MAY 2019

PFNDAI Bulletin

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FOOD, NUTRITION & SAFETY MAGAZINE

WHEY TO GET LEANER, FITTER AND HEALTHIER!

Also Inside

Sugar and Salt reduction -
Key challenges and opportunities for the Food and Beverage industry

Blockchain Technology:
From Pilot to Reality through Farm to Fork Approach to ensure Food safety

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EDITORIAL

It has been observed that Indian regulators of food laws make regulations and do not really see whether the regulation is effective or whether it is being followed.

Calcium carbide for ripening of fruits was banned long time ago but it is seen that it is freely used all over to ripen fruits. Recently it has asked state food safety commissioners to do effective surveillance and enforce the ban on calcium carbide for fruit ripening as it is unsafe. This is being done after many reports in the press that it is still being used in spite of the ban.

This shows that unless pressurised regulator will not try to enforce its own regulation let alone trying to monitor its effectiveness.

We need to see the ground reality. Farmers need to bring in their fresh fruits from far away places to cities where the markets are. The long times and temperature conditions can easily cause a lot of spoilage. Thus farmers prefer to bring in unripe fruits to market places and then ripen them so next day it is ready for the consumer market. This not only saves a lost of wastage due to spoilage but also they can bring in continuous and regular quantities over a period of time that works out logistically much better as well as avoiding a glut in the market which makes commercial sense.

World over farmers use ethylene for ripening this way. In fact the fruits themselves produce ethylene when they are naturally ripening which produces all the changes in colour, taste and texture. It is a natural ripening hormone. Ethrel or Ethephon is the chemical used as spray or dip which is absorbed by fruits whose acid breaks this compound down to ethylene and phosphoric acid. This evenly ripens the fruits and is a safe chemical.

However, this is more expensive than calcium carbide which produces acetylene which does about the same job but the chemical itself is unsafe so it was banned.

Farmers need something to artificially ripen the fruits as the markets need large supply of fruits every day. So even when it is banned they keep on using it for two reasons. One is that there is very little awareness created about the dangers and ban of calcium carbide to the farmers and secondly they do not have any cheaper alternative.

The government must make an alternative available at competitive price. Ban is very appropriate but we cannot just ban and stop. We need to provide alternative and awareness.

Prof Jagadish Pai,
Executive Director,
PFNDAI

WHEY TO GET LEANER, FITTER AND HEALTHIER!

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Obesity is the root cause for many metabolic ailments like high blood pressure, cardiovascular disease, diabetes and certain cancers and remains a significant public health problem.

The dual burden of malnutrition is characterized by the presence of undernutrition in overweight and obese individuals further aggravating the impact of non-communicable diseases. The negative physiological and psychological effect of the fad diets deficient in calories and protein outweighs the cosmetic benefits of weight loss. A balanced moderate to low calorie diet is an effective and sustainable way to lose weight. A conventional energy restriction or negative energy balance diets, requires a caloric reduction of 500 kcal per day, ensuring a weight reduction of 0.5- 1 kg per week. The dietary principle of high protein- low carbohydrate diet is to achieve weight loss and maintenance of good health. The initial weight loss is from glycogen losses and the satiating effect of the high protein intake further enhances weight reduction.

Protein as an aid for weight reduction

Diets high in protein promote early satiety, higher energy expenditure and help in accrual of lean body mass.[1] Lack of protein in diets and macronutrient imbalance in the urban and rural populations in India is one of the major contributing factors to obesity.

During caloric restriction for weight loss, it is crucial to meet the dietary requirements of protein across age groups for the sustenance of growth and lean body mass. This is adequate to aid fat loss in an individual. However, to augment accrual of larger amount of lean body mass, an additional intake of protein may be necessary.

A high protein-low carbohydrate diet is implicated to also reduce the intrahepatic triglyceride (IHTG) in healthy humans, which may contribute to the prevention of non-alcoholic fatty liver. (NAFLD).

Not all proteins are created equal!

Antinutritional factors in the diet affect the digestibility, bioavailability of protein in the diet. Digestibility and quality of traditional mixed diets consumed in India, Brazil and Guatemala is lower (54-78%) as compared to a typical high protein North American diet (88-94%). The common antinutritional factors include tannins in legumes and cereals, trypsin inhibitors in soyabean and phytates in cereals. In addition to consuming adequate protein in the diet, it is important to choose the protein based on the quality of protein.

Table: Quality of Protein

	Protein Digested Corrected Amino Acid Score	Biological Value	Protein Efficiency Ratio	Net Protein Utilization
Whey Protein	1.0	104	3.2	92
Egg	1.0	100	3.9	94
Soy Protein	1.0	74	2.2	61
Casein	1.0	77	2.5	76
Milk	1.0	91	2.5	82
Beef	0.92	80	2.9	73

Adapted from: U.S Dairy Export Council, Reference Manual for U.S. Whey Products 2nd Edition, 999 and Sarwar, 1997.

Many terms and ratios have been used to define the quality of protein. The common ones include the Protein Digested Amino Acid Score, Biological Value, Protein Efficiency Ratio and Net Protein Utilization all of which essentially point towards the utilization of protein and nitrogen retention after consumption of a protein rich diet.

Amongst the food proteins, animal proteins are complete proteins as they provide all essential amino acids in adequate quantities to meet the daily requirements in humans. Plant proteins on the other hand, lack one or more amino acids and/or have inadequate amounts of the essential amino acids and are called as incomplete proteins.

Whey protein is a complete protein that has the highest biological value followed by egg and then milk deeming it to be the gold standard in proteins.

Whey – A Gold Standard Protein

Whey is the liquid that remains after coagulation of milk during cheese processing. Whey protein is separated and purified from this liquid to obtain various grades of protein. Whey acts a functional food with various biological components like lactoferrin, beta-lactoglobulin, alpha-lactalbumin and immunoglobulins. Different types of whey can be obtained from various processing techniques used for separating whey which have varied applications. They contain negligible amounts of fat, lactose and minerals.

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Table 1: Types of Whey Protein

	Protein Concentration	Applications
Whey Protein Powder	11-14.5 %	Additive in dairy, bakery, confectionary and snack products.
Whey Protein Concentrate	25-89 % (Most Common 80%)	Contains more amount of biologically active components Negligible fat, lactose and minerals
Whey Protein Isolate	90-95%	Significantly lesser fat and lactose. The isolated protein is easier to digest and has clinical applications and in sports industry.
Whey Protein Hydrolysate	82-85%	Significantly lesser fat and lactose. The hydrolysed protein is easier to digest and has clinical applications
Instantized Whey Protein	90-92%	Purest form of whey. Has applications in sports industry and clinical nutrition

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Table: Amino Acid Profile of Different Proteins (Value per 100 g)

	Protein Digested Corrected Amino Acid Score	Biological Value	Protein Efficiency Ratio	Net Protein Utilization
Whey Protein	1.0	104	3.2	92
Egg	1.0	100	3.9	94
Soy Protein	1.0	74	2.2	61
Casein	1.0	77	2.5	76
Milk	1.0	91	2.5	82
Beef	0.92	80	2.9	73

Adapted from: U.S Dairy Export Council, Reference Manual for U.S. Whey Products 2nd Edition, 999 and Sarwar, 1997.

Amino Acid Profile of Whey

Whey protein is a complete protein with PDCAAS of 1.0 and biological value of 104. Whey protein concentrate has a higher proportion of branched chain amino acids with potent insulinotropic properties.

