and the authority and continue this cooperation in all the spheres of food industry interaction including enforcement as well as rule-making process. Some years ago efforts were taken to train the food safety officers. That was a great initiative and we hope that it is continuing. On the job training for these officers is quite helpful but it would again make life much easier for a many honest food business operators if properly trained safety officers are available.

Rulemaking is another critical area which would make a great difference if both industry and the regulators come together and make sound rules that would ensure food safety as well as ease of doing business for industry. The rules are always creating much confusion and due to differences in understanding of these by manufacturers as well as enforcers, a lot of problems arise. Industry does not really want lax regulations but just and easy to understand and implement. There should not be ambiguity in their interpretation which becomes a source of problems. There are many excellent international regulations and we want to be part of the global system. So let us try to fully harmonise with global food regulatory systems so not only will we have uniform and safe laws there will be less problems in global trade.

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Executive Director
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3D PRINTING

By
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Cooking is an important activity, whether at home or commercial level. Many beautiful creations require a long time to make and is associated with many challenges. 3-D printing is a new technology that could revolutionize cooking. Ithas the potential to be extremely versatile and useful, as it integrates printing along with digital gastronomy techniques and consists of building complex solid forms layer upon layer. It gives us opportunities for customized novel food fabrication; by transforming a digital 3D model directly to a finished product.

3-D printing is also known as Food Layered Manufacture or Additive Manufacturing and does not require either object-specific tooling, or molding, or human intervention. Based on the principle of stereo-lithography, it consists of a system for generating three-dimensional objects by making a cross-sectional pattern of the object to be generated. The first step is to use a 3-D scannerormake a printable 3 D model computer-aided design software, split the product into layers which are then successively printed, one on top of the other, according to the layers specified. Various aspects can be customized such as thickness of the layers, temperature, or the outer finish. Almost any geometric shape can be made. Depending on the size and complexity of the product, printing may require a few minutes to as much as several hours.

The set up required for 3-D printing is not very expensive and production of small quantities of food may be economically feasible. The quality of the finished food product largely depends on the planning and the process and not the skill of the person who produces the food. Fabrication of food can be accurately controlled to meet the customer's needs. Several companies are active in 3D printing - TNO, Phillips, Electrolux, Nestle, Mondelez, Hershey's, NASA, Barilla among others. However, the process is not as easy as it may sounds because both the formulation and the process need to be optimized. One needs to have knowledge about ingredients, formulations and their behaviour under various processing conditions.

It is important that the material is stable enough to maintain its shape after it is deposited. Some materials may require further (post-deposition) processing/cooking e.g. composite formulations like batters or protein pastes. Some products may require removal of liquid/moisturefrom the printed material without being completely solidified, and to ensure that the fabricated layerscan hold their structure and are able to bear the weight of the upper layers that are subsequently laid on without significant deformity and change in shape.

What materials can be used? Different types of material like liquid, powder, paper or sheet material (either singly or in combination) can be laid out in layers that can then be fused to obtain the final shape. We can use a series of base ingredients to make virtually any design in terms of shape, composition, ingredients and their relative amounts or ratios, structure, texture, density and taste.

However, not all materials and formulations are directly suitable. Materials can be classified into two categories based on their printability.

(a) Natively printable materials that can be extruded smoothly from a syringe, e.g. cheese, chocolate, hummus, cake frosting or hydrogels. Several materials have been tested including mixtures of sugars, starch. Among some of the traditional foods tested, the best results were obtained with pasta dough as judged by the viscosity, consistency and solidifying properties of the product.

(b) Non-printable traditional food materials: Many of our staple foods like rice and other commonly consumed foods such as meat, fruits and vegetables that are part of the diets oflarge segments of the populationare not printable. However, by using hydrocolloids in these solid materials, it is possible to manipulate textures/ mouthfeel and flavour.

The materials, processes, process parameters and equipmentsused need to be matched and /or adaptedfor obtaining the right product. Sometimes the recipe may need to be either modified or reformulated.

The food applications can be grouped into two areas: directprinting and mold printing. In direct printing, the product is made layer by layer through extrusion. In this process a powder and a binding agent are used. A thin layer of powder is first laid and then the binding agent is applied in a predefined pattern (as per the 3D shape being created). This technique allows use of coloured binding agents and design of coloured products such as sugar sculptures, candies and sweets.

Mold printing is simpler than is direct printing. In mold printing, a mold is first created to use as a cast for the material in the actual product. The cast is made from a material different from the material used in the actual product. The mold could be reused in order to reduce costs. Mold printing is useful for printing ingredients that cannot be easily extruded eg shaping flavoured gelatin.

Mobile 3-D food printers are being researchers by the US military for providing the rations as well as enhancing the variety of menus for the soldiers' supply of predetermined ready –to-eat meals. Both in space and during combat, storage is a problem and preparation time and place are limited, hence the usefulness of this technology is being researched. Barilla has made a "Rosa Pasta" - a 3D model that 'blooms' and turns into arose when placed in boiling water.

Opportunities afforded by 3-D printing:

In commercial establishments that provide fine dining experiences, 3-Dprinters will allow for expression of creativity and artistic abilities. In the future, mass customization may help extend the capabilities to the industrial culinary sector.It provides tremendous opportunities for experimenting with varied food forms, shapes, colours and flavours often at a production rate and cost that would be less than at present where customization necessarily entails specific and specialized skills. For example one could print customized chocolates or make personalized full-colour images in solid food formats.Chocolate and materials like cream cheese and mashed potatoes have been printed has been used for extrusion printing. In a University in the UK beautiful, intricate chocolate doilies have been printed.

More importantly 3-D printing may be extremely helpful to dietitians for management of diets tailored to meet the specific needs of individuals, as one can control taste, nutritional value, and texture. There is scope to develop agreat variety of foods, each having a unique combinationof consistency, malleability, and texture as well as taste.

Besides catering to a person's preferences, food printing could help us to precisely control diets that meet the nutritional needs and so help improve the health and well-being of the individual. Obviously this would require tailored use of food ingredients for different formulations and fabrications and even multi-textured food products.

One area that is being explored in European countries is printing of pureed foods and customized meals to help persons with chewing and swallowing problems, especially for older persons to help better nourish them. One could help meet individual nutritional needsby varying amounts of different food components, in a traditional product(personalized food and nutrient parameters) which is not possible with currently used manufacturing processes. A German company Biozoon is developing a a 3D "Smoothfood",

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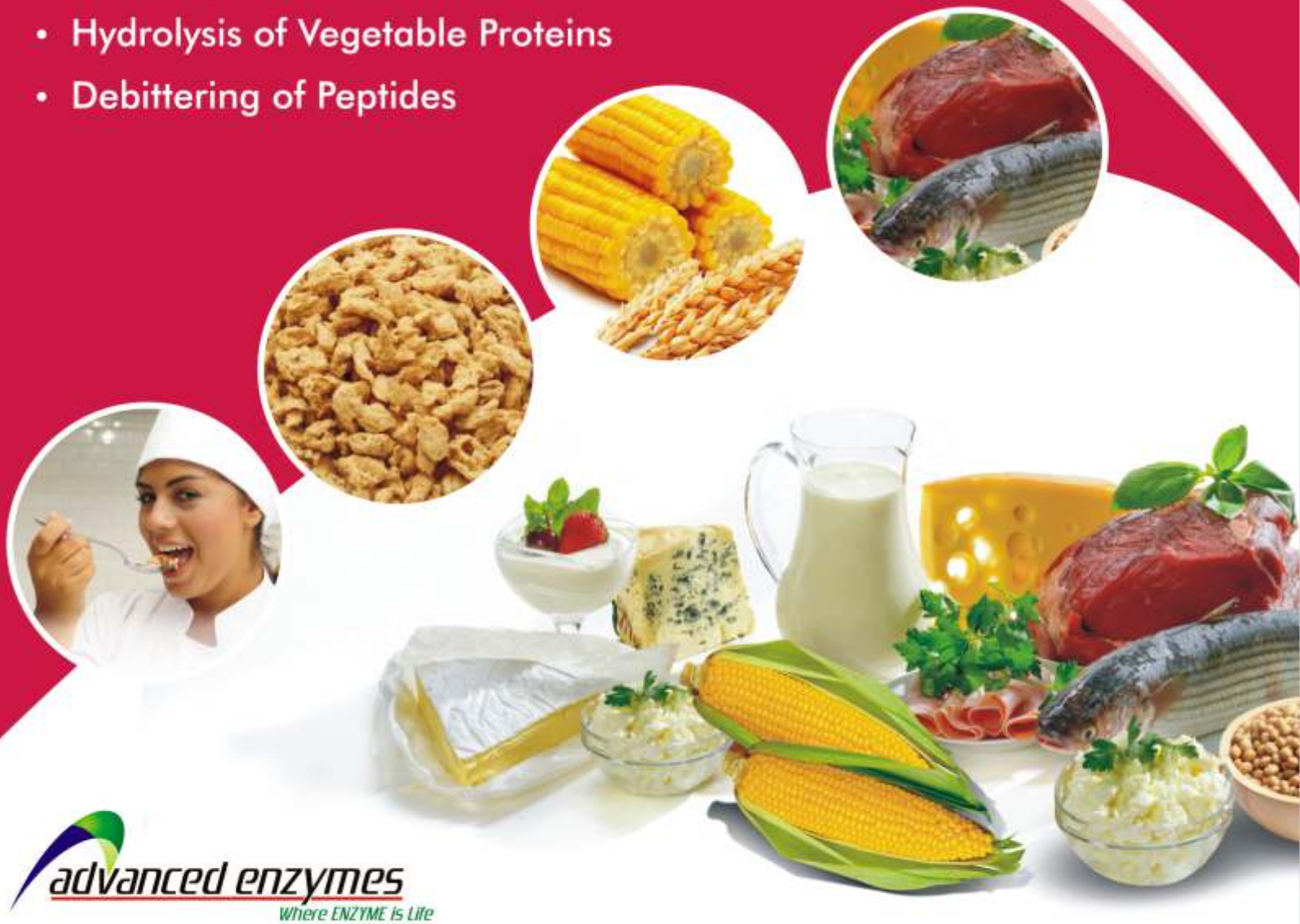

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with the objective of providing individualized nutritional meals with a jelly-like texture that resembles solid food but dissolves in the mouth and can be easily swallowed.

Parameters that could be personalized include:
• energy content so we could increase the calories if we want to feed a malnourished person or decrease it for people who want to restrict intake
• alter the macronutrient composition such as protein and fat, by manipulating (reducing or adding) the amounts of the macronutrients used; and even the type eg MUFA or n-3 versus SFA.
• vary the amount and source of protein used for patients where low protein diets or high protein diets are recommended.
• add minerals, and/or vitamins
• Add nutraceuticals, bioactive compounds that are good for health.
• alter other components to suit needs as per the medical condition e.g., fiber
• make the shape, size and hardness as per the needs of the individual

There might be possibilities of using different ingredients such as proteins from algae, grass, insects, leaves of vegetables that are currently less used such as drumstick leaves, beet greens/leaves.

Also, personalized nutrition applications are being tested for physically challenged adults, athletes, astronauts and hospital patients where precise amounts of nutrients need to be provided for optimizing health and /or performance.

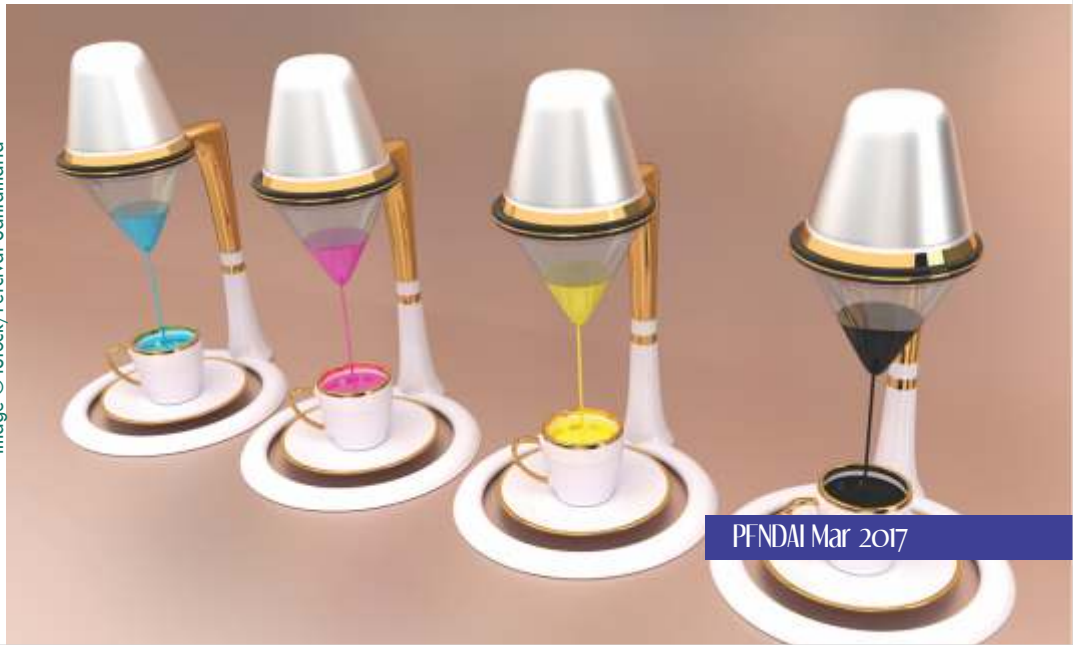
Nestlé launched the"Iron Man" project in 2013 for developing profiles that analyse levels of essential nutrients that are unique to an individual and provide these. It has been suggested that this technology will allow man to use alternative ingredients in food products so that it can help deal with food shortages in the future. There is an "Insects Au Gratin" project, wherein insect powders were mixed with extrudable icing and soft cheese to shape tasty food products. The insect powder is used as an alternative protein source instead of meat.

Several organizations are exploring the use of extrusion-based printing machines, because they allow printing of a wide variety of foods; virtually any material that can be extruded through a nozzle and maintain its geometry after extrusion. It is possible to incorporate hollow spaces and have honeycomb structures, which otherwise are not easy to create. No mould is required and the cost is essentially for the digital design and the food ingredients. By fine-tuning the concentrations of hydrocolloids, a very wide range of textures andmouthfeel can be achieved such as cooked spaghetti, cake icing, tomato, etc. The flavors can be altered by adjusting the amount of flavor additives utilised in production of a specific food.

Under NASA's Food Technology program, solutions are being sought for minimizing the time spent by the crew on cooking as well as the space required. This technology can offer solutions for both while providing various options for food and providing all the essential nutrients. The possible use of 3D food printing technology is being explored for providing safe, acceptable and varied foods with nutrient stability that can be printed from shelf stable ingredients, while minimizing waste. It may also be possible for astronauts to prepare personalized recipes that are to their liking. Use of dry reconsitutable ingredients would greatly reduce the amount of food (that could go upto thousands of kilograms) that needs to be carried for a space mission.

Multiple nozzles can be used to combine materials to manufacture a product containing different ingredients instead of a single component foodstuff. For example the process for making pizza can be automated and customized in terms of ingredients and portion sizes.For example, using powdered ingredients that are reconstituted just before printing, the dough would be first printed, followed by a layer of tomato paste and then cheese.

This technology could be extended to products such as uttapams, cakes and other products wherein multiple batters are/could be used.A multi-ingredient food printer called the Foodini is being developed to construct pizzas, ravioli and hamburgers, where the meal is prepared and is ready to cook.



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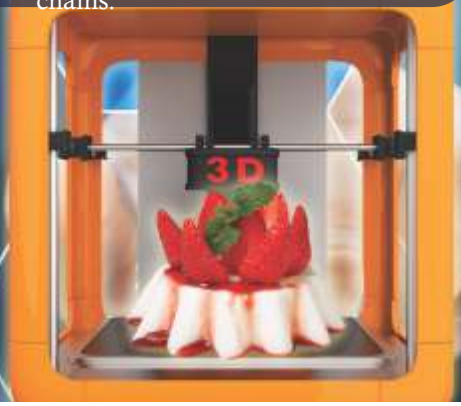
Peeping into the future:

Convenience is one important benefit that this technology can confer because one can provide freshly prepared food when it is needed.However, this technology is in the prototype stage and it may take some years before it reaches a stage where the functionalities are enhanced and food can be printed on large scale. It would be extremely worthwhile if awide variety of healthy and sustainable foods including vegetables, fruits that are not natively printable could be printed.

If the printing is integrated with a nutrition model, the exact amount of nutrients present could be calculated along with distribution in different parts of the recipe. This could help individuals to manage their dietary intakes more effectively. One could even download blueprints from the internet and use it for printing foods.

Challenges:

Regulations and guidelines for specific foods will be required. Also ingredients would be exposed to heating, cooling and temperature fluctuations which may allow growth of micro-organisms and reduce the shelf life and safety of the foods. Thus guidelines may need to be given for appropriate temperatures and shelf life or "Best By' dates. This will be especially relevant where different ingredients may have considerably different shelf life. Also type of packaging may need to be considered.Also, in the long run, if thistechnology is successful, it could alter the production and distribution of goodsand management of supply chains.



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GOOD REGULATORY PRACTICE (GRP)

HEALTH SUPPLEMENTS & NUTRACEUTICALS: CATEGORY & PRODUCT IDENTITY

By Dr. J. I. Lewis, Food & Regulatory Consultant

When reading a regulation both the regulator and the regulated must achieve consensus in its first or second reading. If the context upon which it is founded is clear and the language simple; this will happen. When regulatory texts are loosely stitched together - without context or understanding of the underlying principles - a multitude of interpretations emerge. Unease in doing business begins here.