The branched chain amino acids - leucine, valine, and isoleucine - are more insulinogenic than other amino acids. Leucine, which is present in high concentrations in whey, has been shown to stimulate muscle protein synthesis and may also increase postprandial energy expenditure[2].

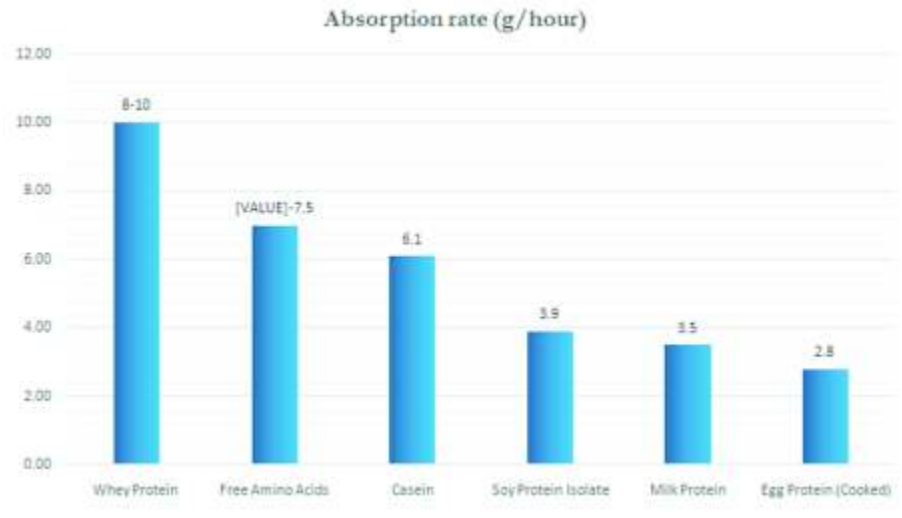
High protein intake increases the post prandial amino acid pool and stimulates protein synthesis, turnover and induces a small suppression of protein breakdown.

Whey protein has a higher proportion of branched chain amino acids than casein and soy and is more soluble in the acidic environment of the stomach, leading to more rapid digestion which is a desirable trait as far as proteins are concerned.

In a recent comparison of two protein sources, the greatest postprandial insulin response was associated with whey compared to casein and was attributed to the more rapid appearance of amino acids in plasma when derived from whey[3].

Whey is preferred over Casein and Soy because of the differences in the amino acid composition and absorption kinetics between the two proteins. Whey protein has the highest absorption rate followed by casein and soy protein isolate.

Figure: Absorption rate of different types of protein



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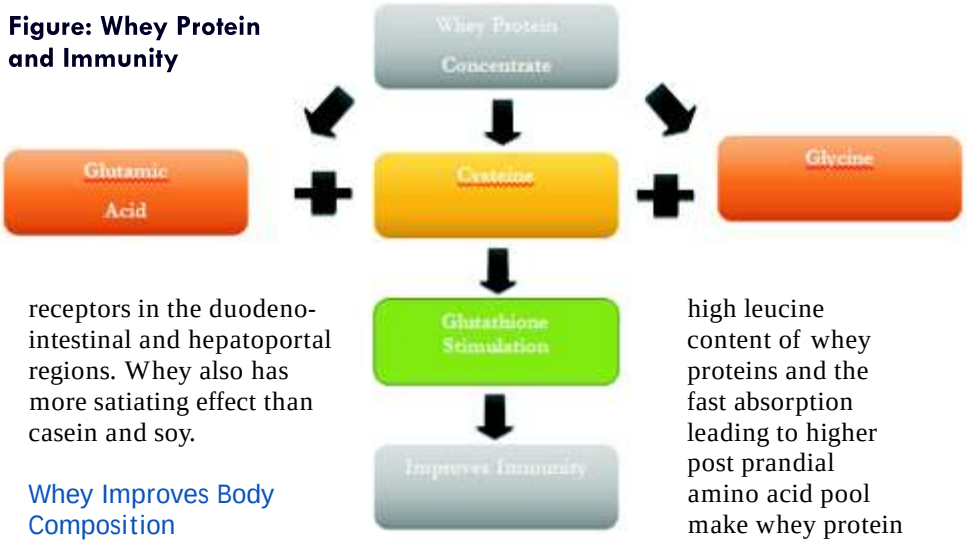
Whey Protein and Satiety

Whey protein elicits a greater thermic response than protein composed of either casein or soy, where protein accounted for 50% of the energy content of the meal. This may be because whey protein, as a "fast" protein, is rapidly digested to result in greater postprandial protein synthesis. The satiating effect of protein is due to the combination of elevated levels of plasma amino acids, anorexigenic gut hormone concentration, protein induced thermogenesis and possibly gluconeogenesis. Concentrations of glucagon-like peptide 1 (GLP1), cholecystokinin (CCK), and peptide YY (PYY) consistently increase in response to high protein intakes.

The dietary protein intake suppresses the post-prandial ghrelin levels thereby suppressing hunger. A larger pool of post prandial amino acidsis associated with higher accrual of lean body mass. Studies have also shown that subjects consume less food during an ad libitum high protein dietary intake. According to the aminostatic theory, an elevated amino acid level in the blood, stimulates satiety signalling in the brain after the utilization of amino acids for protein synthesis. The satiety signalling by the branched chain amino acids in whey is via the receptors in the duodeno-intestinal and hepatoportal regions. Whey also has more satiating effect than casein and soy.

Figure: Whey Protein and Immunity



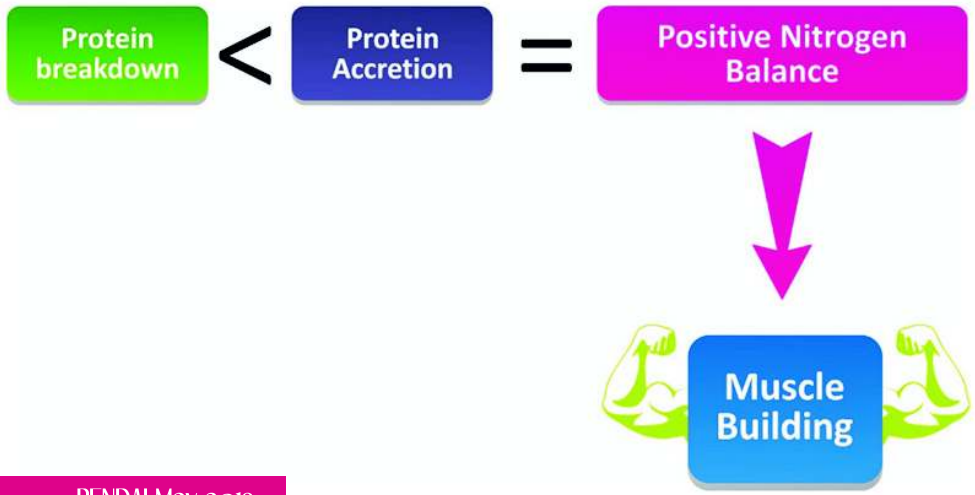
Whey Improves Body Composition

There is a 42% increase in energy expenditure following a high protein diet due to increase in the gluconeogenesis. Higher rates of energy expenditure are observed in energy balanced- high protein diets. As a result of greater solubility, more rapid digestion, and resultant higher plasma concentrations of amino acids, whey appears to be the more favorable protein to provide nutritional and functional benefits in obesity management.

A study reported a 43% reduction in body weight with 0 g/d protein and a reduction of 79% with 50 g/d protein. During weight maintenance following weight loss, lean body mass was preserved, while fat mass was reduced in the group receiving 50g/d protein[4]. The high leucine content of whey proteins and the fast absorption leading to higher post prandial amino acid pool make whey protein ideal as a protein supplement during weight loss.

Image © iStock.com/panic_attack

Figure: Protein breakdown is lesser than protein accretion creating a positive nitrogen balance in whey protein supplementation due to higher absorption rates.



When dietary protein substitutes carbohydrate in an energy restricted diet, aiming for weigh reduction, the levels of thyroid hormones T3 and T4 are maintained and there is a diminished response to the meal.

These endocrine differences are concurrent with higher rates of lipolysis. An increased dietary protein causes reduced muscle losses associated with very low-calorie diets.

High protein diets rich in branched chain amino acids help maintain muscle protein synthesis during these catabolic phases. The maintenance of lean body mass and fat loss resulting from high protein diet is due to reduction in body fat and/or sparing of the muscle protein[5].

Whey and immunity

Whey also improves immunity. Whey protein is a good source of cysteine which enhances glutathione levels which acts as a strong antioxidant.

Glutathione helps in immuno-modulation as glutathione is the major endogenous antioxidant produced by the cells that help fight free radicals and reactive oxygen species. It also helps maintain exogenous antioxidants such as vitamins C and E in their reduced (active) forms.

Conclusion

Whey protein is a gold standard protein with varied applications in wellness and clinical nutrition segment. With its functional components and high levels of amino acids, it can act as a functional food in one's diet.

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SUGAR AND SALT REDUCTION - KEY CHALLENGES AND OPPORTUNITIES FOR THE FOOD AND BEVERAGE INDUSTRY

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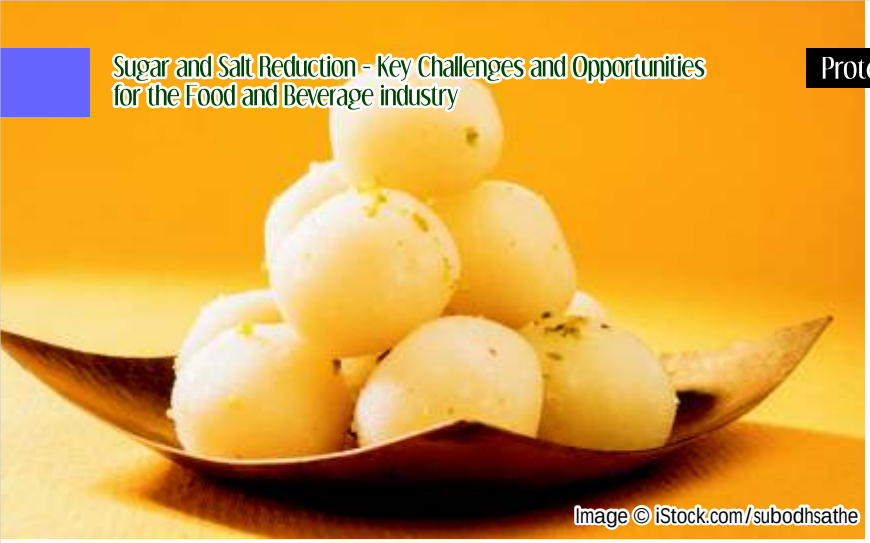
Over the last hundred years, there has been a large shift in dietary habits owing to sedentary lifestyles, growing number of desk-bound jobs and lesser physical activity among children and adults. These lifestyle factors in combination with poor dietary habits are the major causes of growing obesity, esp. in urban India.

A diet high in sugar, sat fat, salt and low in fruits and vegetables has been identified as one of the leading factors of obesity (WHO 2004; World Cancer Research Fund 2007). The war on obesity and other lifestyle ills has opened a fight against consumption of sugar and salt. According to the World Health Organization (WHO), an average Indian consumes nearly 11 grams of salt per day, more than double the daily recommended amount of 5 grams.

However, research has also shown that a growing number of Indian consumers are now increasingly focusing on healthy living, with more than half of urban Indians saying one of their top goals over the next three years is to live a healthier lifestyle. What's more, consumers are now attempting to eat more nutritious food compared to a year ago. (source: Mintel).

In light of this emerging trend of health and wellness, food and beverage companies across the globe are constantly trying to implementsalt, sugar andfat reduction strategies. Public health efforts are also being aimed at reducing the number of calories people consume, including reducing the energy density (calories per gram) of processed foods by decreasing total fats and carbohydrates, including sugar. Food and beverage companies are responding to public health policies by reformulating food and drinks and reducing their energy content where technically possible. However, a bigger challenge to food technologists and culinary experts is to maintain the same great food experience consumers are used to, as theyare not willing to bargain on taste even though products may be healthier. The situation is complex for the industries as there are limitations of science& technology to address the taste challenges, frequent regulatory changes, changing public health advocacies, consumer perceptions and misconceptions on level of sugar and salt consumption.

Product reformulation is not always straightforward: Sugars and salt are responsible for many sensory properties of food and thus they cannot usually be replaced by a single ingredient. Removing or replacing sugar will change the characteristics (taste, texture, bulking, appearance etc) of a food. To compensate, they need to change the whole recipe, resulting in a different product. At the same time, reformulation must respect consumer preferences and the expectations they have from their favorite products. Sometimes the replacement compound may have the same calories as sugar. For example sugar in breakfast cereals may be replaced with starch, another carbohydrate, which contains the same amount of calories. Therefore, reducing sugar may not necessarily result in fewer calories; consumers may expect foods that are "reduced or low in sugars" or have "no added sugars" to contain fewer calories. Finally, sugars play an important role in food preservation and extending shelf-life. Consequently, care should be taken when reducing or replacing sugars to ensure the reformulation product meets consumer expectations and maintain food safety.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Sugar: Sugar occurs naturally in all foods that contain carbohydrates, such as fruits and vegetables, grains, and dairy. Consuming whole foods that contain natural sugar is okay as it has high amounts of fiber, essential minerals, and antioxidants, and dairy foods contain protein and calcium. Since our body digests these foods slowly, the sugars in them offer a steady supply of energy to body cells.

All sugars are sweet because they contain OH groups with a particular orientation that can interact with the taste receptor for sweetness in our tongues. Sucrose is the standard to which all other sweeteners are compared. So, when someone says aspartame is 200 times sweeter than table sugar what they are really saying is that it is 200times more potent than table sugar because you can use a significantly lower dose to obtain the same perception of sweetener.

Interest has never been greater in the development of new sweetness technologies which enable more cost-effective food and beverage product formulation, more sugar-like taste quality and reduction in caloric levels. Guidance, targeted to organizations considering development of new sweetness technologies, is given as to the specific requirements for successful commercialization of new sweeteners and sweetness modulators. And the argument is made that a successful new sweetness technology must deliver on nine metrics, including 1) high maximal sweetness response, 2) clean flavor profile, 3) sugar-like temporal profile, 4) sugar-like sweetness adaptation profile, 5) safety, 6) stability, 7) solubility, 8) cost-effectiveness and 9) patentability. Importantly, the argument is also made that a viable new sweetness technology must deliver on all nine of these metrics in order to realize commercial success

Various techniques / alternatives being adopted by industry to reduce sugar consumption in various food and Beverages.

Approach 1

Using plant derived sweeteners such as Stevia, Yacon syrup, monk fruit, Thaumatin etc.