It is therefore customary for regulators to provide guidance documents to practitioners in the food industry space to enable compliance. Guidance documents are a convenient place to find explanations to the reasoning or purposeof regulatory clauses. While these are not legally binding, they offer current thinking on the topic,with the intent of unraveling its context. Contextor underlying principlesare the most critical part of any regulation.

It is international practice to harmonize laws and the earliest reference to a modern law regulating supplements is the Dietary Supplement Health Education Act 1994 (DSHEA), established more than 20 years ago; followed by the European Commission (2002) and Codex (2005). The legal framework on 'health supplements' provided in FSSA (2006) is based on these pre-existing acts and regulations. Obviously the practice and implementation cannot be different?

The new Food Safety and Standards (Health Supplements, Nutraceuticals, FSDU, FSMP, Functional Foods and Novel Foods) Regulations 2016 [FSS (HSN)], is to be read carefully - and where ambiguity exists, verification must be sought, prior to implementation. This guidance is about how a health supplement differs from other foods based on a precise understanding of its definition and categorization. Two factors identify products; categorization and definitions. This fundamental understanding drives regulatory thinking, drafting and finally implementation.

Categorization: Categorization is a system that places groups of foods or food products together because they share a common feature. The Food Category System is based on product descriptors of foodstuffs as marketed, unless otherwise stated. For example category 13.0 has the main descriptor "intended for particular nutritional uses"(Fig.1);

Fig 1: Food Category System*

13.0	Foodstuffs intended for particular nutrition
13.1	Infant formulas, follow-on, and formulas for special medical purposes for infants
13.1.1	Infant formulas
13.1.2	Follow-up formulas
13.1.3	Formula for special medical purposes for infants
13.2	Complementary foods for infants and young children
13.3	Dietetic foods intended for special medical purposes (excluding products of food category 13.1)
13.4	Dietetic formulas for slimming purposes and weight reduction
13.5	Dietetic foods (e.g. supplementary foods for dietary uses) excluding products in food categories 13.1, 13.4 and 13.6
13.6	**Food Supplements**

* Food Category System: Codex Stan 192-1995 and adopted by
- Indian Food Code
- Food Safety and Standards (Food Product Standards & Food Additives) Regulations 2016

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hence foods in the sub-categories are intended, prepared and marketed for a particular nutritional use. The particular nutritional use arises from certain disorders or conditions that exist in specific populations (infants, persons with coeliac disorders etc.). It is a category of foods not meant or intended or consumed by the general population. Foods consumed by the general population lie in the other categories (Category 1-16, except 13.0)while foods under 13.0 are specifically marketed to groups that require particular nutrition/.

Several terms are used to describe foods under this category 13.0,andto distinguish them from foods within its sub-categories (intra) and other categories (inter). The terms typically used are "conventional foods", "normal or ordinary foods", or " not ordinarily consumed as foods". As opposed to these descriptions, only food supplements are characterized by the term "pre-dose forms". These terms are not interchangeable between sub-categories and when used convey different meanings in the way foods are marketed and consumed.

Sub-categories 13.1, 13.2,13.3, 13.4, 13.5, are foods specially prepared and/or formulated " to satisfy particular dietary requirements *which exist because of a particular physical or physiological condition . . .*

Sub-category 13.6 is food products meant *to supplement the diet*, by increasing the total dietary intake of the dietary substance(s) contained in the food. There is no mention of a physical or physiological condition existing as in the case of foods under the other sub-categories. Note the difference in the intended purpose of use; in all sub-categories except 13.6 the foods are prepared to suit the particular physical or physiological condition, while 13.6 is not formulated for such conditions.

Definitions (Sec-22)

Two category definitions relating to health supplements and foods for special dietary uses (FSDU) are embedded in texts of sub-sections (1)(a)(b), under Section 22. With appropriate disentanglement and re-arrangement, definitions consistent with international regulatory norms emerge. Placing them under their relevant titles will improve regulatory implementation tremendously.

Foods for Special Dietary Uses:

(Extract from Act), means foods which are specially processed or formulated to satisfy particular dietary requirements which exist because of a particular physical or physiological condition or specific disease or disorders and which are *presented as such,* wherein the composition of these foodstuffs *must differ significantly* from the composition of ordinary foods of comparable nature, *if such ordinary foods exist*. This definition is harmonized with Codex.

Key points that characterize these sub-categories are;

✓ These foods are specially formulated or prepared or manufactured and

✓ Their composition must differ significantly from the composition of ordinary foods of comparable nature, if such ordinary foods exist.

✓ Only persons affected by either a particular physical or physiological condition consume these foods;

✓ Examples of foods in this category are gluten-free or low gluten foods (coeliac condition), infant foods (physical condition), foods for special medical purpose (phenylketonuria). The affected population is dependent on such foods as part of their diet.

✓ They are not required to be present in pre-dose forms (capsules, tablets, etc.). They are typically marketed as conventional foods and ordinarily eaten as such **Fig (2)**.

Health Supplements: *(Extract from Act)*, means a dietary substance, such as vitamins, minerals, proteins, amino acids, enzymes, plant or botanicals or their parts in the form of powder, concentrate or extract in water, alcohol or hydro-alcoholic extract, or substances from animal sources, for use by human beings to supplement the diet (emphasis

Fig.2

Conventional food forms - but are not ordinary foods.

Box 1. **Difference in products under Category 13.0**
Sub- categories 13.1, 13.2, 13.3, 13.4 and 13.5
✓ Specially prepared to satisfy a particular dietary requirement;
✓ Differs significantly from composition of ordinary foods;
✓ Are marketed in conventional food forms
Sub-category 13.6
✓ Foods to supplement the diet
✓ Marketed in pre-dose forms
✓ Not to be represented as conventional foods

provided) by increasing the total dietary intake; and
which is not represented for use as conventional foods and
whereby such products may be formulated in the form of tablets, capsules, powders, granules, liquids, and other dosage forms; and
they shall not contain drugs, hormones, steroids or psychotropic substances

Pre-dose forms are a specific pre-condition for foods in this category as they are expected to deliver concentrated amounts of the nutrient to the diet. Pre-dose forms are typically capsules, tablets, powders, and syrups etc., which ensure ingesting in small measured quantities.

Conditions & Restrictions: Based on the conditions imposed by categorization and definitions, the following become applicable for compliance;
Health supplements;
✓ Are not to be marketed in conventional food forms such as sweets, bread, biscuits, fat spreads, juices, jams etc. as these eaten are part of the diet or meal and are eaten for enjoyment.
✓ Ingredients listed in Schedules IV and VI – except for commodity foods such as herbs, spices, fruits, vegetables, milk, food grains or their fractions such as whey or soy proteins, brans etc., - are also not permitted to be used in foods, ordinarily eaten as part of the diet or meals, unless otherwise provided by regulation.
✓ Two separate regulations govern foods – one for 'commodity type foods' or 'foods ordinarily eaten as part of the diet" [FSS (FPS&FA) 2011] and another for health supplements [FSS (Health Supplements etc.) 2016]. While not exclusive of each other, they are nonetheless separated by regulatory process.

Fig. 3 Phytosterols (Ingredient) - used in different categories

✓ A case in point is evident in the example in (Fig 3);it illustrates how an ingredient – e.g. plant sterols/stanols – when included in a fat spread or yogurt – must be pre-authorized by regulation.
o This is because fat spread or yogurt are conventional foods and are governed by FSS (FPS & FA) 2011. A recent amendment permits the addition of plant sterols/stanols in fat spread, milk products, milk based fruit drink, fermented milk products, soy and rice drink, cheese products, yoghurt, spice sauces, salad dressings, juices and nectars, edible oils and baked products (bread). These foods fall within their respective categories (1-15, except 13.0)..
o However plant sterols/stanols may also be marketed as health supplements under FSS (HSN) – but in capsules (dosage form). Separate regulation authorized the use of plant sterols/stanols in Nutraceuticals.

The avoidable confusion has apparently arisen by including ordinary foods such as milk, coffee, food grains, vegetable oils, fruits, vegetable and spices in positive lists under Schedule IV or VI. Positive lists have the impact of sanctioning the free use of ingredients on the list. It appears that the regulation has created a dichotomy. However the definition and categorization clearly restricts these foods from being marketed as health supplements or FSDU or FSMP and the explanations in Box (2) below become superfluous when the definitions and categorizations are applied.Nothing prevents the use of ordinary food ingredients in health supplements provided that they are marketed in pre-dose forms of capsules tablets etc.

Nutraceuticals: Nutraceuticals are subject to the same conditions as health supplements. The only difference being
Nutraceutical may contain ingredients from Schedules IV and

Box 2: Explanations, consequent to including common foods in Schedules

Regulation3. (13): For the purposes of these regulations, any of the ingredients specified in the Schedule I, II, III, IV, VI, VII and VIII, may be used in food in accordance with the provisions of these regulations and for the said purpose, may use additives as applicable to the categories specified in Schedules VA-VF.

Explanation 1 – For the purpose of these regulations food or ingredients referred to in Food Safety or Standards (Food Product Standards and Food Additives) Regulations 2011, and for which standards are provided and the plants and botanicals specified in Schedule IV of these regulation offered in normal or naturally occurring forms shall not constitute a health supplement or nutraceutical or food for special dietary use or food for special medical purpose

Explanation 2 – Mere food forms such as vegetables, namely, bhindi, karela and other vegetables; cereals, namely, ragi, jowar, millets and other cereals, legumes namely, rajmah, amla, jamun, grapes and other fruits and other plants or botanicals, minimally processed (cleaned, de-weeded, sorted, dried or powdered), in either as juice or cooked form, shall not constitute health supplement or nutraceutical or food for special dietary use or food for special medical purpose. Regulation 3. (19): The Food Authority may suspend or restrict sale of such articles of food as have been placed in the market that are not clearly distinguishable from articles of food for normal consumption and are not suitable for their claimed nutritional purposes or may endanger human health in accordance with the provisions of the Act.

Direction issued 6th January 2017: It is also clarified that products covered under these regulations and products mentioned in paragraph 3 above may also contain such additional ingredients, other than additives, which are either standardized or permitted for use in the preparation of other standardized foods as specified in the Food Safety and Standards (Food Products Standards and Food Additives) Regulations 2011

Fig. 4. Similar product - different regulations

Fig. 5 Dietary, Health or Food Supplement

VI. If it can contain ingredients specified for Health Supplements – what then distinguishes them from health supplements.

Nutraceuticals as are not recognized as a regulatory category internationally

The illustration in (Fig 4, 5) shows the numerous regulatory schemes devised to regulate the same product, which neither builds consumer confidence nor optimizes regulatory activity.

The terms Health Supplements and Nutraceuticals appear to be distinctions without a difference

In conclusion, understanding conditions of compliance of foods regulated under Category 13.0 is critical for regulators and the regulated. With the approaching enforcement date of 1st January 2018 it is imperative that capacity building measures are taken withenforcement mechanisms in State FDA's/UT's on differentiating how foods are to be assessed for compliance under each of these categories. FBO's should be clear on how to comply. Of high priority is the need for suitable regulatory amendmentsrequired to harmonize with international regulatory frameworks, including Codex.

FOOD SUPPLEMENT / NUTRACEUTICALS REGULATION

By Ms. Rini Sanyal, Herbalife

Key Drivers of the sector

Specialised Foods like Food or Health supplements. FSDUs, Nutraceuticals etc. have witnessed a tremendous increase in the recent years among the consumers due to their potential of providing health benefits, which is the key driving factor. Reduce dietary deficiency and general wellbeing is the other aspect for the growth of the industry.

Background: the sector receives positive recognition with the enactment of FSS Act 2006

Enabling Provision: Section 22 of Food Safety & Standards Act 2006, however, the coverage remain large and includes among FSDUs, Functional Foods, Neutraceuticals, Health supplements – foods from GM origin, Irradiated foods, organic foods etc.

FSS Act : Section 22 and the scope

Covers foods which are specifically processed or formulated to satisfy particular dietary requirements due to particular physical or physiological condition or specific diseases and disorders"…which actually covers food that may be used in certain diseased condition.

Regulatory Framework: Food Safety & Standards Regulation on Health Supplements, Nutraceuticals, FSDUs etc. 2016:

The Food Safety and Standards (Health Supplements, Nutraceuticals, Foods for Special Dietary Uses, Foods for Special Medical Purposes, Functional Foods and Novel Food) Regulations, 2016 have been gazette notified on 23rd December 2016

Compliance of existing as well as new products latest by 1st January, 2018

During this period, FBOs may continue with manufacturing, importing, storing, packing, distributing and selling products / ingredients following any of the below listed criteria

- Prior notification of FSS Act
- Either approved or granted NOC during the PA regime
- Licenses were obtained for such products / ingredients

Product coverage as food (which may also contain Ayurvedic ingredients)

Food or Health or Dietary Supplements / Nutraceuticals

Food for Special Dietary Uses and Food for Special Medical Purposes

However, the FSS Act and the regulation have clubbed all the above under the same definition.

Codex Reference

These Guideline apply only in those jurisdictions where products defined are regulated as foods. Vitamin and mineral food supplements for the purpose of these guidelines derive their nutritional relevance primarily from the minerals and/or vitamins they contain. Vitamin and mineral food supplements are sources in concentrated forms of those nutrients alone or in combinations, marketed in forms such as capsules, tablets, powders, solutions etc., that are designed to be taken in measured small-unit quantities but are not in a conventional food form and whose purpose is to supplement the intake of vitamins and/or minerals from the normal diet.

General Requirements:

Capsule format (hard, soft or vegetarian) to comply with general monograph & quality criteria as per Indian Pharmacopoeia

For making claims on Food Supplements - Individual nutrient content shall not be less than 15% of RDA

For Higher Nutrient Content claim – nutrient content not less than 30% of RDA


Image © iStock.com/phanasitti

Quantity of nutrients added shall not exceed the RDA specified by ICMR (only in case where such limits are not provided, limits laid down by international Food Standards body like Codex shall apply
Purity Criteria for the ingredients used in the categories shall be as determined and notified in the official gazette by the Food Authority from time to time

Tolerance limit for variation of nutrients (during sample analysis of finished products) shall not be more than – (10)% from the declared value

Formulation of such foods shall be based on the principles of medicine / nutrition and supported by valid scientific data

Manufacturing of both ingredients and products shall be carried out in compliance with established Good Manufacturing Practices.

The formulation of such articles of food shall be based on the principles of sound medicine or nutrition and supported by validated scientific data, wherever required.

Specific Requirements
The mere combination of vitamins and minerals formulated in tablets, capsules, syrup formats shall not be covered in any of the categories of these regulations except when vitamins and minerals are added to an article of food or in a food format

Schedule IV(list of Plants & Botanicals): Originally, this list was originally included from Ayush and it consists of plants, vegetables, fruits etc. with limits and claims. Later, the same has been converted to Plants & botanicals sources without any modification on the usage limits

Schedule VI (Nutraceutical): listed ingredients under Nutra are actually from plants, botanical sources or extracts from plants, fruits, etc. However, there is restriction on usage of Nutra ingredients in Food / Health Supplements except enzymes.

Addressing Incongruities
Before the regulation reaches the compliance date, concerns need to be addressed / amended suitably. Below are few observations:
Section 22 of the Act defines Health supplements, Nutraceuticals, FSDUs etc. as one; however, they are different formats as per the regulation and the Indian Food Code (which is harmonised with Codex categories)
• Similar categories in different names not readily recognised globally
• Inconsistency in use of ingredients / nutrients across formats
• Conflict in use of RDA limit in different formats

Besides,
Ingredients under Schedule IV needs careful revision as plant and botanical extracts are highly complex active ingredients and not merely plants / fruits or vegetables.

Certain ingredients which are in use in the country and are safe, are missing in the list of ingredients – need priority inclusion

Already approved spices, essential oils etc. needs to be incorporated in the regulation for ease of reference
There are few repetitions and conflicts in General and Specific conditions which needs to be streamlined

Labelling and Claim part needs to be further simplified and most of the declaratory requirements to be covered under Labelling & Claim Regulations which is in the pipeline

Use of "Warnings" needs to be evaluated further and should be applicable only where it is necessary.


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REGULATORY ROUND UP

By
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This round up is third in the series. In my opinion, FSSAI has published more or less all the regulations which are the key drivers for the Indian food industry. The remaining key ones would include regulation on "Claims".

Final notification on the process of approval of novel ingredients, new additives is awaited. Here onwards, the new regulations would focus on the improvements on the existing ones to reflect the changes in nutrition, food safety, modern technology , environment, etc.

This would facilitate FSSAI to focus their energy and resources in effective enforcement and implementation of rules and regulations. This would include capacity building in terms of analytical laboratories, training, etc.

Coming back to the present, please find below a roundup of important announcements by FSSAI during April and May 2017.

General

A Note on the issue of High Fat, Sugar and Salt (HFSS) in food and associated health risks has been published by FSSAI. The report or a guideline has been prepared by an expert committee consisting of doctors, nutritionists , public health experts.

No food technologist or food industry representative is in the committee though they are most impacted. The report begins with an attempt to define "junk" food which is not defined by any regulator, including FSSAI.

The report creates a new category of " ultra processed food " which is confusing, to say the least. The report goes on to describe the ill effects of "High Fat, Sugar and Salt" (HFSS). The report does not attempt to set out any measurable criteria for naming a food as "HFSS".

The identified HFSS food by the report, tend to refer to processed and restaurant foods. It must be noted that traditional snacks can also very well qualify as HFSS foods but does not find an emphasis in the report.