Stevia is a sweetener and sugar substitute extracted from the leaves of the plant species Stevia rebaudiana, native to Brazil and Paraguay. The active compounds are steviol glycosides, which have 30 to 150 times the sweetness of sugar, are heat-stable, pH-stable and not fermentable.

Approach 2

Using artificial sweeteners such as Aspartame, Acesulfame potassium, Sucralose, Neotame etc.: Artificial & natural sweeteners are compounds that have been found to deliver the similar 'Sweet" taste we get from sugars. Few of these sweeteners are low calorie as they are so much sweeter than sugar that only a tiny amount is needed. Others are low calorie or no calorie because our bodies can't metabolize them. They simply pass through our digestive system without being absorbed.

Approach 3

Taste Sweetness Modulators SWEET TASTE for mouthfeel, richness and optimization of taste i.e. SymLife Sweet, ClearTaste etc. Sweet modulators replicate the action of sucrose on taste receptors. These unique modulators are thermally stable, extremely potent in sweetness performance have an extended shelf life and are well suited for any application where good solid sweetness modulation is required.They are used by manufacturers to alter the sweet taste. Sweet modulators are used in various food applications such as bakery products, confectionery products, and snacks & savory products. With the increasing awareness among consumers

Approach 4

Using natural fruits like Monk fruit – Monk fruit emerges as a unique solution for natural calories and sugar reduction with very clean flavor profile and no lingering bitterness, monk fruit juice is an ideal solution for reducing or replacing added sugar in food and beverages. Monk fruit juice extract is 150-200 time3 to 5 times sweetener than sugar and contains zero calories. Today monk fruit is found in products from some of the world's largest food and beverage companies.


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^CONTAINS NATURALLY OCCURRING SUGARS. *Vitamin C : 22.2 mg. Per Serve 200ml (Approximate Values*). *Contains juice of 17 Oranges (Fruit equivalence for a 1l pack based on one Orange size = 100g) †Tropicana is the No.1 brand in packaged 100% Juice and Nectars* in the world in 2018 in off-trade volume. Source: Euromonitor International Limited; *Soft Drinks 2019 edition. Claim based on 100% Juice and Nectars (25% - 99% Juice Content) sales combined, excluding Juice Drinks (Up to 24% Juice Content), 2018 data. For further details, see pack.

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Approach 5

Simple techniques like particle size reduction to increase exposure on tongue and reduced particle size increases appropriate distribution in the product base and therefore optimize the quantity i.e. biscuit dough, sheeted products etc. The degree of sweetness we taste depends on how well the receptors in our tongue interact with molecules. The stronger they interact the sweeter we perceive the taste. The receptors are found on the surface of cells all over tongue. They send message to the brain to tell it that we are eating something sweet.

Approach 6

Few other options like using Sugar alcohols such as Xylitol, erythritol, Isomalt, Maltitol etc. are commonly used in various industries like chewing gum , tooth paste cough syrup etc.i.e xylitol has fewer calories than sugar for the same sweetness.

All these approaches are effectively used in soft drinks, juices , Baking, Dairy and ice cream industries etc.

Salt:As part of the change towards healthier eating habits, consumers are looking for products with lower sodium levels. So how can popular brands retain the positive taste aspects and desirability supplied by salt while maintaining great taste.

Sodium plays several key roles in foods as well as taste, in considering sodium reduction they all need to be considered.Few key roles are taste, preservation, texture and yield, leavening etc

Sodium based ingredients have critical functional properties in some of our products for texture and preservation and sourcing of alternatives is challenging.

- Sodium emulsifiers for processed cheese (refrigerated)
- Sodium as a preservative for shelf stable cheese liquid dinners.
- Sodium for preservation in meat.

Opportunities exist to reduce sodium by up to 25% using existing technologies, at significant cost to the consumer. Consumer acceptance of the cost impacts and quality challenges must be assessed on a product by product basis.

- Taste is no bargain– delicious is required before the sodium levels are considered.
- Salt is a very inexpensive ingredient. All alternatives are more costly.
- Consumers are very cost conscious, especially in the current economic environment. They have not shown a willingness to pay for reduced sodium alternatives.
- Food safety is paramount. No amount of increased food safety risk will be tolerated or considered to reduce sodium levels.

Fundamental technical techniques are built and sustained by continuous development and platforming of technologies.

Image © iStock.com/st_lux

Salt substitutes

Approach 1

Using Salt Substitutes - Salt substitutes are low-sodium table salt alternatives marketed to circumvent the risk of high blood pressure and cardiovascular disease associated with a high intake of sodium chloride while maintaining a similar taste. They usually contain mostly potassium chloride, Potassium Lactate etc. Salt substitutes may replace sodium in moderation.

Approach 2

Particle size reduction - Salt particle size plays a key role in overall salt reduction up to 20-30% of reduction in the product due to is increased surface area due to smaller particle size which gets covered with tongue. It also ensure just right salt level and increase the uniform particle size distribution in the product.

Approach 3

Conscious use of other sodium containing additives There are food additives which has been used as functional ingredients which may add sodium to your diet which food technologist should be conscious of while using it in the foods. Sodium alginates are the approved Gelling agents, Sodium ascorbate for antioxidants, Sodium benzoate for Preservatives, Sodium citrates as control of acidity and as aid in emulsification etc.

Approach 4

Salt Taste modulators or natural flavor systems design to enhance perception of saltiness. Most of the salt modulators are proprietary for leading flavor companies.

Government efforts:

Governments all over the world are levying taxes on sugar-sweetened beverages in an effort to improve the health of their citizens. Over the last year, Asian countries like Philippines, Brunei and Thailand have introduced taxes on sugar-sweetened drinks; while Indonesia, Malaysia, Singapore and Vietnam are looking into it. India too has imposed a hefty 40% tax on carbonated soft drinks. and need focus on reduction. Along with consumers in India, health is also of high priority for regulators. The Food Safety and Standards Authority of India (FSSAI) has proposed a traffic light labelling system on the front of packs that will indicate the level of salt, sugar and fat in packaged food and drink.

BLOCKCHAIN TECHNOLOGY: FROM PILOT TO REALITY THROUGH FARM TO FORK APPROACH TO ENSURE FOOD SAFETY

By
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Cloudtail India Private Limited.

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Blockchain is a hot topic today and the food industry is no exception. But this technology and its implications are not always easy to understand. What exactly is blockchain, and how can it be used to improve food safety worldwide? We can explore the current applications and future possibilities of this emerging technology, and consider how blockchain can help provide safe food for consumers everywhere.

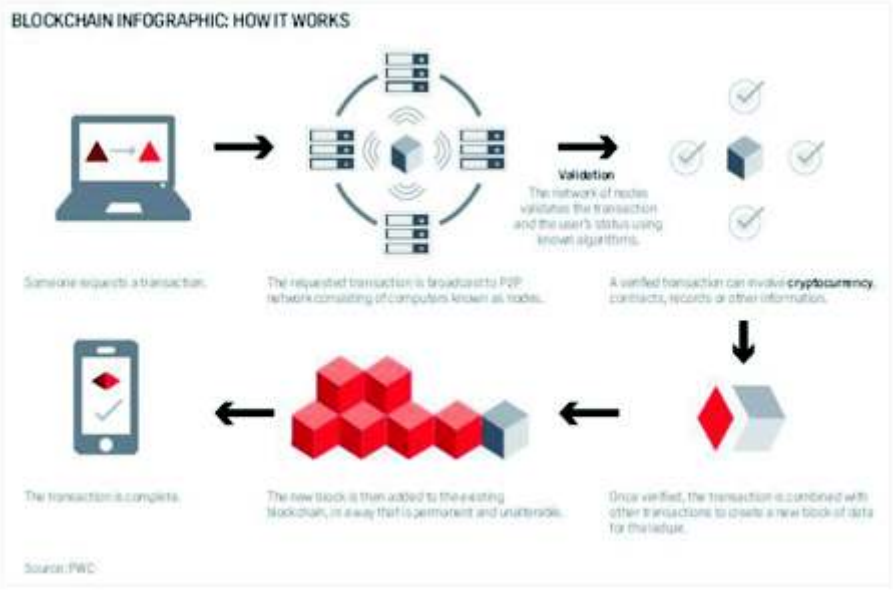
What is blockchain and Why it is Unique?

Blockchain is a database that records digital transactions in secure and transparent way. It is a distributed ledger technology that allows all members to record transactions in a decentralized data log maintained on a network of computers, rather than a physical ledger or a single database. Transactions must be approved through consensus, and everything is secured through cryptography.

In simpler terms think of blockchain as google sheets versus excel sheet sent through emails. In google sheets, all members have live access to the data being entered in the sheets and can independently record/track the updates of every entry being made. Add another layer on top of this, where entry once made is recorded permanently and cannot be edited or erased by any member.

What makes blockchain so unique is that data stored on its networks is transparent and incorruptible. Data is embedded on the network as whole, it is public and data once stored cannot be corrupted by altering any information on the blockchain. Blockchains have three major characteristics:

- Blockchains are public: Everyone participating in the blockchain can view the transactions, which are stored in "blocks."
- Blockchains are decentralized: No single party owns the blockchain. All participants first must reach a consensus (via an algorithm) before any transaction can be added to the chain. This means greater trust of the data stored in the blockchain.
- Blockchain is secure: Data in the blocks cannot be altered and blocks can only be added to the chain, never removed, making a blockchain database highly secure.



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Application of blockchain in Agriculture and food industry:

One of the most logical applications of blockchain is in agriculture & which is plagued with several challenges in fact we can call them as opportunities. With rising consumer consciousness towards food safety, blockchain application can play a vital role in solving many agriculture-related problems.

Agri Inputs - Are the Inputs Authentic?

Farmers are often unaware if the inputs they are buying are authentic. Local level retailers are selling fake products to farmers to increase their profit margins. At times, even the retailers are unaware if the products supplied to them are authentic. Big agriculture-input players are also losing millions of dollars due to pilferage or duplication which also impacts their brand image.

Blockchain application will solve this problem by increasing the traceability of each product sold, from manufacturer to end buyer. Retailers and farmers can simply scan the blockchain barcode on each product via their smartphone and get to know about the authenticity and source of the products they are buying.

Food Safety - What is the Source of My Food?

Consumers have grown suspicious of the food they are consuming. Food fraud costs the global food industry an estimated $30-40 annually. Food allergies are much more common now than 25 years ago, and consumers are beginning to demand the information related to the food they are consuming.

As this trend continues to rise, big food chains will have no choice but to use blockchain for ensuring accountability, traceability and quality of the food. Blockchain will in fact become competitive edge for brands competing in the competitive FMCG space.

The promise of blockchain for the food industry lies in its ability to provide a fully automated system for complete traceability. Imagine if all players in a supply chain, from raw material supplier to retailer, pushed their data to the blockchain. All transactions executed by and between these partners would be automatically added to the blockchain, showing a full record of the supply chain and any changes made to it—such as updated supplier facilities, certifications, and product composition. Ultimately, every supply chain participant would end up with a supply chain that is not just fully transparent, but also fully traceable, for any point in time.

This has significant implications for the way food companies approach food safety issues such as recalls and fraud. With a full traceability system, provided by blockchain, supply chain stakeholders can “go back in time” and identify the exact moment the data in question was changed. Coupled with their secure nature, blockchains provide food companies with a detailed and trustworthy database of complete supply chain knowledge.

Maximizing the power of blockchain:

As of today, blockchain is still a new technology that is rapidly changing. Its application to food safety is still in the early stages, and use of the technology still has plenty of room to evolve.

We see three essential requirements that should be addressed for blockchain to achieve its full potential in the food industry which are illustrated below.

1. Sharing Data:

Blockchains are powerful from a security perspective, but they still rely on connected supply chain data. To provide a complete picture of the supply chain, data cannot exist in isolation but rather be shared between suppliers, manufacturers, and retailers. Food businesses therefore should first focus on collaborating with their supply chain partners to discover, map, and digitize their end-to-end supply chains, before tackling blockchain. It is only when this first step has been achieved that the blockchain can be of any real value to supply chain partners. In addition, data is only valuable if it is accurate. Food companies must develop methods to ensure the data declared by their suppliers and clients, such as food safety and quality certifications, is verified. Without these checks, blockchains can still be created, but not necessarily trusted.

2. Creating Consortia:

Consortia enable food businesses to work together to develop agreed-upon standards and infrastructure, which is key for emerging technologies such as blockchain. Collaboration between successful food companies ensures everyone has a say in determining the best way to harness the power of blockchain for the food industry.

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*Source: The Times of India, July 2017

Loggerheads_2018

By getting involved in organizations such as the Global Food Safety Initiative (GFSI), food businesses can ensure they have access to the network and platform needed to effectively collaborate with others. Global Food Safety Initiative (GFSI), food businesses can ensure they have access to the network.

3. Achieving the right balance:

Beyond the practicalities of blockchain, a bigger question remains: exactly what information can, and should, be shared? Blockchain's appeal comes from the fact that it is a transparent, and therefore trustworthy database. But even public blockchains encrypt the details of each transaction, with full access provided only to those designated by the transaction owner.

When it comes to the food industry, some information, such as quality certifications, clearly benefit from public visibility. But other data, such as recipes or supplier practices are proprietary and should remain private. Which begs the question: how much information should be shared and with whom, to safeguard confidential information while still providing transparency? and to go a step further: what is the right way to communicate blockchain data to consumers?

As we are still in the early days of blockchain, we have not yet determined the right balance between public and private blockchains and it will take time to develop. Food businesses therefore need to discuss and collaborate to determine the right model before blockchain can reach its full potential for enhancing food safety.

Conclusion:

Blockchain technology holds great promise for food safety, with the potential to provide greater security, transparency, traceability, and trust. Yet it is only through collaboration within the food industry that the power of blockchain can be effectively used.

References:

www.blockchain.com,
www.mygfsi.com,www.inc42.com

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e-mail:
sachinmax2001@yahoo.com ;
Mob No: 91-8884600252

COMING EVENTS

IFT Food Expo
June 2-5, 2019
New Orleans, USA
W: www.ift.org

Food Hospitality World 2019
June 13-15, 2019
Bangalore
T: +91 22 49723120

Bakers Technology Fair 2019
July 5-7, 2019
Coimbatore
E: +91 44 22780776
M: +91 9380220533

Agro F&B Pro
August 1-3, 2019
Dr SPMukherjee Indoor AC Stadium, Goa
E: megashow704@gmail.com
W: www.agrofnbpro.com

Foodpro 2019
August 23-25, 2019
Chennai Trade Centre, Chennai
T: +91 44 42444555
E: foodpro@cii.in
W: www.ciifoodpro.in

India FoodEX 2019
Aug 30 - Sep 1, 2019
Hall no 2&3, Bangalore Intl Exhibition Centre (BIEC), Bangalore
T: +91 11 2953 5593/5872
E: indiafoodex@gmail.com
W: www.indiafoodex.com

Anutec International FoodTec India
Sep 13-15, 2019
PragatiMaidan, N. Delhi
T: +91 22 28715200
E: info@koelnmesse-india.com
W: www.foodtecindia.com

NUTRITION AWARENESS ACTIVITY AT BHASKARACHARYA COLLEGE OF APPLIED SCIENCES, DELHI, ON TUESDAY 12TH FEB 2019

Report By

Dr. Eram Rao,
President, AFST (I) Delhi Chapter
Associate Professor, Dept of Food Technology,
Bhaskaracharya College of Applied Sciences, Delhi

&

Ms.Anuja Rawool,
Food Scientist,
PFNDAI

The Nutrition Awareness Activity Delhi was organized by Department of Food Technology, Bhaskarachrya College Delhi in collaboration with Protein Foods & Nutrition Development Association of and AFST (I) Delhi Chapter On Friday, 15th March 2019.