The physical activity which is very important for energy balance and good health is not given its due importance. The phrase "physical activity" appears only once in the report that too in connection with a survey and is not discussed.

The expert committee goes on to recommend restriction on advertisement of HFSS foods, higher taxation on " ultra processed food", etc. World over, higher taxation has not really worked on curbing consumptions.

Recommendation on increasing the awareness through education and labelling is a welcome suggestion. The food industry may take a cue and reformulate reducing fat, sugar and salt without impacting the taste.

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As a part of capacity building exercise, FSSAI wants to take the support of external and independent agencies to conduct food safety and GMP audits of food business auditors. **This draft regulation sets out the procedure for the recognition of third party agencies or independent food safety auditors.** A great opportunity to food professionals who have a flair for audit.

An order permitting the sale of edible vegetable oil through tamper proof vending machine. This is essentially done to make edible vegetable oil available in small and required quantities. It is expected that such an arrangement will increase the reach of edible vegetable oil at affordable prices as packaging cost is eliminated.

The distribution cost is also likely to come down. However, technological challenges like shelf stability, etc needs to be addressed.

FSSAI has published a list of food testing laboratories for the purpose of carrying out analysis of food samples under FSS Act, 2006. The lists includes the type of analysis each laboratory is accredited to perform.

Standards

Revised standards for chocolates have been finally notified. The standards permit upto 5% vegetable fat, other than cocoa butter, in the chocolates. Type and characteristics of permitted vegetable fat has been described. Milk solids, that can be used in milk chocolates,have been specifically characterized.

Draft amendment to additive regulation, published on 5th September 2016, has been proposed to include many more additives in different categories of food. The draft regulation also makes amends of few typos crept in during the final notification.

Compliance

Presently, there are no microbial standards for ice coming in contact with food. In view of this, **FSSAI has issued an order** stating that ice in contact with food need to comply with the microbial standards prescribed for edible ice in Appendix B of FSS (Food Products Standards and Food Additives) Regulation, 2011.

Import

FSSAI has simplified the procedure for the import of special food products, required for specific medical conditions, for personal use.

RESEARCH IN HEALTH & NUTRITION

Image © iStock.com/ demaerre

Dieting? Your gut microbes might delay the benefits

Written by Honor Whiteman
Medical News Today 3 January 2017

If your New Year's resolution is to adopt a healthful diet, you shouldn't expect to see immediate effects; your gut microbes might not let you.

In a new study, researchers found that the diversity of gut microbiota - the population of microbes that reside in the digestive tracts - is altered by a typical Western diet. Furthermore, the study reveals that a gut microbiome that has been conditioned by a Western diet may weaken the effects of a healthful, calorie-restricted, and plant-based diet.

Senior study author Jeffrey Gordon, director of the Center for Genome Sciences and Systems Biology at Washington University in St. Louis (WUSTL), and colleagues publish their findings in the journal Cell Host & Microbe. A Western diet - sometimes referred to as the "American standard diet" - is typically defined as one that is low in fruits, vegetables, seafood, poultry, and whole grains, but high in red meats, carbohydrates, saturated fats, sugar, and processed foods. Studies have shown that the Western diet is a key contributor to obesity, and it can also raise the risk of heart disease, cancer, and various other diseases. In order to reduce the risk of such conditions, a plant-based diet - that is, high in vegetables, fruits, whole grains, and legumes, but low in animal products - is considered one of the best options.

According to the new research, however, individuals wanting to switch from a Western diet to a plant-based diet are unlikely to reap the benefits straight away. For their study, Gordon and colleagues collected fecal samples from individuals who followed either an unrestricted Western diet or a plant-based, calorie-restricted diet. On analyzing the fecal samples, the researchers identified a greater diversity of microbes in the samples from people who followed the plant-based diet.

Western diet-conditioned microbes weaken response to plant-based diet
Next, the team introduced the human gut microbe communities conditioned by each diet to germ-free mice - mice that are absent of all microbes. The rodents were then fed either the diet that their human donors followed or the alternative diet. The team found that both groups of mice responded to the new diets. However, mice with a gut microbiota that had been conditioned by the Western diet demonstrated a weaker response to the plant-based diet.

The researchers then placed two different groups of mice together in a cage. Both groups of mice had a microbiota derived from humans. One group had a microbiota conditioned by a Western diet, whereas the other group had a microbiota conditioned by a plant-based diet. The team found that the gut microbes conditioned by a plant-based diet soon crept into the Western diet-conditioned microbiota; these plant-conditioned microbes significantly increased the Western diet-conditioned microbiota's response to a plant-based diet.

"We need to think of our gut microbial communities not as isolated islands but as parts of an archipelago where bacteria can move from island to island. We call this archipelago a meta-community," notes first author Nicholas Griffin, an instructor at WUSTL. Many of these bacteria that migrated into the American diet-conditioned microbiota were initially absent in many people consuming this non-restricted diet," he adds.

The researchers are hopeful that their results will help to identify ways to improve people's responses to healthful diets, but they caution that further studies are warranted to pinpoint the mechanisms involved in microbial exchange. "We have an increasing appreciation for how nutritional value and the effects of diets are impacted by a consumer's microbiota. We hope that microbes identified using approaches such as those described in this study may one day be used as next-generation probiotics. Our microbes provide another way of underscoring how we humans are connected [...] to one another as members of a larger community." Jeffrey Gordon

Image © iStock.com/robynmac

Fibre's impact on gut & metabolic health studied

By Will Chu, NutraIngredients
06Jan2017

Fibre's positive influence on health has been further reinforced in two studies, which point to its functional capabilities as a prebiotic, metabolic manager and inflammation reducer with few if any side effects.

Undigested or resistant starch (RS), a type of dietary fibre, was the subject of a review paper that assessed its role in different health outcomes such as postprandial glycaemia, satiety, and gut health. Researchers from University College Dublin, and the British Nutrition Foundation (BNF) compiled and evaluated a body of human evidence that strongly leaned towards its ability to reduce the glycaemic response, and may be particularly useful for managing diabetes.

The wealth of evidence linking RS to reduced postprandial glycaemic responses has resulted in an EU approved health claim back in 2011. The European Food Safety Authority (EFSA) approved the wording 'Replacing digestible starch with resistant starch induces a lower blood glucose rise after a meal.' This statement sets out the minimum amount (at least 14% of the total starch content must be RS) that is needed to replace digestible carbohydrates in order to produce the desired effect.

The review, which was financially supported by ingredients provider Ingredion, also remained unmoved on RS' impact on other metabolic markers, such as blood pressure and plasma lipids. "It should be noted that there is limited evidence suggesting that RS does not influence vascular function, including peripheral or vascular stiffness or blood pressure," the review stated. "Furthermore, there does not appear to be a role of RS in mediating effects through the activity of the adipose tissue derived hormones, adipokines, such as adiponectin."

Fibre as a prebiotic

The team of researchers thought that RS' credentials as a prebiotic needed more convincing evidence in order to fulfil proposed classification criteria. The team referred to a paper that attempted to provide these guidelines. These were: a resistance to gastric and gastrointestinal digestion, an ability to be fermented and used by gut microbiota, and an ability to selectively stimulate activity of one, or a limited number of, gut bacteria with health properties.

Whilst the researchers stated that current literature on RS did not quite fulfil these criteria, they did acknowledge that fermentation rates (and thus certain changes in the composition and/or activity of the gastrointestinal microbiota) could vary according to RS type. The review went on to comment on RS' greatest challenge for the future, which was to prove its ability to selectively stimulate beneficial microorganisms.

This obstacle is made all the more complex by the health claim restrictions imposed on probiotics and prebiotics by EFSA. Additional considerations include the individual variations in gut microbiota and diet-induced responses, as well as factors such as age and geography.

Fibre effects on gout

Finally, Brazilian researchers were able to demonstrate fibre's instrumental role in interfering in the inflammation associated with gout in a separate study. More specifically, the findings point to a mechanism of action that leads the gut to produce short chain fatty acids (SCFAs). These SCFAs were found to promote the death of neutrophils—a type of white blood cell that forms part of the immune response. This includes inflammation that is linked to progressive tissue damage and debilitating pain.

Mice placed on a high-fibre diet appeared to prevent the inflammation caused by injections of monosodium urate (MSU) crystals into the knees of mice – the prime characteristic of gout. As well as neutrophil cell death, the experiments also showed the removal of this dying/dead cell debris.

Reduction of inflammation was also joined by increased production of anti-inflammatory substances in the knee joint, further preventing knee damage and dysfunction. The study provides an example of how tweaking inflammatory circuits is possible by harnessing diet to microbial products producing significant effects on an inflammatory disease that affects the joints. "By understanding the way foods interact with living organisms, we may be able to create diets that help people with the disease, as well as their health overall," said Dr Mauro Teixeira, a researcher at the Institute of Biological Sciences at the Federal University of Minas Gerais in Minas Gerais, Brazil.

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Nutrela Soya Rajma

Ingredients:

- 1 cup red kidney beans, 4 cup water,
  2 cups soaked Nutrela Soya Mini Chunks.
  (Soaked, boiled and squeezed dry),
  2 cup fresh tomato puree.
- 1 teaspoon cumin seeds, crushed black peppercorns, Kashmiri red chilli powder, garam masala powder and ½ teaspoon aamchur.
- 1 tablespoon coriander powder,
  2 tablespoon ginger garlic paste,
  3 tablespoon oil.
- chopped 2 green chillies,
  2 medium onions.
- 1 pcs tej patta, 1 inch ginger,
  cut into thin strips,
  Salt to taste.

Method:

- Soak red kidney beans overnight and boil them with water, salt and tej patta.
- Heat oil, add cumin seeds and let it splutter
- Add onions and saute` till onions become golden brown and start to caramelize.
- Add ginger paste, garlic paste, chopped green chilly and saute` it.
- Add tomato puree and sauté for 4-5 minutes.
- Add red chilli powder, turmeric powder, pepper powder coriander powder, amchur powder, garam masala powder and saute` for 2 minutes.
- Add Rajma, Nutrela Soya Mini Chunks, salt and mix well.
- Add the balance water in which the rajma was boiled, mash a few of the rajma into a paste to slightly to thicken the gravy and allow it to cook.
- Add the remaining garam masala powder and ginger strips and mix well
- Transfer into a serving bowl and serve hot

Image © iStock.com/koya79

Gelatin supplements, good for your joints?

Medical News Today 30 December 2016

A new study from Keith Baar's Functional Molecular Biology Laboratory at the UC Davis College of Biological Sciences and the Australian Institute of Sport suggests that consuming a gelatin supplement, plus a burst of intensive exercise, can help build ligaments, tendons and bones.

The study is published in the American Journal of Clinical Nutrition. Connective tissue and bone injuries are common in both athletes and the elderly, and interfere with peoples' ability (and enthusiasm) for exercise, whether they are an elite athlete or just trying to lose weight and maintain fitness and flexibility. Steps that can prevent injury and enhance recovery are therefore of great interest. Obviously, it's difficult to assess the direct effect of a supplement on tissues without opening up someone's knee. But Baar's laboratory has been developing techniques to grow artificial ligaments in the laboratory. They used their lab-dish ligaments as a stand-in for the real thing.

Gelatin, Vitamin C and Exercise Baar, Greg Shaw at the Australian Institute of Sport, and colleagues enrolled eight health young men in a trial of a gelatin supplement enhanced with vitamin C. The volunteers drank the supplement and had blood taken, and after one hour performed a short (five minute) bout of high-impact exercise (skipping). The researchers tested the blood for amino acids that could build up the collagen protein that composes tendons, ligaments, and bones. They also tested blood samples for their effect on Baar's lab-grown ligaments at UC Davis. The gelatin supplement increased blood levels of amino acids and markers linked to collagen synthesis, and improved the mechanics of the engineered lab-grown ligaments, they found. "These data suggest that adding gelatin and vitamin C to an intermittent exercise program could play a beneficial role in injury prevention and tissue repair," the researchers wrote.

EPA, DHA omega-3s may lower heart disease risk

IFT Weekly January 11, 2017

A comprehensive meta-analysis published in the Mayo Clinic Proceedings shows that EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid) omega-3s may reduce the risk of coronary heart disease (CHD).

The researchers conducted a systematic literature search of Ovid/Medline, PubMed, Embase, and the Cochrane Library from Jan. 1, 1947, to Nov. 2, 2015. They identified 18 randomized controlled trials (RCTs) and 16 prospective cohort studies examining EPA+DHA from foods or supplements and CHD, including myocardial infarction, sudden cardiac death, coronary death, and angina.

Among RCTs, there was a statistically significant reduction in CHD risk in higher risk populations, including 16% in those with high triglycerides and 14% in those with high LDL cholesterol. In addition, they found a non-statistically significant 6% risk reduction among all populations in RCTs, a finding supported by a statistically significant 18% reduced risk of CHD among prospective cohort studies.

"What makes this paper unique is that it looked at the effects of EPA and DHA on coronary heart disease specifically, which is an important nuance considering coronary heart disease accounts for half of all cardiovascular deaths in the United States," said Dominik Alexander, lead author and principal epidemiologist for EpidStat. "The 6% reduced risk among RCTs, coupled with an 18% risk reduction in prospective cohort studies—which tend to include more real-life dietary scenarios over longer periods—tell a compelling story about the importance of EPA and DHA omega-3s for cardiovascular health."

The researchers noted that further clinical trials looking specifically at CHD outcomes may continue to provide a better understanding of the promising beneficial relationship between EPA/DHA and CHD risk. Current RCTs have varying durations, different baseline CHD status for study participants, and utilize several methods for patient selection and randomization.

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Enzyme blend may help recover from muscle soreness

IFT Weekly January 11, 2017

A study published in Sports Nutrition and Therapy shows that a multi-enzyme complex (Sabinsa's DigeZyme, a proprietary blend of non-animal sourced enzymes) may promote more rapid recovery from delayed onset muscle soreness (DOMS).

Delayed onset muscle soreness is one of the outcomes of inflammation due to microscopic wear and tear in the muscles caused by strenuous exercise. While some muscle soreness is typical of any exercise regimen and usually peaks around 36–48 hr after the event, in athletes or regular gym-goers unaccustomed to high intensity workouts, the exercise may lead to sustained inflammatory response, causing prolongation of skeletal muscle recovery. DOMS may lead to passive stiffness, swelling, and pain in muscles, which may affect performance as well as recovery.

In this prospective, double-blind, randomized, placebo-controlled trial on 20 healthy male subjects, the analgesic effect of a multi-enzyme complex capsulein management of DOMS was compared to a placebo. The multi-enzyme complex consisted of amylase, protease, lipase, cellulose, and lactase, while the placebo capsules contained an equivalent weight of maltodextrin. All participants in the experimental group received 50 mg multi-enzyme complex supplementation over a three-day period. During this period, they consumed one capsule three times a day. The participants in the placebo group received capsules of similar size and colour, and they were given identical instructions on dosage of study supplement to be followed. The participants visited the clinic on day 0 (baseline visit) and subsequent visits on day 1, day 2, and day 3. The researchers conducted physical exams after recording vital signs (blood pressure, pulse rate, heart rate, and respiratory rate) and medical history.

The researchers found that the multi-enzyme complex demonstrated significant improvement in subjective pain and tenderness, with no significant improvement in levels of markers of inflammation, muscle damage, or muscle flexion. The researchers concluded that "the findings of this study suggest that multi-enzyme complex can have several potential clinical applications. Protease supplementation when coupled with a well-managed training program can result in more rapid recovery of the damage caused to contractile mechanism by DOMS."

Diverticulitis study: More bad news for lovers of red meat

Written by Tim Newman, Medical News Today 10 January 2017

This week, meat-eaters receive another diet-based kick in the ribs. A new study, published in the journal Gut, links the consumption of red meat to an increased risk of developing diverticulitis.

Diverticulitis is a relatively common complaint that occurs when bulging sacs appear in the lining of the intestine. These pockets can become infected or inflamed, leading to symptoms such as nausea and fever, constipation and/or diarrhea, cramping, and pain in the abdomen.

Approximately 4 percent of people with diverticulitis go on to develop severe or long-term complications, including abscesses, perforations in the gut wall, and fistulas, which are abnormal connections between the hollow spaces of the body. Each year, diverticulitis accounts for around 210,000 hospital admissions in the United States. This costs an estimated $2 billion per year. Worryingly, the number of new cases appears to be rising, particularly among younger individuals.

Known risk factors include using non-steroidal anti-inflammatory drugs (NSAIDs), a sedentary lifestyle, obesity, and smoking. However, despite the high number of cases, a full range of causes has not yet been described. Although low levels of fibre intake are thought to play a role, dietary influences on diverticulitis had not been examined thoroughly.

Recently, a team led by Dr. Andrew Chan - from Massachusetts General Hospital in Boston - set out to investigate dietary factors involved in diverticulitis in more detail. They specifically focused on the consumption of meat, poultry, and fish in 46,500 men from the Health Professionals Follow-Up Study.


Image © iStock.com/5432action

The participants were aged 40-75 when they joined the study between 1986 and 2012. Every 4 years, the men were asked how often they had eaten standard portions of red meat, poultry, and fish over the preceding 12 months. The responses were given using a 9-point scale, ranging from "never" or "less than once a month" to "six or more times a day." Over the 26-year study period, 764 men developed diverticulitis.

Dietary trends in diverticulitis

Participants who ate higher quantities of red meat were also more likely to have used NSAIDs and painkillers, smoked more, exercised less, and consumed less dietary fibre. Conversely, individuals who ate more fish and poultry were more likely to take aspirin, smoke less, and exercise vigorously more often. Although these differences were clear, a significant effect was still observed once they had been accounted for: total red meat intake was associated with an increased risk of diverticulitis. Perhaps surprisingly, this association was not influenced by age or weight.

When those consuming the least red meat were compared with those consuming the highest quantities, a 58 percent increased risk of developing diverticulitis was found. Each daily serving was associated with an 18 percent increased risk, peaking at six portions per week. The strongest links were found with unprocessed meats; swapping just one daily portion with poultry or fish was associated with a 20 percent reduction in risk. The authors conclude: "Our findings may provide practical dietary guidance for patients at risk of diverticulitis, a common disease of huge economic and clinical burden."

How does red meat influence diverticulitis?

The next question to ask is why red meat consumption might increase diverticulitis risk. Further research will be necessary to answer this query, but there are some theories in circulation. The researchers explain that red meat has been linked to increased levels of C-reactive protein and ferritin, both of which are inflammatory chemicals. Red meat has also been linked to cardiovascular disease, cancer, and diabetes, conditions where inflammation plays a key role.

Another theory is that red meat consumption influences the types of bacteria present in the gut - the microbiome. It is possible that alterations in populations of these bacteria could affect the integrity of the gut lining and the immune responses. Similarly, the higher temperatures required to cook unprocessed meats might influence microbiome factors and levels of inflammation.

Although the investigation tapped into a relatively large pool of participants, the authors note some shortfalls. For example, because the study is observational, cause and effect cannot be concluded. Additionally, the study only focused on men, and inaccuracies in participants' recall could also affect the results. More research is needed, but for people at increased risk of diverticulitis, these preliminary results may guide future eating habits.

Cardiovascular Benefits Continue 5 Years after Weight Loss

Nutrition Insight 05 Jan 2017

A new study has demonstrated that a weight loss program designed by the Joslin Diabetes Center continues to offer health benefits for participants five years after they begin the intervention.

The study reveals that participants in the Why WAIT (Weight Achievement and Intensive Management) program lost substantial amounts of weight, and even those who maintained relatively little loss of weight after five years demonstrated reduced risks of cardiovascular disease.

The study followed 129 Why WAIT participants with an average body-mass index (BMI) of 38 (a BMI higher than 30 is considered obese). Participants showed an average loss of body weight of 9.7% (24 pounds) at the completion of the initial 12-week intervention, and maintained an average loss of 6.4% (16 pounds) at five years. "This weight loss was very impressive, since we know from previous research that if this population can maintain a 7% weight loss, they show a marked improvement in insulin sensitivity and many other cardiovascular risk factors," says Osama Hamdy, M.D., Ph.D., medical director of Joslin's obesity clinical program and assistant professor of medicine at Harvard Medical School.
"To the best of our knowledge, this is the longest follow-up in the real world of clinical practice to show encouraging results that weight loss can be achieved and maintained," adds Hamdy, lead author on a report about the research in BMJ Open Diabetes Research & Care. Among the Why WAIT participants, the study found that reaching the target 7% weight loss after one year was a good predictor of maintaining weight loss over longer periods.


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creamy
happiness.

cheesy
wholesome
tasty
happy.

thick rich
fruity
happiness.

happiness
of juicy
mangoes
with mishti
doi.

soft creamy
delicious
happiness.

the happiest
mix of healthy
and tasty.

The researchers divided the participants into two groups, depending on whether participants reached that level of weight loss after a year. The group that didn't achieve this goal saw an average weight loss of 3.5% after five years, while the second group (with 53% of participants) maintained an average loss of 9.0% at that time. These varied results were reflected in measurements of hemoglobin A1C levels. (A1C is a standard assessment of blood glucose levels over two to three months, and people with type 2 diabetes seek to keep their A1C levels below 7.0%.)
The higher-weight-loss group saw average A1C levels drop from 7.4% to 6.4% at 12 weeks and then slowly climb to 7.3% over the five-year period. However, in the lower-weight-loss group, results were not so positive. The average A1C decreased from 7.5% to 6.7% at 12 weeks and then rose to 8.0% at five years.

These A1C trends were reflected in patient use of insulin and drugs that help maintain control of blood glucose levels, blood pressure and cholesterol level. Prescriptions of these medications increased significantly among lower-weight-loss participants, but either did not change or drop in the higher-weight-loss group at five years. The lower-weight-loss group also maintained better LDL (bad cholesterol) and HDL (good cholesterol) levels over five years, and their average blood pressure remained unchanged during that time.

The higher-weight-loss group maintained improvements in their LDL and HDL levels over the length of the study. Additionally, these participants showed lower blood pressure at 18 months, although blood pressure returned to baseline levels after five years. Although the Joslin study didn't include a control group of patients, Hamdy says that obese people with type 2 diabetes generally continue to gain weight over time, increasing their risks of cardiovascular damage.

Launched in 2005, the Why WAIT program aims to deliver an innovative and achievable combination of nutritional, exercise, medication, learning and monitoring offerings. Among its benefits, "The plan is designed to maintain muscle mass during weight loss so most of the weight loss is from the fat mass, and people will retain high energy expenditure for long-term," Hamdy says, "This study demonstrated that they were able to do this."

Foods Rich in Resistant Starch May Benefit Health

Nutrition Insight 05 Jan 2017

A new comprehensive review has examined the potential health benefits of resistant starch. The review includes research suggesting it can aid blood sugar control, support gut health and enhance satiety via increased production of short chain fatty acids. Resistant starch is a form of starch that is not digested in the small intestine and is therefore considered a type of dietary fiber.

Some forms of resistant starch occur naturally in foods such as bananas, potatoes, grains, and legumes, and some are produced or modified commercially and incorporated into food products.

There has been increasing research interest in resistant starch, with a large number of human studies published over the last 10 years looking at a variety of different health outcomes such as postprandial glycemia, satiety, and gut health. The review summarizes reported effects and explores the potential mechanisms of action that underpin them.

For example, there is consistent evidence that consumption of resistant starch can aid blood sugar control. It has also been suggested that resistant starch can support gut health and enhance satiety via increased production of short chain fatty acids.

"We know that adequate fibre intake--at least 30 g per day--is important for achieving a healthy, balanced diet, which reduces the risk of developing a range of chronic diseases," says Dr. Stacey Lockyer, co-author of the Nutrition Bulletin review "Resistant starch is a type of dietary fibre that increases the production of short-chain fatty acids in the gut, and there have been numerous human studies reporting its impact on different health outcomes."

Lockyer adds, "Whilst findings support positive effects on some markers, further research is needed in most areas to establish whether consuming resistant starch can confer significant benefits that are relevant to the general population; however this is definitely an exciting area of nutritional research for the future."

Eating hot red chilli peppers may help us live longer

Written by Honor Whiteman
Medical News Today 16 January 2017

New research brings some good news for lovers of spicy foods, after finding that eating hot red chili peppers might help to extend lifespan. A study of more than 16,000 people in the United States revealed that individuals who consumed red chilli peppers had a lower risk of death from all causes over an average of 18 years than those who did not eat the spicy food.

Study co-authors Mustafa Chopan and Benjamin Littenberg, both from the University of Vermont, College of Medicine, recently reported their findings in the journal PLOS One. Chilli peppers are the fruits of the Capsicum plant, which belongs to the nightshade family. There are many types of chilli pepper, all of which have different heat levels.

In hot peppers, such as jalapeños, the fiery flavour comes from a compound called capsaicin. Studies have suggested that this compound can offer a wealth of health benefits. A recent study reported by Medical News Today, for example, found that capsaicin might have the potential to halt breast cancer, while an earlier study linked the compound to a reduced risk of colorectal cancer.

According to Chopan and Littenberg, only one previous study - published in The BMJ in 2015 - has investigated how the consumption of spicy foods such as chilli peppers can impact death risk. It found a link between regular consumption of such foods and reduced all-cause and cause-specific mortality. The new study supports this association, after finding that people who eat hot red chilli peppers might have a longer lifespan.

All-cause mortality risk 13 percent lower with red chilli pepper intake

Chopan and Littenberg reached their findings by analyzing the data of 16,179 adults aged 18 or above who took part in the National Health and Nutritional Examination Survey III between 1988 and 1994. At the point of survey, participants' consumption of hot red chilli peppers over the past month was assessed using a food frequency questionnaire. The all-cause and cause-specific mortality of participants were monitored over a median follow-up period of 18.9 years using the National Death Index. During follow-up, 4,946 deaths occurred.

Compared with participants who did not consume hot red chili peppers, those who did were found to be at a 13 percent reduced risk of all-cause mortality. Because of the relatively small number of deaths in this study, Chopan and Littenberg say that their data on how red chili pepper intake might impact specific causes of death is limited. Still, the available data suggested that hot red chilli pepper consumption was most strongly associated with a reduced risk of death from vascular diseases, such as heart disease and stroke.

While the researchers are unable the pinpoint the precise mechanisms by which red chili peppers might extend lifespan, the team says that it is likely down to capsaicin, which activities transient receptor potential (TRP) channels.

"Activation of TRP vanilloid type 1 (TRPV1) appears to stimulate cellular mechanisms against obesity, by altering mediators of lipid catabolism and thermogenesis," the researchers explain. "Protection against obesity leads to decreased risk of cardiovascular, metabolic, and lung diseases. Capsaicin may also defend against heart disease via a TRP-mediated modulation of coronary blood flow," they add.

New research 'strengthens generalizability' of previous findings

Overall, the team says that these latest findings support those of the 2015 study, linking spicy food intake to reduced risk of death by showing "a significant decrease in mortality associated with hot red chili pepper consumption." However, Chopan and Littenberg note that the earlier study was only conducted in Chinese adults, so the new research "strengthens the generalizability" of those findings.

The team concludes that: "Given the observational nature of both investigations, causality can only be suggested, not confirmed. Further studies should aim to investigate the benefits of other spices and differential effects of certain chilli pepper subtypes. Such evidence may lead to new insights into the relationships between diet and health, updated dietary recommendations, and the development of new therapies."

Colorful compound in fruits, vegetables could lower smokers' lung cancer risk

Written by Honor Whiteman
Medical News Today 23 January 2017

A compound found in oranges, sweet red peppers, and other fruits and vegetables has the potential to reduce the risk of smoking-related lung cancer, according to a new study.

Published in the journal Cancer Prevention Research, the study describes how the pigment,

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Study co-author Xiang-Dong Wang, of the Jean Mayer United States Department of Agriculture Human Nutrition Research Center on Aging at Tufts University in Boston, MA, and colleagues say that their results indicate that eating fruits and vegetables high in BCX might reduce the risk of lung cancer-caused by smoking.

This year, around 222,500 new cases of lung cancer will be diagnosed in the United States, and there will be more than 155,000 deaths from the disease. Smoking remains a leading cause of lung cancer. According to the American Lung Association, men who smoke are 23 times more likely to develop lung cancer than men who do not smoke, while women who smoke are at a 13 times greater risk of developing the disease than their nonsmoking counterparts. Secondhand smoke exposure is also a risk factor for lung cancer, causing approximately 7,330 deaths among nonsmokers in the U.S. each year.

Nicotine and lung tumor growth
There are more than 7,000 compounds in tobacco smoke, many of which are carcinogens, or cancer-causing substances, that damage the cells lining the lungs upon inhalation. While nicotine is not considered a direct cause of lung cancer, studies have shown that the addictive compound can promote the growth of lung tumors. Wang and colleagues explain that when inhaled, nicotine binds to receptors on the surface of the lungs, known as nicotinic acetylcholine receptor α7 (α7-nAChR). This prompts a signalling cascade that causes cell proliferation and the formation of new blood vessels, which are processes involved in cancer growth.
Furthermore, nicotine increases the production of α7-nAChR, and the more of these receptors there are for nicotine to bind to, the stronger the signalling cascade that encourages the growth of lung cancer cells among smokers. However, Wang and colleagues believe that BCX could be effective for reducing the amount of α7-nAChR receptors on the lungs, which could decrease the growth of lung cancer cells.

BCX reduced lung tumor growth by up to 63 percent in mice
BCX is a type of carotenoid that is responsible for the yellow, orange, and red colors of numerous fruits and vegetables, including oranges, tangerines, butternut squash, and sweet red peppers. In previous research, Wang and team observed a link between the consumption of BCX-rich foods and a lower risk of lung cancer in humans. For this latest research, the team set out to pinpoint the mechanisms underlying this association. To reach their findings, the researchers gave two groups of mice a daily injection of a carcinogen derived from nicotine. One group of mice was also given a daily dose of BCX before and after the injection. Compared with rodents that did not receive a daily dose of BCX, the team found that rodents that did receive the carotenoid experienced a 52-63 percent reduction in lung tumor growth. A daily dose of 870 micrograms of BCX - the equivalent to the human consumption of around one sweet pepper or two tangerines - was found to be the most effective in reducing lung tumor growth, the team reports.

BCX 'may have a beneficial effect on lung cancer risk'
Next, the researchers tested BCX on human lung cancer cells with and without α7-nAChR. They found that lung cancer cells with α7-nAChR were less likely to spread with BCX exposure, compared with lung cancer cells without the receptors. While further research is required to gain a better understanding of how BCX might impact lung cancer development in humans, Wang and colleagues believe that individuals exposed to tobacco smoke might benefit from consuming foods rich in BCX. "For smokers, tobacco product users, or individuals at higher risk for tobacco smoke exposure, our results provide experimental evidence that eating foods high in BCX may have a beneficial effect on lung cancer risk, as suggested by previous epidemiological studies" said Xiang-Dong Wang.

Peed piper: Urine fine to define dietary kind

By Eliot Beer, NutraIngredients 20 Jan 2017

Researchers in Britain have developed a urine test which can distinguish between different diets, potentially allowing a person's health to be assessed more effectively than through food surveys.

A team from Imperial College London, Newcastle University and Aberystwyth University created urinary metabolite models for each of four different dietary interventions, testing urine samples from participants, and comparing them against control groups. Nineteen healthy volunteers aged between 21 and 65 and with BMIs (Body Mass Index) of 2035 each had four inpatient stays of 72 hours, during which time they were given one of the four diets, with each diet randomly assigned.

Image © iStock.com/Jovanmandic

Diets ranged from one very close to UK guidelines (diet 1), including fish, lean meats and fruits and vegetables, to a high fat, low fibre diet (diet 4).

Urine was collected throughout the day from each participant, and pooled to give 24hour samples, which were then analysed using nuclear magnetic resonance imaging (NMR). These were then compared to models developed by the researchers attempting to predict the metabolite content of urine from the different diets.

Markers for fish and veggies detected

The team found their predictions were valid, with biomarkers such as hippurate for fruits and vegetables, dimethylamine and tri-methylamine N-oxide (TMAO) for fish, and other markers for cruciferous vegetables and oily fish and chicken, present in much larger quantities in diet 1 than diet 4.

The researchers also tested their findings against urine samples from 66 Danish volunteers who were not provided with specific diets but completed food surveys, and found the results remained valid.

While the tests need refinement, the researchers said their work has potential to improve health screening, in terms of cost, time and accuracy. "Existing methods for dietary assessment — e.g., dietary diaries (which require coding and data entry), food frequency questionnaires, and dietary recalls — are expensive (our own estimated cost is £60 (€69) for the complete analysis, including quality control of a one day dietary recall by an experienced nutritionist or dietitian)," wrote the researchers in a paper in the journal Lancet Diabetes and Endocrinology.

"Translating our study method into clinical practice is a cost-effective and time-effective alternative for objective dietary assessment—the cost is roughly £20 (€23) per sample for robust analysis by NMR, which takes less than five minutes per sample to run (excluding sample preparation)," they added.

"A major weakness in all nutrition and diet studies is that we have no true measure of what people eat. We rely solely on people keeping logs of their daily diets – but studies suggest around 60% of people misreport what they eat to some extent. This test could be the first independent indicator of the quality of a person's diet – and what they are really eating," said Gary Frost, senior author of the study and a professor at the Department of Medicine at Imperial.

No sausage and chips detection - yet

Isabel GarciaPerez, co-author from the Faculty of Medicine at Imperial, said: "We need to develop the test further so we can monitor the diet based on a single urine sample, as well as increase the sensitivity. This will eventually provide a tool for personalised dietary monitoring to help maintain a healthy lifestyle. We're not at the stage yet where the test can tell us a person ate 15 chips yesterday and two sausages, but it's on the way." They said the test could be available to the public in two years.

Fruit & veg flavonoids prevent unhealthy fat build-up: Twin study

By Will Chu, NutraIngredients 20Jan2017

Flavonoid-rich foods appear to alter body composition as UK researchers tie in a higher intake of anthocyanins, flavonols and proanthocyanidins with a lower body fat mass.

Findings from the crosssectional Multivariable study suggest flavonoids may contribute to an overall healthier fat mass profile. This definition includes body fat distribution, which may be a stronger influence on insulin resistance and inflammation that is characteristic of metabolic conditions such as diabetes.

The associations were made with achievable dietary intakes of flavonoids in mind. According to the research team, the findings had specific relevance for public health recommendations aimed at reducing body fat composition.

Current European recommendations differ from country to country with health campaigners also debating as to whether eating vegetables over fruit is more beneficial. The UK's EatWell guide for example recommends at least 5 portions of a variety of fruit and vegetables a day – an amount also recommended by the World Health Organisation (WHO) and other countries such as Germany and the Netherlands.

France has taken this figure and doubled it with recommendations totalling 10 fruit and veg portions a day as standard. Further afield the Australian government has set out advice of "two plus five" a day that recommends people consume two portions of fruit and five of vegetables.