Participation in the activity was appreciable as 148 students and several staff members participated wholeheartedly in the event. From the food industry, representatives of PepsiCo, DuPont, Mother dairy and Marico and nutritionist attended the event.

The morning was devoted to intercollegiate competitions among students. Students from several colleges participated in different competitions –
The event had two intercollegiate competitions, Value From Waste and Food Photography, for students of Food Technology, Food Sc., Home Sc., Dietetics and Nutrition alongside a seminar on 'Good Food for Healthy Life' supported by Marico, Coca Cola, Kellogg India.

COMPETITION 1
Name: Value from Waste
The motive of the competition was the development of a food product while utilizing food waste, the recipes were judged on parameters like innovation and waste utilization. The need for utilization of food waste can't be debated in a country with limited assets and an overwhelming number of 1.3 billion mouths to feed and rising. The event was a success with 16 entries from 7 colleges from Delhi and nearby areas. The top three recipes were awarded by PFNDAI. The efforts and innovation of the participants were widely lauded by judges and seminar attendees alike; one of the judges was found quoting "when the word waste utilization is heard the mind immediately associates it with a food product with compromised taste attributes but the students here changed that perception today".

The Competition was judged by
1. Ms.Parma Badra – E.I.DuPont
2. Dr.Prashant Bhatt –Mother Dairy

Name of Participating Organizations: Shyama Prasad Mukherji College Bhaskaracharya College of Applied Sciences, Institute Of Home Economics, Lakshmibai College, Lady Irwin College, Jamia Hamdard

Name of the winners:
1st - Samta Saroya and Srashti Rajpoot from Bhaskaracharya College of Applied Sciences
(Recipe -Nachos with hung curd dip)

2nd- Supriya Kumari and Shivani Bisht from Institute Of Home Economics
(Recipe- Okra Muffins)

3rd- Ruqayya from Lakshmibai College
(Recipe- Cauliflower green peel biscuits)

COMPETITION 2

Name: Food Photography

The competition was conducted in two rounds. The theme for the first round was to click a healthy food and the criteria of selection of participants for the second round was to get the maximum number of likes on their pictures that were uploaded on the Facebook handle of Ambrosia. There were 10 participants for the second round which was conducted on 15th March 2019 in the Principal Block of Bhaskaracharya College of Applied Sciences. The theme for the same was "traditional dish -low in either of the two: fat, sugar or salt". The photographs were judged based on various criteria and three participants won attractive prizes and certificates.

The Competition was judged by
1. Dr. Sanjay Naphade
2. Dr. Vasudha Sharma

Name of the winners:
1st Position: Kriti Ahuja, Bhaskaracharya College of Applied Sciences.
2nd Position: Vikas Manjeda, Bhaskaracharya College of Applied Sciences.
3rd Position: Gaurav, St. Gregarious School

The technical event commenced with an inaugural speech by Dr. Balaram Pani, Principal Bhaskaracharya College, he addressed the topic of 'Good Food for Healthy Life' and was followed by four technical sessions by exalted industrial and medical professionals. The competitions were held simultaneously in the principal's block of the college.

Dr.Eram Rao introduced the delegated about the AFST (I) Delhi Chapter and also welcomed the students, delegates and invitees. Ms. Anuja Rawool, Food Scientist PFNDAI introduced the delegates about NAA and the programs conducted by PFNDAI.

The technical session comprised of four technical sessions conducted by eminent speakers. The first session was presented by Dr. Sakshi Bhushan, Principal Nutritionist Marico. She spoked on Edible oils-Health beyond basic Nutrition. She highlighted about how fat plays an important part in our food and nutrition, its quality and quantity bears a huge impact on overall health. She also emphasized on the selection of the fats/oils consumed and its quantity has played large role in the etiology of CVD. Majority of these studies have been carried out on the composition of fatty acids consumed, its positional distribution in glycerol backbone and relative ratios of fatty acids.

The technical session two was presented by Ms. Mili Bhattacharya Scientific, Nutrition and Regulatory, Coca Cola. She spoked on Role of Functional Beverages for consumer choices and highlighted upon the beverage opportunity in India. Her focal point was about how to identify & develop successful functional beverage? She overviewed about the regulatory frame work & also highlighted about the journey of Production Diversification of Coca Cola.

The 3rd Session was presented by Dr. Neelanjana Singh, Former President IDA. She spoked on Exposing the Myth of Whole Grain where she gave an overview about the history of whole grains. Dr. Neelanjana also discussed about the consumption of cereal grains, Glycemic index unprocessed food & what is the Role of Microorganism in the prevention of inflammation. The Refining process of bread and a brief history. Nutritional significance of phytates and phytic acid.

The last session was presented by Mr. Indranil Chatterjee on Making Food Product Healthier with Protein and Fibre. He introduced about protein and fibre & their health benefits. Importance of proteins in the diets of people belonging to different age groups, gender and those involved in activities like sports. He overviewed about PDCAAS, Protein Digestibility Corrected Amino Acid Score, is a new method of checking the quality of protein. Egg has the highest PDCAAS value. It contains all the essential amino acids and is easy to digest.

The seminar was followed by prize distribution to the student winners of the two competitions. The prizes were given away by the Judges and the speakers.

The program ended with the vote of thanks by Dr. Eram Rao.

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Delegates

Dr. Sanjay Naphade Judging

Mr. Indranil Chatterjee

Dr. Neelanajana Singh

Dr. Sakshi Bhushan

Ms. Mili Bhattacharya

Speakers, Judges and BCAS staff

Dr. Neelanjaa and Dr. Sanjay

Dr. Eram Rao, Ms. Parama Bhadra and Dr. Rizwana

Faculty of Jamia Hamdard College, Delhi

Dr. Sakshi, Dr. Eram and Dr. Vasudha

Food Photography Competition

Mr. R. L. Goyal discussing with Ms. Anuja, Mr. Indranil Chatterjee, Dr. Jeevan Kumar and Dr. Sanjay Naphade

REGULATORY ROUND UP

By
Dr. N. Ramasubramanian,
VR Food Tech Private Limited
n.ram@vrfoodtech.com

Dear Readers

Please find below the summary and the link to regulations, order, etc published by FSSAI since the last round up.

Draft notification related to new standards for low lactose/lactose free milk and dairy permeate powder and mozzarella cheese. Limits for low lactose and lactose free milk have been defined. Such modified milk would be an advantage for lactose intolerant people. However, lactose is also involved in calcium absorption and milk is a good source of Calcium. There will be a tough competition between lactose free milk and Soy milk.