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Study details

Researchers from Kings College London and the University of East Anglia enrolled a total of 2734 healthy, female twins aged 18–83 years. Intakes of total flavonoids, flavanones, anthocyanins, flavan3ols, flavonols, flavones, polymers, and pro-anthocyanidins were assessed using food-frequency questionnaires.

Dual-energy X-ray absorptiometry — a technique normally used to measure bone mineral density—was used in this case to measure total fat content, including limb-to-trunk fat mass ratio (FMR), fat mass index, and central fat mass index.

Results found a higher intake of anthocyanins, flavonols, and proanthocyanidins were associated with a lower FMR. Twins with higher intakes of flavan3ols, flavonols and proanthocyanidins had a significantly lower FMR than that of their co-twins with withinpair differences of 3–4%.

Further analyses of twins with higher intakes of flavonol-rich foods (onions, tea, and pears), pro-anthocyanidin-rich foods (apples and cocoa drinks) had a 3–9% lower FMR than that of their co-twins. This finding was also observed in younger participants (aged 50 years) consuming anthocyanin-rich foods (berries, pears, grapes, and wine). "We showed that higher intakes of anthocyanins and flavonols were associated with lower fat mass and reduced central adiposity," said the research team. "These inverse associations were independent of established dietary and other risk factors, including physical activity," they added.

One finding of note found the addition of total fruit and vegetable intake and fibre intake to the model did not significantly weaken the relationship. The team thought this benefit was specific to a food constituent contained within flavonoid-rich foods and not necessarily to subjects who ate large amounts of fruit and vegetables.

Likely mechanisms of action

Such is the strength of evidence of flavonoid efficacy, several plausible mechanisms linking this metabolite to fat distribution were proposed. Evidence that the bioactive constituent, the flavan3ol epigallo-catechin gallate (EGCG) prevents lipid absorption, decreases the expression of genes that regulate lipid metabolism and increases energy expenditure have been put forward. Additional animal studies have provided more explanation on the effects of dietary flavanones, flavonols and anthocyanins on obesity. Mechanisms mentioned include the inhibition of cell differentiation, the regulation of glucose tolerance, and the adjustment of insulin and inflammatory signalling pathways.

Post-exercise protein cuts later food intake: Study

By Eliot Beer, NutraIngredients 23Jan2017

Consuming a whey protein drink after exercise cuts later energy consumption and eating rate compared to consuming a carbohydrate drink among lean men, according to a study.

Researchers from Loughborough University and other UK institutions tested how consumption of either a dextrose drink or a protein drink after exercise affected later food consumption. They recruited 15 resistance-training men, and following a standardised breakfast and exercise routine, gave them one of the two drinks, following a randomised double-blind protocol. Around 65 minutes after finishing their drinks, participants were offered a meal, where they could eat as much as they wished – with researchers measuring consumption.

"Energy intake was reduced after the consumption of a whey protein isolate drink compared to an energy-matched carbohydrate drink. Mean eating rate was also reduced after consumption of the whey protein drink," wrote the researchers in an article published in the European Journal of Nutrition.

The average energy intake per meal afterwards for participants who consumed the protein drink was 3,742 kJ, compared to 4,172 kj for participants who consumed the carbohydrate drink. The eating rates were 339 kJ / minute and 405kJ / min for protein and carbohydrate recipients respectively.

Cut could help weight loss

The researchers noted the difference between trials in energy consumption was 10.3%, above the 8.9% variation shown by a previous study into variation in meal consumption, suggesting the difference was significant. They also said their findings had implications for weight management: "It has been suggested that the daily discrepancy between intake and expenditure causing long-term weight gain is slight.

Accordingly, the modest reduction in energy intake observed in the current study (430 ± 579 kJ) may augment the effects of resistance exercise in aiding long-term weight management. "The present study suggests that a reduction in energy intake following resistance exercise with whey protein consumption may offer an additional mechanism through which body re-composition might occur," they added.

While participants were not told the composition of the drinks during the study, they were asked to rate their perceptions of them – and when told they had consumed either protein or carbohydrate drinks at the end of the study, were able to identify which was which.

Perception differences significant
The authors said it was possible perceptions of the drinks, in addition to protein content, might have affected later food consumption. "Within the current study, the protein drink was perceived to be thicker and creamier than the carbohydrate drink, and less pleasant. Consequently, it is probable that oro-sensory factors may have played a causal role in the reduction in energy intake after consumption of the protein drink compared to the carbohydrate drink. "Whilst the failure to match drinks for orosensory factors might represent a limitation of the present study, it also increases the external validity of the study as in practice protein and carbohydrate drinks consumed in a post-exercise setting would likely differ hedonically," they noted.

The protein in the study was provided by Volac, which had also previously funded research by one of the study's authors – however beyond providing the materials Volac was not otherwise involved in the study. Other authors have previously received funding from dairy industry bodies, which were similarly not involved in this study.

CVD: Blinkered training pushes young doctors away from supplements

By RJ Whitehead, Food Navigator Asia 19Jan2017

Doctors show low willingness to recommend omega3s to their patients because the training they received lacked any attention to nutrition and lifestyle.

That's according to Ross Walker, one of Australia's most eminent cardiologists, who says that most of his colleagues didn't know a thing about omega3s. Also a broadcaster who strongly voices his support of the benefits of omega3 supplementation, Dr Walker says fatty acids protect us from outside toxins, making them vital for good health. "The covering of every cell, the membrane, in a healthy person is 75% fat, so you need to feed high-quality fats into that membrane. High-quality fats are omega3 fats and monounsaturated fats, not omega6 polyunsaturated fats, while saturated fats are pretty neutral—don't hurt, don't help."

Yet the problem for conservative doctors is that if you can't "fix a condition with a prescription pad or a scalpel", then the alternative is bound not to work. "This is the problem with medical training, the amount of time given to students and to young medical trainees on nutrition, lifestyle and supplementation, it's so minimal. And if they aren't told about it, they won't believe it," says Dr Walker. "If you go to a medical school where all you're told about is the importance of pharmaceuticals and the importance of surgical procedures and other procedures, all else is bunkum. "The Jesuits said: 'give me a child to the age of seven and I've got them for life'. Get an 18-year-old and put them in medical school with all of this stuff and they'll believe it."

Dr Walker believes the evidence for omega3 supplementation, multivitamins and ubiquinol, is overwhelming, but doctors are choosing to ignore the evidence. "Omega3s are some of the most studied chemicals. Eighty per cent of these studies have been positive in support of their benefits across the board, from heart health and brain health to joint health. "Why doctors don't read the evidence properly is beyond me. And one or two randomised control trials which have been incredibly flawed have said there are no benefits from omega3. But they have ignored all the other evidence that said there [were benefits]."

Dr Waker recounts a story he heard about one well-respected cardiologist, who told a patient that he takes Lipitor because it lets him eat everything he wants. "That's just stupid," he says. "Just by being healthy and happy reduces your risk of all diseases by 70% with no side effects. Taking a drug to reduce your cholesterol reduces your risk for one disease by about 20-30% with the potential of a bucket of side effects. Moreover, the more you eat badly, don't take enough exercise, are stressed or smoke, the more you override any benefits you derive from a pharmaceutical drug or from a supplement. It's not rocket science, he says, though it has clearly stumped some of the medical industry. "I was on a show six years ago about meditation as I've been meditating every day for 25 years. A GP who was head of the Australian Sceptics Association asked why I would waste half an hour of every day of my life meditating when I could just pop a pill in five seconds," he says, adding: "I rest my case."


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Cry baby: Infant tears reveal nutrient deficiencies

By Will Chu, NutraIngredients 16Jan2017

Tears have been suggested as a reliable indicator of health as researchers have found the nutrient profile of this bio-fluid to be similar to blood, which may enhance the speed of deficiency diagnoses.

Vitamin concentrations in infants were ascertained from tear and blood samples with tears shown to be as effective as the more traditional medium of blood. Lead study author, Dr Khaksari, a research specialist at the Chemical Advanced Resolution Methods (ChARM) Laboratory at Michigan Technological University, and her team took samples from 15 four-month-old infants and their parents.

They focused on babies with a 100% liquid diet of formula or breast milk to garner further understanding between the connection between parent nutrition and infant nutrition. Nutritional data garnered from parents also revealed additional insights into family's intake of healthy foods. In general, water-soluble vitamins were found at higher levels in the infants while fat-soluble vitamins were higher in parents.

An important observation noted that mothers tended to be more deficient across-the-board. A correlation was observed between vitamin E and vitamin B levels in the tears of both parents and babies. Formula-fed babies were the exception, with notably higher levels of B vitamins in their tears. "Our goal was to seek the viability of establishing measurable units of tears for nutritional assessments," said Dr Khaksari. "Since tears contain vitamins, they might have real potential to replace other clinical tests."

Tears 'less invasive'

Vitamins are convenient indicators of nutritional health because they are not manufactured by the body consequently they reflect the quality of dietary food sources. Tears' sample preparation and collection are considered less invasive when compared to procedures involving blood, which requires several millilitres and is an invasive sample.

Urine samples as another example suffer from hourly composition changes and require 24hour sample collection for accuracy. In discussing some of their findings, the study's authors noted the influence of a breastfed/ bottle-fed approach along with diets, on vitamin concentrations.

"We observed the concentrations of these two vitamins (B1 and B3) to be higher in the serum of infants with the greater percentage of bottle-fed diet," the study's authors wrote. "Also, breastfed infants demonstrated stronger concentration correlations with their parents. The correlations between the vitamin concentrations of infants and parents proved that an infant's nutrition was dependent upon their parent's nutrition."

Higher vitamin concentrations were found in the tears of participants with minimal tear production. This, they said suggested that the vitamin concentrations depend on tear flow rates.

'Impressive': Omega3s during pregnancy may protect kids from asthma

By Stephen Daniells+, NutraIngredients USA 05Jan2017

Fish oil supplements during the third trimester of pregnancy may reduce the risk of the children developing asthma or wheezing, says a new study published in the prestigious New England Journal of Medicine.

Data from the Copenhagen Prospective Studies on Asthma in Childhood 2010 (COPSAC2010) cohort indicated that the risk of persistent wheeze or asthma was about 7% lower in children of mothers who received fish oil supplements during the third trimester, compared with those who received olive oil (control). In addition, omega3 supplementation was associated with a significant reduction in the risk of infections of the lower respiratory tract, report researchers from the University of Copenhagen, the Technical University of Denmark, the University of Waterloo (Canada), and Harvard School of Public Health (US).

"We've long suspected there was a link between the anti-inflammatory-properties of long-chain omega3 fats, the low intakes of omega3 in Western diets and the rising rates of childhood asthma," said Professor Hans Bisgaard of COPSAC at the Copenhagen University Hospital and lead author of the paper. "This study proves that they are definitively and significantly related."


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"Nothing short of impressive"
Commenting independently on the study's findings, Harry Rice, PhD, VP of regulatory & scientific affairs for the Global Organization for EPA and DHA Omega3s (GOED), told us: "Results from the present research are nothing short of impressive, particularly in the offspring of mothers that had the lowest EPA/DHA levels before supplementation. These results add to the totality of scientific evidence, including, but not limited to the benefits associated with reducing the risk of early preterm birth and improving child neurodevelopment, which underscores the importance of EPA and DHA during pregnancy. It's clear that pregnant women need to be encouraged to increase their intake of fatty fish and omega3 rich supplements."

Study details
Prof Bisgaard and his co-workers recruited 736 pregnant women at 24 weeks of gestation and randomly assigned them to receive 2.4 grams per day of omega3rich fish oil or olive oil until one week after delivery. The children were then monitored for five years. Data from 695 children indicated that there was a 7% reduction in the risk of persistent wheeze or asthma in the omega3 group, compared to the control group (17% versus 24%, respectively). This corresponded to a relative reduction of 31%, said the researchers. An even stronger protective effect was observed in children of women with the lowest average blood levels of EPA and DHA, with a 16% lower risk versus the control group. This corresponded to a relative reduction of 54%, said the researchers. In addition, fish oil supplementation was associated with a 7% reduced risk of infections of the lower respiratory tract, compared to the control group. "The proportion of women with low EPA and DHA in their blood is even higher in Canada and the United States as compared with Denmark, so we would expect an even greater reduction in risk among North American populations," said Prof Ken Stark, Canada Research Chair in Nutritional Lipidomics and professor in the Faculty of Applied Health Sciences at the University of Waterloo. "Identifying these women and providing them with supplements should be considered a frontline defense to reduce and prevent childhood asthma."

Vitamin B6 deficiency linked to cognitive decline: Study

By Eliot Beer, NutraIngredients USA 16Jan2017

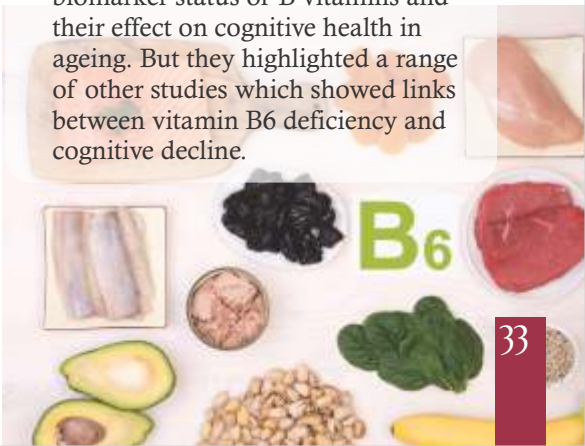
Low vitamin B6 intake may contribute to cognitive decline in older adults, while other B vitamins do not show the same effects, according to a new follow-up study in Northern Ireland.

Researchers from Northern Ireland and Ireland contacted participants aged 60 and over from a previous study into B vitamin intake, with 155 out of 255 potential subjects, all of whom showed normal cognitive function in the original study, able to participate in the new research.

In the original study participants over the age of 60 completed a cognitive function test – Folstein's Mini Mental State Examination (MMSE) – in order to test their competence in recalling food intake. The new study compared these results to new MMSEs, along with blood tests and dietary surveys. Participants had a mean age of 70 years, were predominantly female, well-educated and had a low rate of depression. The majority of participants were regular consumers of foods fortified with B vitamins (75%). "Dietary intakes compared favourably with current UK dietary recommendations as reflected in good overall B vitamin biomarker status."
Biomarkers & surveys show link
"Our results showed that participants with lower status of vitamin B6 [PLP the measure of active vitamin B6] at baseline were 3.5 times more likely to have a greater rate of cognitive decline over a [four year] follow up period," wrote the researchers in their paper, published in Nutrients. The decline affected participants not only with deficient vitamin B6 levels, but also some with clinically sufficient levels of B6. The researchers suggested this showed that optimal vitamin B6 levels might be important for cognitive health in ageing.

No link for other B vitamins
In contrast to vitamin B6 (pyridoxine), the researchers did not find any links between other B vitamin status and cognitive decline in the subjects. "Whilst elevated plasma homocysteine, low folate and, to a lesser extent, vitamin B12 [cobalamin] status have been frequently associated with cognitive decline there was no evidence of significant associations for these biomarkers in the current study," wrote the researchers. The findings in the current study may be explained to some degree by the fact that vitamin B6 seemed to be the limiting nutrient within the cohort. There was a greater incidence of deficiency of vitamin B6 (11% clinical deficiency) compared with folate [vitamin B9, 3%] or vitamin B12 (0%)," they added.

They noted other studies support the idea that correcting suboptimal levels of a B vitamin deficiency has a greater impact than providing additional B vitamins to people with optimal levels. The researchers said they believed their study was the first longitudinal study to look at both dietary intake and biomarker status of B vitamins and their effect on cognitive health in ageing. But they highlighted a range of other studies which showed links between vitamin B6 deficiency and cognitive decline.



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FOOD SCIENCE & INDUSTRY NEWS

Healthy snacks might see unhealthy American diet as an opportunity, Mintel suggests

By Douglas Yu+, Bakery and Snacks 17Jan2017

A latest Mintel report shows only 42% of Americans consider their diet to be healthy, while less than 38% consumers agree that healthy foods are worth the added expense.

"Despite the fact that we're seeing such a widespread and growing interest in healthy foods, relatively few Americans believe their diet is healthy," senior food and drink analyst at Mintel, Billy Roberts, said. "With consumers largely wary of even regulator-approved health food options, marketing healthy foods to sceptical consumers requires far more than merely an on-pack promise," he added.

So, does this give healthy snacks a better chance to be incorporated into consumers' diet? Roberts told BakeryandSnacks that healthy foods of all types appear to have a better opportunity to reach more consumers with the growing number of nutritious options and better-for-you ingredients. "Interestingly, consumers are seeking healthier components in foods, such as protein, fibre and whole grains, in particular. A number of consumers are also being seen to avoid sweeteners, with half seeking to avoid high-fructose corn syrup, 47% trying to avoid sugar, and 43% trying to cut their consumption of artificial sweeteners."

Despite the fact that healthy snacks appear to meet the consumer demand for convenience, Roberts added, they have to promote their lack of artificial elements and entice consumers with an increased protein and fibre content.

Challenges imposed by stigma against processed foods
Roberts said most shelf-stable processed foods, including snacks, are generally regarded by the consumer as "almost inherently unhealthy." "When asked to describe foods they consider healthy, consumers were much more likely to choose such descriptors as natural, organic and free of pesticides and preservatives," he mentioned.

Roberts maintains this year's biggest challenge for food and snack brands will be in the area of genetically modified ingredients. "Last year saw significant legislative efforts aimed at encouraging brands to identify GM elements, and it may well have awakened consumer concerns about genetic modification."

Mintel reported the multi-outlets sales of better-for-you snacks reached $1.1bn in the 52 weeks ending June 12, 2016. This represents an 18% year-over-year increase, and a 35% gain since 2014.

The quest for the next 'meatless meat'

IFT Weekly January 11, 2017

As the environmental impact of livestock is increasingly debated as a key obstacle in achieving sustainable lifestyles, sales of plant-based meat substitutes have made steady gains in developed markets, as they move away from being the preserve of vegetarians to becoming popular among the wider group of flexitarians seeking to reduce their meat intake.

In a recent study, Euromonitor International's Food Analyst Raphael Moreau explores the future of meat alternatives, including in-vitro and 3D-printed meat.
The strong growth of plant-based meat alternatives, notably in Western Europe, was partly driven by ongoing improvements in mimicking the texture and taste qualities of real meat. A high profile new vegetarian burger that uses the genetic code from soybeans to imitate the blood-infused properties of beef was launched in summer 2016 at the New York restaurant Momofuku Nishi. Its producer, Impossible Foods, a California start-up founded in 2011 to reinvent the veggie burger, seeks to appeal to meat eaters who will not compromise on the "meatiness" taste.

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Beginning in 2013, when a team from Maastricht University in the Netherlands demonstrated the first cultured or in-vitro meat by growing meat from cow cells, forward-looking companies have been seeking to advance the technology to create the next breakthrough in the evolution of meat substitutes. For example, Memphis Meat, a California start-up, first produced a meatball using a bioreactor in 2016 and expects to commercialize its products within five years.

According to Moreau, while 3D printed meat can't claim to break ground in ethical terms in the same way as in-vitro meat does, its emergence could contribute in shifting consumer acceptance towards alternative types of meat. The German company Biozoon has been a pioneer in using 3D printing technology to create new shape and textures for food, including some meat-based products. The 3D printed dishes, which can combine several ingredients including chicken and pork, are easier to eat because they reproduce each ingredient with a softer texture. As a result, the 3D-printed meals have already been adopted by some nursing homes in Germany.

"While plant-based meat substitutes still have bright days ahead of them before being challenged by other types of meat alternatives still years away from being commercially competitive, the increased popularity of plant-based meat alternatives among consumers could herald the potential future acceptance of a wider range of alternatives to meat, once they become available," wrote Moreau. "Industrially-processed meat may be particularly vulnerable, potentially challenged by newer types of substitute products which can claim to score higher on ethical grounds, provided that in their quest to achieve the holy grail of 'meatless meat' taste is not scuppered by a consumer backlash against over-engineered food or by legislation undermining their development."

Convenience Not Only Reason Why Parents Buy Frozen Dinners

Nutrition Insight 09 Jan 2017


Image © iStock.com/mg7

A new study looking into the reasons why parents buy frozen ready-made dinners for their family, has found that a genuine like for the meals, cost saving and poor cooking and meal-planning ability contribute to the sales of such food items, with convenience also playing a big part.

It's well known that processed foods are higher in calories, sugar, sodium and saturated fat than natural foods. However, despite the consensus that boxed entrees and frozen dinners available at home can contribute to a poor diet, they are still widely popular, which led researchers from the University of Minnesota and Duke University to examine reasons why parents purchase pre-packaged, processed foods.

Although the majority (57%) of parents surveyed as part of this study identified time savings as a reason for purchasing frozen dinners, the results were a little more complex. With data from the HOME Plus randomized controlled trial, researchers used a psychosocial survey to assess the motivation of parents in buying pre-packaged, processed foods. Nearly half (49%) of parents reported buying ready meals because their families really liked the meals, one third chose processed foods because children could help prepare them, and more than one quarter (27%) preferred the cost savings of frozen dinners.

"Because of the convenience and marketing of pre-packaged, processed meals, it is not entirely surprising that most parents buy frozen dinners to save time on preparation," lead author Melissa Horning, PhD, RN, PHN, said.

Previous studies had shown a link between purchasing frozen dinners and the desire to save time, and the researchers also found a link between parents working more hours per week and choosing to purchase pre-packaged, processed meals. Likewise, indicating any reason for purchasing frozen dinners other than "They are easy for my child to prepare" was linked to parents have lower cooking self-efficacy and meal-planning ability.

The authors say that the results of this study raise some concerns, namely that choosing pre-packaged, processed meals was linked to less fruit and vegetable availability, greater availability of less nutritious foods, and lower cooking self-efficacy and meal-planning skills. The researchers suggest that future studies address these concerns. "If parents are not confident in their ability to cook, pre-packaged, processed meals are an appealing but less nutritious option," Horning commented. "Parental attributes of self-efficacy for cooking healthful meals and meal-planning ability are modifiable, however, and new research should confirm our findings and explore interventions to enhance parents' skills and abilities."

Image © iStock.com/paulprescott72

India has potential to be one of world's biggest food processors

By RJ Whitehead, Food Navigator Asia 24Jan2017

With nearly a tenth of the world's arable land and a fifth of its irrigated farming, India is one the world's largest producer of milk, pluses, ginger, bananas, guavas and mangoes.

It also ranks second in the world for rice, wheat, vegetable and horticulture production. Yet a new report finds that an underdeveloped food processing industry and inadequate postharvest infrastructure have resulted in huge wastage of produce. In an assessment of India's food processing machinery industry, analyst Research & Markets found that only about 2% of fruit and vegetables, 6% of poultry and 8% of seafood ever made it to be processed. This is even though consumer demand for processed foods—never before a huge market in home-cooking India—has been skyrocketing.

"Demand is growing rapidly for processed food products. Growth is being driven by rising incomes, rapid urbanisation and changes in the family structure that have resulted in a significant increase in the number of nuclear families," it said. "Changing palate, lifestyles and a young population are also driving demand. It is against this backdrop that demand for processed food has grown annually by about 15% in the past five years, and the growth rate is expected to accelerate to over 20% for the foreseeable future."

To drum up interest in investment in food processing—and the government's planned mega food parks—India's dynamic food processing industries minister, Harsimrat Kaur Badal, has been contact with many of the country's food chiefs. Food processing is central the Indian government's flagship "Make in India" agenda, which Prime Minister Narendra Modi claims will boost the prospects of food manufacturers at a time when domestic processed food supplies are lagging.

From wheat to meat: Seaweed start-up launches vegan bacon after pasta success

By Emma Jane Cash, Food Navigator 16Jan2017

Following the success of I Sea Pasta, seaweed specialist Seamore, has launched a vegan bacon made entirely from seaweed and has further plans to expand its market.

Since the company's launch in 2014, Seamore now has two products available to buy in eight countries and an online shop that ship worldwide. The bacon is made out of 100% organic, unprocessed seaweed that can be used in a variety of ways to add flavour or texture to meals.

The seaweed bacon can be used in its dried form or can be soaked or fried, before added to meals, and it has a smoky, salty taste. For the launch of I Sea Bacon, the company marketed the product using the slogan "Save My Bacon", claiming there are three benefits to eating I Sea Bacon. "The first is you're not getting saturated fat you're just getting good stuff and that saves your own skin. The second is you don't have to sacrifice the pig and the third is that pork is one of the most eco-unfriendly foods that we have, so you're saving the skin of the planet too," Willem Sodderland, founder of Seamore, said.

Sodderland says by adopting this marketing technique of displaying health benefits the products are more accessible to consumers despite the higher prices compared to standard wheat based pasta or pork bacon. Currently, Seamore only uses two varieties of seaweed, himantalia elongate and dulse, out of the 10,000 species available, one for the pasta and the other for the bacon respectively, which it harvests out of Ireland and Brittany, France.

Sodderland explains that one benefit of harvesting from these sites is they are able to get both varieties of seaweed from the same suppliers. However, it is experimenting with different varieties for its new products. "We are still in talks [with seaweed suppliers] about quality and quantity, so nothing has been decided yet but there are lots of possibilities. For other species the scope can be completely different. South America and Asia are also regions we can source from. When we start to expand to use more species then our geographic scope will also change," Sodderland said.


Image © iStock.com/jfybel

Sodderland will be giving a presentation at the Food Vision event in March, held in London, which will focus on how Seamore has become the forerunner in a whole new food category that has the potential to become a sustainable source of protein, carbohydrate, minerals and vitamins. He will discuss the technologically friendly side of harvesting seaweed, as well as the company's partnership with Dutch bank Rabobank and how Seamore became a part of its 'banking for food' initiative.

As well as growing into new countries, Sodderland says new products are also on the horizon, including wraps and readymade meals. "One of the things we are seeing is that there is a group of people that are more willing to go out and find new foods that have the great benefits our products have, and are able to adjust to the way you cook with them. There is obviously also a much larger group of people that doesn't really want to do much. They want a healthier product, they would love to have products that are organic, maybe more sustainable, but they don't really want to do much to get it," he said.

The readymade meals will be targeted at these consumers in order to entice them to try seaweed based products. He added that the new products are still in an early development stage and will take time to become market ready. Sodderland believes his products can be used to make tasty dishes and can be used as substitutes in classic recipes. His favourite dishes are mashed potatoes with endives and I Sea Bacon, as well as I Sea Pasta pesto. "It is a really incredibly simple dish. It's the pasta with a vegan pesto with some cherry tomatoes for colour. Then you can go in different directions you can add a piece of cod, or some chicken or even lamb chops. If you wanted to go completely vegan then you can use artichoke hearts," he said.

Functional food and supplement manufacturers urged to get creative with whey protein offerings

By Millette Burgos+, Food Navigator Asia 13Jan2017

South East Asia functional food and supplement firms need to help educate consumers that whey protein isn't just for body builders, and formulate new products that can help treat the rising number of sarcopenia cases among the elderly in the region.

That's the view of Dr Douglas PaddonJones, professor at the Department of Nutrition and Metabolism, University of Texas Medical Branch who highlighted the increase in Sarcopenia a condition that cause muscle and strength loss due to ageing – at a recent seminar in Singapore organised by the American Dairy Council.

Dr PaddonJones, who published a research paper on dietary protein recommendations and the prevention of sarcopenia, talked about his evolving research around the benefits of protein and how the distribution of protein intake throughout the day, compared to a skewed intake, can maximize muscle protein synthesis, improve functional outcomes in in ageing adults, and influence appetite and satiety.

There has been much debate that current dietary guidance for protein, which is based on minimum protein requirements, may not optimize health benefits for aging adults and seniors. Thus, as research advances and consumer demands for added protein increases, there is a need for versatile proteins that offer nutritional and functional benefits to the food industry.

Whey protein from dairy products is one example, Dr PaddonJones said, because dairy enjoys a positive image in South East Asia. "Whey protein products are an opportunity to meet the health and nutritional needs of consumers across life stages, making it a good opportunity for manufacturers," he added.

Muscle mass

But while whey protein is available in powder form in Southeast Asia, awareness of whey protein's health and nutritional benefits are mostly known only by gym-goers and bodybuilders who take whey protein to increase muscle mass, and for the nutritional ingredient's ability to repair muscle after exercise. "Awareness is still growing for the general population, who are currently learning the benefits [of whey protein] for older demographics as well as for weight management and satiety," said Dr PaddonJones.

He believes there are ample innovation and growth opportunities for consumer packaged products using whey protein in the region. "Choices that are convenient to eat and coincide with the wants and needs during different parts of the day are especially important," he said. "It is important to keep in mind that not all proteins are equal in terms of nutritional quality. Notably, whey protein contains all essential and nonessential amino acids and are high in branched-chain amino acids such as leucine which is essential to kick-start muscle protein synthesis."

Image © iStock.com/marekuliasz

High demand for resealable closures thanks to extended shelf life

By Jenny Eagle+, Bakery and Snacks 03Jan2017

Sales in resealable closures and spouts are expected to reach $16.15bn in 2022, driving future F&B market growth, says Zion Market Research. Its report, 'Resealable Closures and Spouts Packaging Market 20162022', claims niche innovations and improved designs will fuel the global market in the coming years.

Changing lifestyles

Also, owing to changing lifestyle and the advantage of resealable closure and spout packaging, many products can be easily stored and carried. Neha Rathod Godbole, author of the report, Zion Market Research, said the packaging increases the shelf life of the product, which is also anticipated to contribute to the growth of the global market. "Food and beverage is the most demanding sector in the application segment," he said. "Based on product type, the global market is categorized as pillow pouches, standup pouches, flat pouches and others.
Standing pouches is the most demanding product type of all.

"The resealable closures and spouts packaging market are divided on the basis of material as paper, metal, glass, plastic and others. Of these, plastic is the widely preferable material in the global market because of its lightweight and sustainability properties."

Some of the key players in the global resealable closures and spouts packaging market include Bemis Company, Amcor, Janco, Huhtamaki, Ampac, Constantia Flexibles, Dupont, Multivac, Winpak, Essel Propack and Albéa. On the basis of application, the global resealable closures and spouts market is segmented as pharmaceuticals, personal care, consumer goods, food & beverage, electronics goods, paint and dyes, and others.

Asia Pacific prominent region

The report covers forecast and analysis for the resealable closures and spouts packaging market on a global and regional level with a forecast from 2017 to 2022 based on volumes (kilo tons) and revenue (USD million). It states Asia Pacific is the prominent region for resealable closures and spouts packaging owing to increasing number of consumers. In addition, consumer preferences for more attractive packaging and increasing disposal income of people in this region impact the global market growth in a positive way.

Europe is a mature market for resealable closures and spouts packaging with the presence of major competitive market players. North America is anticipated to show significant growth in the near future. Increasing investment in the manufacturing sector by this region is anticipated to drive the global market. The Middle East shows a considerable growth for the resealable closures and spouts packaging market due to increasing consumer concerns for recyclable packaging. Latin America is expected to witness higher growth in the near future.

"The global resealable closures and spouts packaging market was valued at around $11.52bn in 2016 and is expected to reach $16.15bn in 2022, growing at a CAGR of around 5.8% between 2017 and 2022," said Godbole.
"The study provides a decisive view on the resealable closures and spouts packaging market by segmenting the market based on applications. All the application segments have been analyzed based on present and future trends and the market is estimated from 2015 to 2022."

The study includes drivers and restraints for the resealable closures and spouts packaging market along with the impact they have on the demand over the forecast period. It also looks at opportunities available in the resealable closures and spouts packaging market on a global level.

Lactic acid bacteria research could lead to new products and more jobs

By Jim Cornall, Dairy Reporter 09Jan2017


Image © iStock.com/ MeaoFoto

Lactic acid bacteria (LAB) are responsible for the taste, consistency and shelf life of a range of dairy products.

In a new Danish National Food Institute, Technical University of Denmark project, aroma-producing LAB will be used to improve the flavour of cheeses and other dairy products, and in addition create value from dairy by-products. Innovation Fund Denmark has invested €740,000 ($779,000) in the three-year €1.3m ($1.37m) project, a collaboration with Arla Foods and Arla Foods Ingredients, which is officially titled 'NOPROBLEM – Novel tasty dairy products obtained through intelligent resource management.'

Aromas and flavour

Dairy products are characterized by their unique aromas and LAB play important roles in their production. The new project aims to solve a specific problem concerning insufficient flavour formation in certain types of cheeses, a problem that arises due to limitations in the flavour-forming capacity of the LAB currently being used. The goal is to develop improved LAB that perform better in industrial settings, which the researchers say should allow for consistent manufacturing of good and tasty cheeses. Another aspect of the project is to explore ways to integrate an LAB-based flavour-forming cell factory into Arla's production, and thereby enable the creation of novel milk-based products as well as add value to existing low-value dairy by-products. This would contribute to increased sustainability of the dairies.

Research benefiting industry

The National Food Institute's Research Group for Microbial Biotechnology and Bio-refining has more than 20 years of research experience working with LAB. Christian Solem, associate professor at the National Food Institute, said the project is an example of how university research can benefit Danish industry and create value for Danish society. Søren K. Lillevang, cheese culture expert at Arla Foods, said, "We expect that this technology will be able to solve an existing problem in our production and at the same time make the Danish dairy sector more competitive globally, which will lead to increased exports, create more jobs and improve conditions for our dairy farmers." Arla Foods Ingredients' senior R&D manager, Henrik Jørgen Andersen, said the project has the potential to create new products from dairy by-products that currently have no significant value.

Saffron infused chocolate comes to the UK and the Netherlands

By Oliver Nieburg+, Confectionery News 10Jan2017

Start-up firm Mahbir has launched a range of premium Indian foods containing saffron to the UK and the Netherlands, including a Belgian milk chocolate infused with the spice.

British-Indian Mahbir Thukral, 30, launched the brand Mahbir Premium Indian Saffron at the BBC Good Food Show Winter in the UK on November 24, 2016. The Coventry-based business, with offices in the Netherlands and India, sells strands of 100% pure red stigma-tip saffron in gift boxes and has also created three ready-to-eat foods infused with the spice: Belgian milk chocolate, apple jam and marmalade. It is selling the food items online and is seeking listings with premium retailers.

From savoury to sweet

"For many European consumers, the very concept of having saffron in milk chocolate is new because they would naturally associate it with paella or risotto," Thukral, who left a marketing position at International Flavors & Fragrances to start his own business, told ConfectioneryNews. "In a lot of Eastern dishes, saffron is used predominately in sweet products or sweet dishes whereas European consumers use it predominantly in savory dishes," he said. "At the moment it's completely my own brand, but if a major hotel company said we want to do it with our logo on it, then I would happily do so," said the young entrepreneur Thukral.