Draft regulation permitting many additives in different foods and food categories. Sorbitan esters of fatty acids have been permitted in bread and its variants, yeast and like products. These additives were missed out in the last final notification. The regulation also proposes to amend the microbial standards of spices and herbs.

Draft regulation proposing additional additives in different food categories especially in vegetable oils, fats and shortening. The draft also adds to the list of substances that cannot be used as a flavor.

A directive on the implementation of Health Supplement and Nutraceutical regulation. Formulations which are merely a combination of vitamins and minerals , in dosage forms such as tablets, capsules, are allowed till 30th June 2019 or till further order. The order also states that any ingredient which is not permitted by the Health Supplement and Nutraceutical regulation is also not allowed in any food product unless it is specifically permitted.

Labelling of wheat flour has been subjected to frequent amendments. Here is the final verdict. Atta shall be labelled as – Wheat flour (Atta) and Refined wheat flour (Maida). Deadline for implementing this style has been extended to 31 July 2019. Initially, Atta was to be labelled as “Whole wheat flour” which was subsequently amended to “Wheat flour”. Manufacturers who have started declaring Atta as whole wheat flour have been given time till 31 December 2019 for the change over.

Latest list of FSSAI approved laboratories. Please pay attention to the validity period and the scope

FSSAI extends the permission to import of formulations meant for Inborn Error and Metabolic disorders for one more year till 02 February 2020.

Ban on the import of milk and milk products from China has been extended till all the laboratories at develop the capability to test melamine in food products

RESEARCH IN HEALTH & NUTRITION

Image © iStock.com/Predrag Vuckovic

DHA supplementation during pregnancy may prevent high blood pressure in early childhood

26 Feb 2019 Nutrition Insight

Daily supplementation of 600mg of DHA omega 3 fatty acid during pregnancy can help prevent the development of high blood pressure in obese or overweight offspring in early childhood.

This is according to researchfrom the University of Kansas (KU) and the KU Medical Center, published in JAMA Network. The researchers seek to further explore the way "developmental programming" – how prenatal environment impacts a fetus' metabolism – works in preventing disease, such as obesity, later in life. "This research is aimed at expectant mothers and pediatricians who wonder what you can do prior to the birth of your child to optimize health and behavior outcomes," says co-author John Colombo, KU Professor of Psychology, Director of KU's Life Span Institute and currently KU's Interim Vice Chancellor for Research.

The importance of fatty acids is well known, with many foods already fortified with DHA, such as eggs, and an abundance of supplements that tout high fatty acid concentration. However, the researchers note that the amount needed is much higher than what is already included in supplements. "There are already many prenatal supplements that contain DHA. However, most contain half dose used in this study," Susan Carlson, co-author and AJ Rice Professor of Nutrition in the KU Department of Dietetics and Nutrition tells NutritionInsight. "There are also several food products with added DHA, however, it is important to pay attention to the label to know how much DHA some of these formulated products provide," she notes.

The new study followed 171 women with low-risk pregnancies from the Kansas City area who signed up at the KU Medical Center's Maternal and Child Nutrition and Development Lab between March 2006 and September 2009. Half of the women were randomly assigned a prenatal supplement of 600mg of DHA to be received daily and half were given a placebo. The primary outcomes of the intervention were pregnancy outcome and child development through age six. The secondary outcome was blood pressure that was measured longitudinally at different ages in 171 children.

The main finding showed that being overweight or obese came with a high blood pressure in the 82 children whose mothers received the placebo, but not to the 89 children whose mothers received the DHA supplement. "Maternal DHA intake during pregnancy appeared to mitigate the association between childhood overweight condition or obesity and blood pressure," the research says. Obese and overweight children of mothers in the placebo group had a large mean increase of 3.94mm Hg for systolic BP (blood pressure) and 4.97mm Hg for diastolic BP compared with overweight/obese children of DHA-supplemented mothers. These differences were statistically significant, according to the researchers.

How much DHA is needed?

While the researchers stress that the optimal amount of DHA needed is still unknown, they also note that the DHA supplements available in the US contain much less than 600mg of the fatty acid.

"We do not know the optimal amount [of DHA supplementation] to have this favorable effect on blood pressure, however, there is evidence that maternal DHA can also reduce birth before 34 weeks gestation; and our results show that benefit continued to accrue all the way up to 600 mg/day," Carlson says. "There is one study that shows that supplementation for the first four months of life resulted in lower BP at age six. We suspect there is a critical window in development but we don't know what that window is," she adds.

Several studies have shown that DHA levels in pregnant women can be low which may cause complications such as preterm birth. Researchers previously identified that a DHA target blood level of 5 percent or higher may reduce the risk of preterm birth significantly. "Many American children have serious weight issues (overweight and obesity). What the study shows is that if they become overweight or obese for any of a multitude of reasons that [via DHA supplementation during pregnancy] they are protected against the increase in blood pressure that is associated with overweight and obesity," she notes.

Despite the possible benefits of DHA supplementation, BDA dietician and spokesperson Aisling Pigott tells NutritionInsight that the role of nutrition is also significant and natural sources of fatty acids should not be overlooked. "The study has looked simply at a high dose supplement. We know from other research that regular consumption of oily fish has multiple health benefits. Plus, there will be additional nutrients in a food source. At the moment, we would suggest food can be enough to maximize benefit," she stresses.

Developmental programming against high blood pressure

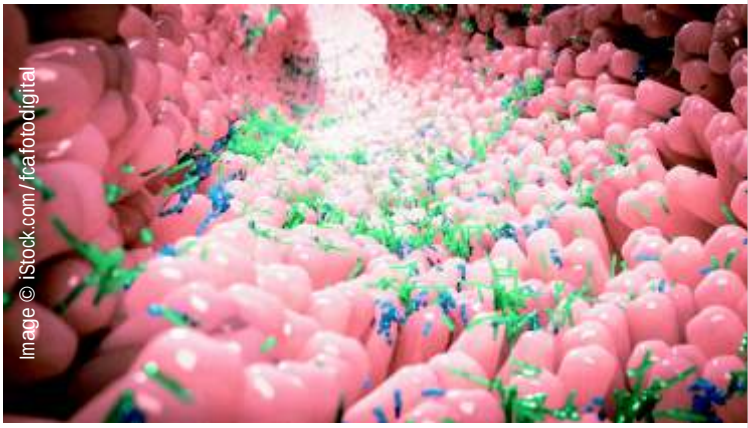
Overweight and obesity are large problems among US children with nearly one in five school-age children and young people aged 6 to 19 years being obese, according to the US Centers for Disease Control 2015-16 data.

"There's a phenomenon called 'developmental programming' and researchers have studied the effects of the prenatal environment on long-term outcomes since World War II. The prenatal environment programs a fetus' metabolism for what to expect in the postnatal environment. Part of DHA's known effects may be in programming cardiac function that preserves normal blood pressure in the case of high postnatal weight gain," says Colombo. "Prenatal DHA exposure appears to program the developing fetus to be protected against the blood pressure-elevating effects of obesity in childhood," adds Carlson.

The authors believe that lower blood pressure at age six might extend beyond childhood. "It is known that blood pressure tracks over time such that people with higher BP early in life are more likely to have higher BP later in life," Carlson says. Next in research. The study and phase 3 clinical trial were supported by the US National Institutes of Health (NIH) and the researchers are currently conducting more research to determine the effects of DHA supplementation.