The company has set a recommended retail price for the 100 g bars of €5.05 in the Netherlands and £4.55 in the UK ($5.52). Mahbir 100 g chocolate bar (left), saffron gift pack (right). Source: Mahbir Premium retail and airlines Thukral said listings at premium UK retailers such as Waitrose and Selfridges would be ideal for the brand, as well as stores in premium hotels chains, such as Radisson and the Marriott. Mahbir is already in discussions with airline companies, such as Emirates and Etihad. "I've been trying to approach Jet Airways (Mumbai-based airline) because I think that would be the right fit," added Thukral.

Formulating with saffron

The company sources its saffron directly from a cooperative in Kashmir. In the chocolate, the saffron is dried and added as complete strands. "Saffron when it is grounded gets oxidized. Like with all spices, they should never be exposed to any light because they quickly deteriorate," said Thukral. He continued: "I didn't want to have bitter saffron like you have bits of sea salt. We needed to experiment at which stage in the chocolate manufacturing process in which the saffron should be added to get a rounded flavour profile."

The company initially had plans for saffron-infused Dutch cheese and Italian pasta, but these concepts were ditched partly due to formulation concerns. "For example with the cheese, we experimented and with the natural aging fermentation process, the saffron congregates in one part of the cheese automatically and you don't have any control of that. That's one of the reasons the cheese hasn't worked out," Thukral said.

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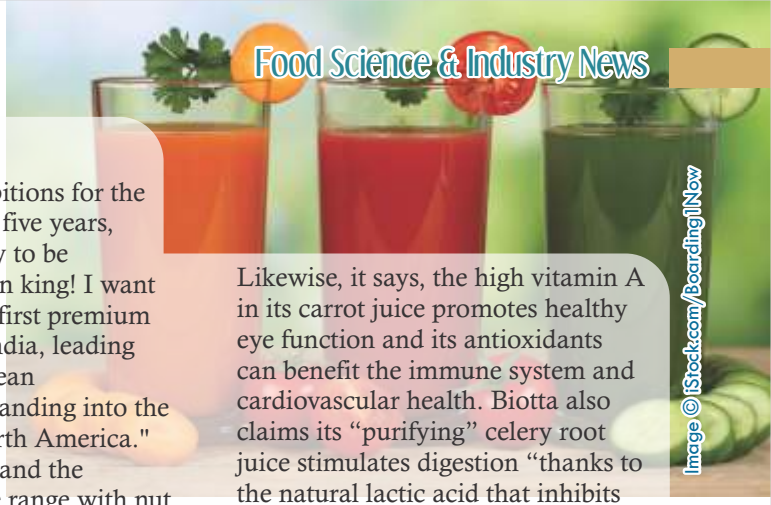

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The company owner went to ISM last year and spoke to Barry Callebaut about supplying chocolate for the brand, but the quantities were insufficient for Barry Callebaut, so Thukral opted for a contract chocolate maker just outside Antwerp, Belgium, which supplies major supermarkets.

Saffron petals and pure red sigma

The company is using saffron flower petals in the chocolate, which Thukral claims is an industry first. Petals are typically thrown away when saffron is extracted, but Thurkal thought the petals could add visual appeal evocative of dried rose petals found in some India sweets. "Last year, we put the petals in the same ovens the saffron is dried in and it didn't work it started going mouldy because there was too much moisture in the flower petal. Then, together with the University of Kashmir, we used a dehydration process," said Thukral. The entrepreneur said the company's saffron is pure red stigma tip saffron. "The red stigma tip is what is the highly-prized part," he said. "Typically, saffron when sold in the mainstream supermarkets half the strand is red [red stigmas] and the other half is yellowy-white [the style]. Even though the style is edible, it doesn't have any flavour and a lot of the manufacturers add it in to increase the net weight of the overall product," Thukral continued.

Dutch launch

Mahbir Premium Indian Saffron has registered addresses in the UK, the Netherlands and India. Thukral is the company's only fulltime employee but he has support from friends and family. Mahbir will this weekend launch Premium Indian Saffron at the Marriott Hotel in Amsterdam during Hotelnacht, an event where local residents can stay in the city's top hotels at cut prices. "Since I spent the last few years in Amsterdam working with IFF, the Netherlands gives me a footprint to get into the European market," said Thukral.

'The saffron king'

Asked about his ambitions for the company in the next five years, Thurkral said:"Really to be considered the saffron king! I want to be considered the first premium food product from India, leading entry into the European marketplace and expanding into the Middle East and North America." He also hopes to expand the company's chocolate range with nut inclusions, also sourced from Kashmir.

Sugar reduction efforts & demand for functional benefits will drive vegetable juice sales in 2017

By Elizabeth Crawford, Food Navigator USA 24 Jan 2017

Vegetables will shine as a rising star in the juice industry in 2017 as consumers look for ways to reduce sugar and increase functional benefits, predicts a top executive working with the international juice maker Biotta.

As consumers become more health conscious they are looking "for all natural ways to address health conditions, rather than having to depend on expensive, chemical-laden prescription medications or unregulated supplements," and for many that means turning to organic, non-GMO, natural juices that are free of artificial additives and which offer functional benefits, Matt Herzog, president of Biotta's US distributor, told FoodNavigatorUSA.

"Most recently," he added, "consumers have become more interested in vegetable juices, which offer a multitude of functional benefits." For example, Biotta claims its beet juice is "ideal for blood pressure and brain" health. On its website, it links to articles and studies showing how drinking beet juice can help lower blood pressure and reduce the risk of fatal stroke, as well as reduce cognitive decline by increasing the blood flow to certain parts of the brain.

Likewise, it says, the high vitamin A in its carrot juice promotes healthy eye function and its antioxidants can benefit the immune system and cardiovascular health. Biotta also claims its "purifying" celery root juice stimulates digestion "thanks to the natural lactic acid that inhibits growth of undesired intestinal bacteria and encourages growth of good bacteria."

The popularity of vegetable juice also will grow because vegetables are "naturally sweet," but have less natural sugar than many fruit juices and do not contain any added sugar, Herzog said. "This is becoming more appealing to consumers for a variety of reasons. First, they are trying to reduce their overall sugar consumption, paying more attention to the ingredients on packaged goods, and looking for hidden sources of added sugar," Herzog said. He noted the new FDA labelling requirements that products break out added sugars from naturally occurring sugar should help boost all juice sales given 100% juice will not have added sugars. As consumers cut back on all types of sugar, "they are finding the less sweet vegetable juices more palatable," which will advance further the trends toward veggie-based juice, Herzog said.

Trend data from Tetra Pak reinforces Herzog's prediction by revealing new product launches with vegetable juices tripled from 2012 to 2015 and captured 3% of the fragmented juice flavor market. Finally, Herzog predicts vegetable juices will continue to grow in coming years because Americans increasingly realize they are not consuming enough vegetables and juice offers and convenient way to boost their intake. To help meet this demand, Biotta will "continue adding new juice and new flavors to bring the great taste and health benefits of Biotta juices to new consumers," Herzog said.


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Why cardiovascular health functional foods are primed to takeoff across APAC: Euromonitor

By Maria Mascaraque, Food Navigator Asia 11Jan2017

Despite Asia Pacific being a region with high incidence of cardiovascular diseases (CVDs), sales of cardiovascular health positioned foods and beverages are not high, writes Maria Mascaraque from Euromonitor International.

They are valued at US$645m in 2016, just accounting for 8% of global sales for these products. This is mainly coming from three countries South Korea, Japan and Taiwan and it is interesting to see that the popular products in these countries are quite different.

In South Korea, they were valued at US$74m in 2016, of which 97% comes from reduced salt shelf stable meat, seafood, fruit and vegetables. In the case of Japan, most of the cardiovascular prime positioning comes with high content of oils and fats. Functional margarine and spreads targeting this positioning were valued at $78m in 2016. The focus here is more related with the use of functional ingredients with cardiovascular health benefits rather than reducing sodium levels or saturated fats. Looking at Taiwan, their cardiovascular health positioned products were valued at $26m in 2016, with the most of it (81%) coming from reduced salt sauces, dressings and condiments. Generally speaking, table sauces remained the most popular product type within the category in 2016, having a retail volume share of 40% within overall sauces, dressings and condiments. Despite the developments in these countries, cardiovascular health is still an emerging 'prime positioning' in Asia Pacific as more attention is currently being paid on general wellbeing and digestive health. Taking this into account, there are products that are not being positioned for cardiovascular health, but could also benefit it. Singapore, for instance, had small sales coming from cardiovascular health positioning, valued at just $4m in 2016. However, it showed a 4% growth in our review period of 2011-16, mainly fuelled by products like MARIGOLD HL Milk, which is fortified with plant sterols. It is produced by Malaysia Dairy Industries Pte Ltd and has been aggressively promoted in 2016, even though the brand has been around for a couple of years now. This product is also low in fat and lactose, fortified with nine vitamins and high in calcium.

CVD benefits not promoted

Singapore has also seen new product launches during this year that are not targeting cardiovascular health, but have benefits related to it. Magnolia Plus Oats LoFat HiCal Milk is an oat based milk launched in July 2016 by F&N Foods (S) Pte Ltd. It is positioned for general wellbeing and it contains betaglucan (oat soluble fibre), making this milk a good candidate to target cardiovascular health as well. Another new product development in the country is the bread loaf Sunshine SmartCarb Low G.I, which is positioned for weight management. It was launched in April 2016 by Auric Pacific Marketing Pte Ltd. It contains vitamin Bs and iron but its main claim is based on its 90% whole grains content. As high fibre products have shown to have beneficial effects on cardiovascular health, this is again a good example of cross benefits between different positionings.

There are still a number of countries in Asia Pacific where cardiovascular health positioned products have not yet achieved noteworthy sales like China, Hong Kong, Indonesia, Thailand and Vietnam. In the case of China it is interesting to see that they are not developments in this sector because it had the world's second largest sales of health and wellness products after the US in 2016. Therefore, it is only a matter of time until cardiovascular health positioned foods and beverages take off in China, not least because cardiovascular disease is the leading cause of death in the country, accounting for 40% of all deaths.

Euromonitor International data shows that over 20112016, health and wellness (HW) cow's milk in China increased value sales by 118%, HW yoghurt increased by 110% and HW edible oils by 91%, and all of them are good products to fortify with cardiovascular health ingredients. Consumer interest in health and wellness is clearly evident in these categories and cardiovascular positioned products are likely to find a good reception, as long as they are coupled with effective consumer education campaigns aimed at their key target groups.

Countries like China, with no visible sales for these products should take off and follow on the food steps of South Korea, Japan and Taiwan. Overall, new products developments under this positioning will help to slowdown the incidence of cardiovascular diseases but also are predicted to have great sales potential, with expected growth of 10% by 2021, creating interesting business opportunities for manufacturers.

REGULATORY NEWS

Image © iStock.com/piotr_malczyk

Don't tax sugar – just sweeten the deal for healthy snacks, say campaigners

By Louis Gore Langton, Bakery and Snacks 19Jan2017

The 'Don't tax healthy' campaign, started by OPPO ice cream, is fighting for UK tax breaks on low sugar foods, saying a system of incentives for healthy alternatives should come before penalties.

The founders of OPPO, a British start up selling reduced sugar ice cream, have created a UK government petition and public campaign demanding a value added tax (VAT) reduction on products such as their own. The campaign is run in alliance with Sugar-wise, a group promoting a kite mark label for all reduced sugar products in UK.

The call is for VAT to be reduced from 20% to 5%. Currently most confectionary products like chocolate, crisps and ice cream are all charged the standard rate of VAT. The standard rate can be dropped for social benefit. This was successfully achieved for tampons after a long protest movement forced the government to drop sanitary items' status as a luxury product and reduce the rate of VAT.

Harry Thuillier, cofounder of OPPO, said: "We know that products can go down in VAT if they have a social benefit, and with the current watered down obesity strategy we think this is an important movement." The petition, which has racked up over 3300 signatures so far, reads: "It's cheaper to buy food packed full of sugar than healthy food that's not. Everyone loves to enjoy their favourite sweet treats, so consumption of sugary food isn't set to change any time soon. This is contributing to the obesity crisis in the UK where, per national statistics, 58% of women and 68% of men are overweight or obese."

Over 50 food and drink brands have pledged support to the campaign, including Nom Popcorn, Whey-less and Tribe sports snacks.

Fatter taxes, thinner people?

The campaign claims eating healthily is too expensive in the UK and those without the means resort to poorer quality foods. Creating cheaper alternatives, it says, should be priority. A recent Yougov survey found that 30% of all people in the UK perceive healthy food to be too expensive; this figure increases to 40% in the 18 – 34 age group. Attempting to level up the price of cheap, poor quality food through a sugar tax would be neither fair nor affective, said Thuillier.

"I wouldn't say we are against it [a sugar tax], but people will always have a sweet tooth. We thought this strategy was very watered down and didn't have much substance to it. Rather than punishing people for buying sugary products, positive incentivisation is a no-brainer."

However, Chris Snowden, head of lifestyle economics at the Institute of Economic Affairs, said this perception of the relation between diet and price is fundamentally incorrect. "The reality is that a healthy diet of fruit, vegetables, starchy carbohydrates and white meat is nearly always cheaper than a diet of ready meals, confectionery and takeaways. Obesity is not caused by economic factors as such, although general affluence does allow people to eat more food in general and more high-calorie food in particular.

"Tap water is always going to be cheaper than fizzy drinks. The appeal of high calorie/processed food is not that it's cheaper (it usually isn't) but that it tastes better, is more convenient and requires fewer cooking skills. For that reason, attempts to change people's diets by raising or lowering taxes on specific food items are almost certainly going to end in failure."

Snowden added that ultimately the government will not agree to tax breaks as it would cost money. One of the cardinal arguments used to justify a sugar tax in the UK was the additional revenue that could be directed towards healthcare.

The 'Don't tax healthy' campaign however, is hoping the government will see beyond this. The indirect cost of obesity to the British economy, as estimated in a recent Kantar study, is €32bn per year.

A 'blunt instrument'?

Voices within the sugar industry, who have vehemently opposed the idea of a sugar tax as discriminatory and nonsensical, agree that altering VAT rates will be ineffective.

Katharine Teague, head of advocacy at AB Sugar, told FoodNavigator: "We support measures that help people improve their diets and address some of the key health concerns in the UK, such as obesity. However, obesity is a complex issue and there is no silver bullet to solving the problem. The difficulty in tackling obesity either through price reductions or levies/taxes on certain food categories is it assumes consumption simply correlates with cost to the consumer, which it often doesn't. This is indeed a blunt instrument for dealing with what is a very complex societal issue."

AB sugar also pointed out that whilst obesity continues to rise in the UK, total sugars in the diet have fallen by 15.4% on average since 2001. A spokesperson for the Food and Drink Federation concurred, saying it was "another example of the apparent obsession with the role of sugar in the diet to the exclusion of all other nutrients. Obesity is a complex and multifaceted problem. We therefore believe that government's efforts should focus on promoting a whole diet approach".

Voices outside the industry however have been more supportive. Nutritionist Dr. Carrie Ruxton, previously a member of the British Sugar Bureau, said: "There is no 'one size fits all' policy that will improve diets. We need many small steps […] Therefore, I do not believe we have an 'either/or' situation with the VAT reduction on low sugar options. We must take forward as many of these ideas as possible."

The debate over the role sugar ultimately plays in public health issues like obesity is ongoing Thuillier said the campaign has chosen to focus solely on sugar because of evidence produced by the Scientific Advisory Committee on Nutrition's (SACN) 2015 report, which found sugar intake to be a substantial cause of diseases like obesity and diabetes. The campaign has said it will continue until a response is given by the government.

FDA approves qualified health claim for high-amylose resistant starch and reduced risk of type 2 diabetes

By Elaine Watson+, Food Navigator USA
15Dec2016

News that the US Food and Drug Administration (FDA) has approved a qualified health claim about high amylase maize resistant starch as a weapon in the fight against type 2 diabetes will start a much-needed conversation about the fiber, say experts.

Qualified health claims enable food marketers to talk about a relationship between a substance and disease where the supporting science fails to meet the FDA's 'significant scientific agreement' standard, so they are typically 'qualified' in such a way as to not mislead consumers.

While the qualification typically comes in the form of a far-from-consumer-friendly disclaimer, many observers believe the claims are still better than nothing. The fact that a regulatory agency has looked at this will increase the confidence of food companies to talk about resistant starch The claim (spelled out in a Dec 12 letter to Ingredion) is only permitted on foods that contain 10%+ of the daily value for vitamin A, C, iron, protein and fibre, plus 10% of the DV for vitamin D or potassium per reference amount customarily consumed (RACC).

It reads: "High-amylose maize resistant starch may reduce the risk of type 2 diabetes, although FDA has concluded that there is limited scientific evidence for this claim." While this might not sound like a ringing endorsement, it reflects substantial progress, said Rhonda Witwer, an expert in resistant starch who worked at Ingredion for more than a decade before setting up the consultancy Witwer Works. "This is the highest claim achieved for a dietary ingredient or food reducing the risk of type 2 diabetes," she told FoodNavigatorUSA.

Image © iStock.com/Piotr Adamowicz

"Yes, the wording isn't great, but this is a Level C qualified health claim, whereas whole grains and psyllium [which are also claimed to reduce the risk of type 2 diabetes], were classified as Level D. "I'm not sure whether food manufacturers will want to put this claim on their labels [talking about medical conditions such as diabetes on food labels can be a bit of a buzzkill, she said], but the fact that a regulatory agency has now looked at this will increase the confidence of food companies to talk about resistant starch and I am hoping will encourage the U.S. National Institutes of Health and other funders of large clinical studies to continue this valuable research."

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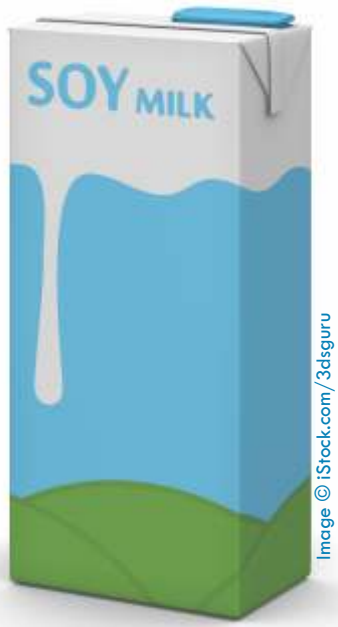
FDA requested to re-label plant-based 'milk'

By Douglas Yu+, Dairy Reporter 19Dec2016

US lawmakers and congressmen have urged the FDA last week in a letter to re-label plant-based products, as they believe that the use of the term "milk" by manufacturers is "misleading to consumers, harmful to the dairy industry, and a violation of milk's standards of identity."



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The letter was written by US representatives, Peter Welch, of Vermont, and Mike Simpson, of Idaho, and it was co-signed by 32 members of the US Congress. In the letter, lawmakers requested the FDA to investigate and take "appropriate action" against the manufacturers of such products.

The request has drawn support from the dairy industry, including the National Milk Producers Federation (NMPF). The letter stated that milk prices have plunged 40% since 2014, which caused dairy farmers to face "a serious financial crisis." Meanwhile, there has been tremendous growth in the sale of plant-based products. A recent Neilson survey revealed that in the past five years, sales of certain plant-based grew 250% to more than $894.6m. By contrast, sales of milk fell 7% in 2015."

The 'milk' name is illegal for plant-based products

"Milk has a clear standard of identity defined as 'the lacteal secretion, practically free from colostrum, obtained by the complete milking of one or more healthy cows (21 CFR 131.110)'," the letter said. It also argued that plant-based products fail to make up the nutritional value of dairy milk. "When consumers purchase and drink a plant-based beverage labelled as 'milk,' they assume they are getting the same nutrients as real milk, when they simply aren't," vice president of food and nutrition at NMPF, Beth Briczinski, told DairyReporter.

"Secondly, all the hard work the dairy industry has done to create this 'dairy halo' – that dairy products are nutritious and safe – is being taken advantage of by these plant-based imposters," she added.

DairyReporter has reached out to plant-based products manufacturers, including WhiteWave Foods, Califia Farms, and MALK, for comment. NMPF said it will continue to hold the FDA accountable in making sure they enforce the labelling laws already in practice.

Are eggs 'healthy'? Outdated FDA labelling rules don't reflect latest science, says United Egg Producers

By Elaine Watson+, Food Navigator USA 13Jan2017

In recently revised guidance on 'healthy' label claims, the FDA changed its stance on total fat, but it should also make other changes in order to allow nutrient-dense foods such as eggs to be marketed as 'healthy,' says United Egg Producers. Food labelling regulations currently mandate that 'healthy' can only be used as a nutrient content claim on foods that are also low in fat, effectively banning highfat foods such as nuts and avocados which are widely accepted as healthy foods from making this claim.

Under pressure from brands such as KIND to take a more nuanced approach to fats, the FDA recently issued new guidance saying it will now permit 'healthy' claim on higher fat products, provided the fats in question are mostly mono- or polyunsaturated fats (considered to be healthier fats).

Dietary cholesterol is not directly related to levels of cholesterol in the blood

This is good news, said United Egg Producers president Chad Gregory in comments submitted to the FDA as part of its new probe into 'healthy' claims , but the guidance still leaves eggs out in the cold: "Eggs still fail two others tests for a 'healthy' claim: The first is the requirement that a food be low in saturated fat [the standard is 1g saturated fat per serving, and eggs have 1.5g]. The standard is also 15% of total calories from saturated fat, while eggs supply 19%."

Image © iStock.com/Amarita

The second is cholesterol content, "and here, eggs do not come close," he said. "The test is 60mg/serving, but eggs supply 185g… The problem is that FDA's current regulations were written at a time when dietary cholesterol was demonized and thought to be directly related to the level of cholesterol in the blood…. But science and dietary guidance have changed.

The 2015-2020 Dietary Guidelines for Americans dropped the longstanding recommendation to limit daily cholesterol intake to 300mg… We respectfully submit that FDA's regulatory threshold for cholesterol content is outdated and should be deleted in its entirety. "Pending regulatory action, FDA should modify the enforcement discretion outlined in its guidance document to permit foods to bear a 'healthy' claim without regard to either total fat or cholesterol as long as less than half their fat content is saturated and they provide a good source of one or more beneficial nutrients listed by FDA." Finally, said Gregory, "UEP requests that FDA exempt foods from meeting the low-saturated-fat requirement for the 'healthy' claim if they are specifically identified as nutrient-dense in the DGA and meet the other requirements noted above."

'Ironic' that snacks bars can be called healthy under new guidance, but eggs cannot

While UEP did not wish to disparage snack brand KIND [which was instrumental in prompting the FDA probe into healthy], he added: "We find it ironic that 'healthy' claims will now be made for snack bars but cannot be made for a nutrient-rich food like eggs."


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Indian regulator to set fortification standards to boost public health

By RJ Whitehead, Food Navigator Asia 02Jan2017

In a move that paves the way for the inclusion of fortified foods in government-run schemes, manufacturers of fortified flour, oil, milk and salt will require a government certificate to verify nutrient claims. A notification by the food regulator indicated that the move was also an attempt to improve national nutrition levels, which are flagging.

It said it would allow for the introduction of fortified food in government-run schemes, such as midday school meals and the public distribution system.

The Food Safety and Standards Authority of India issued the circular, which set new guidelines for foods fortified with vitamins, iodine, folic acid and other nutrients, including minimum and maximum levels. Manufacturers will now have to give an "undertaking" on quality assurance and "submit evidence" of the food safety steps taken. Product testing must be done at approved government laboratories. The move hasn't been met with universal approval, with some groups complaining that it would begin a process that would transform the current provision of fresh-cooked meals with fortified food packets.

One Supreme Court-appointed food commissioner called it a "clear attempt by government to override Supreme Court guidelines against the use of fortified food in government programmes". Harsh Mander said that the government had an agenda to promote food corporations, which stand to benefit greatly from government-run food schemes. Likewise, opposition lawmakers have also alleged that contracts have gone to individuals close to the ruling party. Pawan Agarwal, chief executive officer of FSSAI, said the regulation will initially cover wheat flour, rice, oil and milk, while all other food items would be gradually brought under a comprehensive regulation.

"Many companies have been promoting fortified daily food items such as wheat flour, milk products and rice without any quality assurance to consumers. We are introducing a mechanism to ensure that they deliver on their promise," one FSSAI official told Hindustan Times. The new rule will supersede all previous fortification regulations except those in the law on infant milk and food items.


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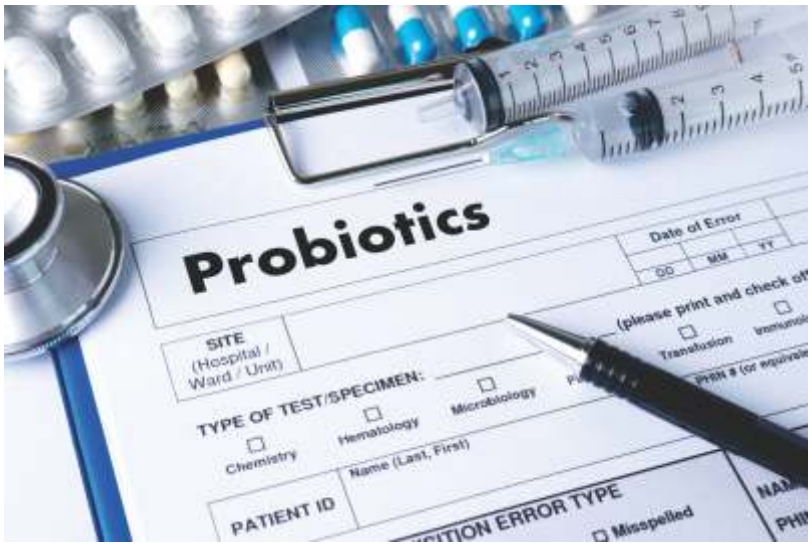
Launch of Good Practices for Probiotics

By RJ Whitehead, Food Navigator Asia 02Jan2017



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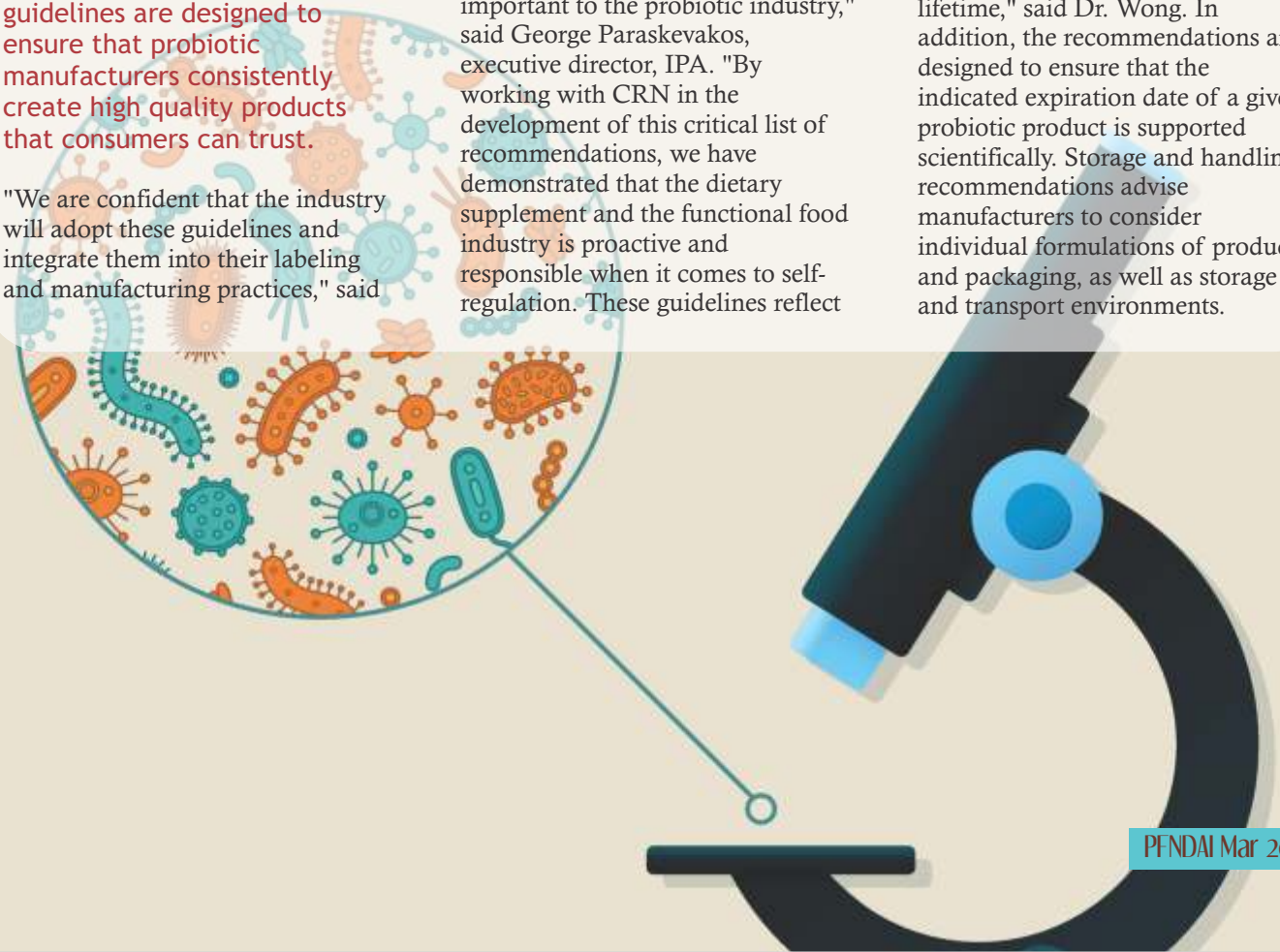
The Council for Responsible Nutrition (CRN), the leading trade association for the dietary supplements and functional foods industry, and the International Association of Probiotics (IPA), an international organization of probiotic companies, have developed a scientific basis with guidelines on Best practices for the labeling, storage and stability testing of dietary supplements and functional foods containing probiotics. As probiotics are rapidly gaining popularity, the guidelines are designed to ensure that probiotic manufacturers consistently create high quality products that consumers can trust.

"We are confident that the industry will adopt these guidelines and integrate them into their labeling and manufacturing practices," said Andrea Wong, Ph.D., vice president for scientific and regulatory affairs, CRN.

"As more and more consumers incorporate probiotic products into their diet, we felt it was essential to develop a work plan for companies that produce and market these products to ensure they meet consistent, high-quality standards."

"We believe these guidelines are important to the probiotic industry," said George Paraskevakos, executive director, IPA. "By working with CRN in the development of this critical list of recommendations, we have demonstrated that the dietary supplement and the functional food industry is proactive and responsible when it comes to self-regulation. These guidelines reflect the way of thinking about science and The information industry is being updated as best practices evolve. We should always be looking for ways to make our industry and the industry better for the benefit of consumers, and adhering to these guidelines is a big step forward. "

Stressing the importance of providing meaningful information to consumers, the guidelines recommend that the quantitative amounts of probiotics in a product should be expressed in colony forming units (CFUs). "UFC is the scientifically accepted unit for measuring probiotics. The labelling of probiotic products in UFC provides consumers with the best possible information when it comes to viable microorganisms present in the product throughout their lifetime," said Dr. Wong. In addition, the recommendations are designed to ensure that the indicated expiration date of a given probiotic product is supported scientifically. Storage and handling recommendations advise manufacturers to consider individual formulations of products and packaging, as well as storage and transport environments.



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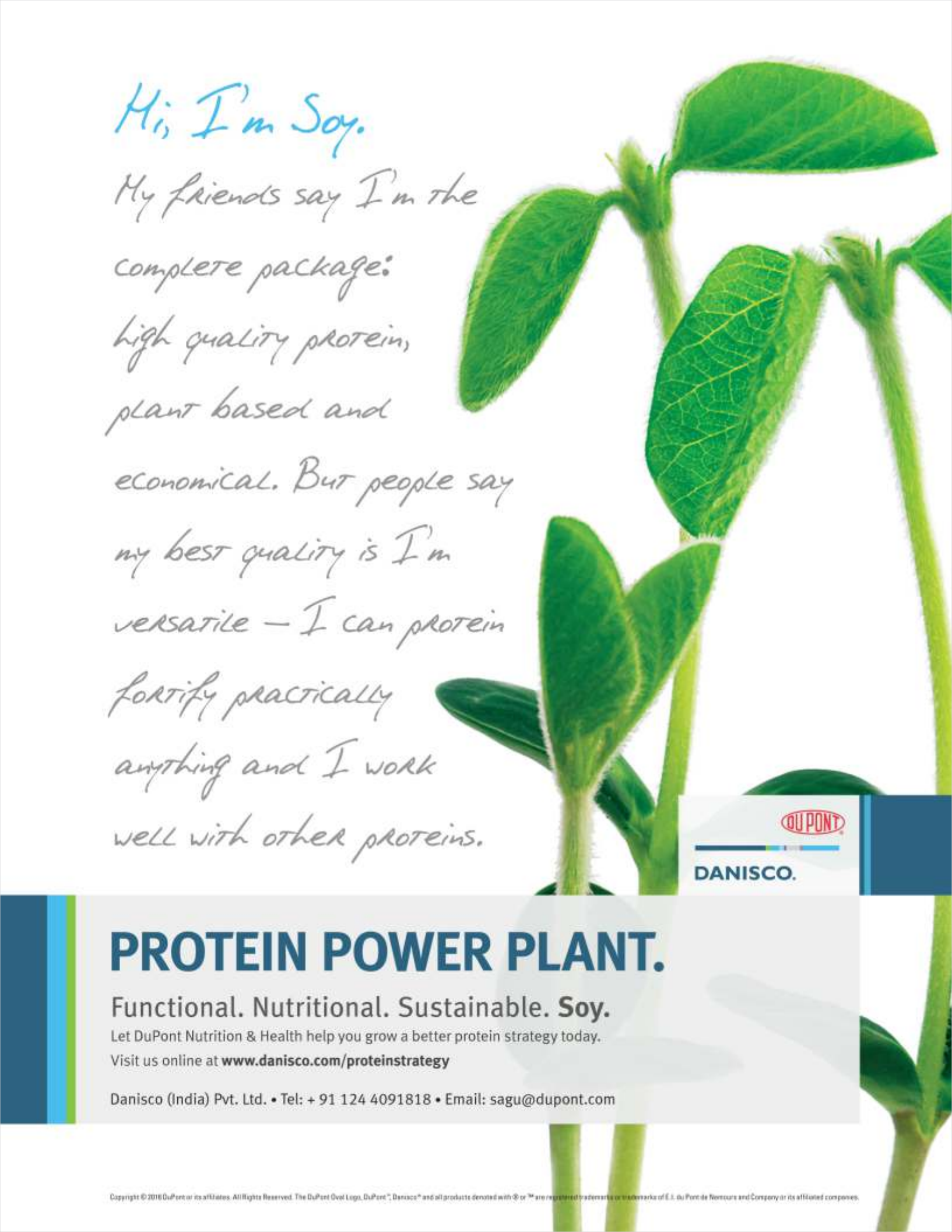

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