"We have just completed assessments of BP at seven, eight and nine years of age in the children in our recent report, so we will be able to determine if the finding persists out to these ages. It would be nice to know how DHA is programming the protection we observed, however, those studies cannot be done in humans," says Carlson. "From the work of others, we already suspect that maternal DHA intake protects the developing autonomic nervous system and reduces stress in mom and baby. These are definitely areas that could and are being explored further in human pregnancy trials funded by the US National Institute of Child Health and Human Development (NICHD)," she concludes.

By Kristiana Lalou



A healthy microbiome is key to warding off CVD, says UK nutrition body

28 Feb 2019 Nutrition Insight

Following a diet that encourages a healthy gut microbiome, avoiding central obesity and getting enough sleep are among the lifestyle factors that may help to protect against heart disease and stroke, according to a report from the British Nutrition Foundation (BNF) Task Force.

The report, Cardiovascular Disease: Diet, Nutrition and Emerging Risk Factors: 2nd Edition, was presented yesterday at a conference for academics and health professionals. The Task Force is calling for further research, particularly regarding the link between specific gut bacteria and cardiovascular health. "The concept that the gut microbiome might be linked to risk of cardiovascular disease is relatively new, but we know that gut bacteria can affect health in a variety of different ways and there is a lot of research emerging in this field," a BNF spokesperson tells NutritionInsight.

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[1]Research shows that diets high in fibre help in weight management. Oats are a high fibre wholegrain breakfast and hence a smarter option than refined cereals. Saffola encourages you to exercise regularly, follow a healthy lifestyle and consume a diet low in saturated fat, cholesterol and sodium to keep your body fit.

Further research is warranted to understand which types of gut bacteria are most important for health and the different ways in which they could influence the risk of cardiovascular disease, they note.

In the UK, the death rate from cardiovascular disease (CVD), which includes heart disease and stroke, has been falling. But it is still one of the leading causes of death. There are a number of treatments available, which have contributed to reducing mortality, but ill health associated with CVD morbidity remains high and could even be rising in older age groups.The fermentation of fiber by our gut bacteria may also influence our risk of heart disease.

Professor Keith Frayn Emeritus, Professor of Human Metabolism, University of Oxford and Chair of the Task Force, says: "Conventional lifestyle-related risk factors for cardiovascular disease include smoking, raised cholesterol and blood pressure, lack of physical activity, obesity and diabetes. However, these 'classical' risk factors cannot fully explain differences in cardiovascular disease risk and emerging evidence suggests that other novel risk factors may play an important role." The Task Force report explores some of the emerging and novel risk factors and how they can affect the risk of heart disease and stroke.

Gut health

Scientific research shows that eating whole grains and other fiber-rich foods are important for a healthy gut, but the Task Force report highlights that the fermentation of fiber by our gut bacteria may also influence our risk of heart disease.
Sara Stanner, Science Director at the BNF and editor of the Task Force report, says: "As a nation, we're consuming well below the recommended fiber intake. Eating plenty of fruit and vegetables, choosing high-fiber or wholegrain varieties of starchy carbohydrates, and eating plenty of pulses, like beans, peas and lentils, will contribute to fiber intakes and can help to keep your gut healthy and decrease risk of heart disease."

Indeed, a recent report published by The Lancet noted that higher intake levels of dietary fiber and whole grains are linked with a lower risk of non-communicable diseases, body weight and cholesterol levels.

Central fat

Being overweight may increase the risk of heart disease and stroke, but where the body carries any excess fat is also important in determining the risk of heart disease and stroke. The


Image: © iStock.com/SIphotography

Task Force report explains that people who have excess fat around the stomach are at increased risk because the cells secrete a number of substances that can contribute to risk. "Regardless of height or BMI, people should try to lose weight if their waist measures more than 94cm (37ins) for men and 80cm (31.5ins) for women," says Stanner.

Published last year, a Mayo Clinic study found that even for those with a healthy body mass index (BMI), a "fat belly" creates a two-fold higher long-term risk of heart problems. However, a recent American Heart Association (AHA) Heart and Stroke Statistics report found that although 48 percent of Americans suffer from some type of CVD and 90 percent of Americans understand that regulating body weight is beneficial to heart health; they do nothing to tackle weight issues actively.

Minerals

There are links between sodium and high blood pressure risks, but other minerals such as calcium, magnesium and potassium may play a role in preventing high blood pressure, says the report. They could also have positive effects on other risk factors for heart disease and stroke. "Eating a varied diet will help to ensure you get all the essential minerals you need; potassium is found in foods like bananas, potatoes and fish, magnesium in lentils and whole grains and calcium in dairy foods and some green leafy vegetables," explains Stanner.

Sleep

Evidence in the report suggests that it is not just a lack of sleep, but also poor quality and interrupted sleep that may be linked to an increased risk of heart disease, stroke, Type 2 diabetes, obesity and hypertension. "There is emerging evidence that inadequate sleep is linked to increased risk of cardiovascular disease. For general health, adults should aim for between seven and nine hours of sleep a night," Stanner adds.

Workplace stress

Many scientific studies have linked stress with ill health, but the link between job-related stress and increased risk of heart disease and stroke is becoming more widely recognized. The report suggests that exposure to stress activates specific regions of the brain, leading to an increase in heart rate and blood pressure, which can affect blood vessel walls and damage the functioning of the blood vessel lining. For those exposed to stress in the workplace, it may be a good idea to find relaxation techniques and actively work at managing stress levels, the researchers advise.

Other risk factors

Other significant risk factors identified by the Task Force report include birth weight (both high and low birth weights are associated with increased risk of heart disease in later life), excessive consumption of alcohol and sedentary behavior, even if interspersed with physical activity.
By Laxmi Haigh

Does eating mushrooms protect brain health?

Medical News Today 15 March 2019 By Maria Cohut

Mushrooms are a much-loved ingredient in cuisines around the world. They are nutritious and especially rich in antioxidants, which protect cell health. Researchers are now asking whether mushrooms can also protect against cognitive decline.Eating mushrooms may help keep cognitive decline at bay.


Image © iStock.com/ Maksym Azovtsev

Mushrooms are fascinating. Although some are edible and grocery stores sell them in their "vegetable" aisles, they aren't actually vegetables.They are actually fungi, a kingdom all of its own, alongside those of plants and animals in biological classifications.

Edible mushrooms — both cultivated and wild species — contain a high amount of dietary fiber, antioxidants, and protein, as well as vitamins and minerals. New research has found that people who integrate mushrooms into their diets — even if they only consume them in small portions — appear to have a lower risk of mild cognitive impairment (MCI), which often precedes Alzheimer's disease. In MCI, a person may experience some symptoms characteristic of Alzheimer's disease — such as poor memory and issues with language and spatial orientation — but in a much subtler way that does not prevent them from continuing to lead a fully functional life. Researchers at the National University of Singapore (NUS) near Clementi hypothesized that eating mushrooms could help preserve cognitive function in late adulthood. So, they conducted a new study to see whether they could find any evidence in this respect. Their findings — which now appear in the Journal of Alzheimer's Disease — suggest that the mushrooms common in Singaporean cuisine may help reduce the risk of MCI.

MCI: A subtle form of cognitive decline

The study lasted 6 years, from 2011 to 2017, and it included 663 participants aged 60 and older at baseline. The researchers recruited them through the Diet and Healthy Aging project.
The investigators focused on the consumption of some of the most common mushrooms that people in Singapore eat:

- golden mushrooms
- oyster mushrooms
- shiitake mushrooms
- white button mushrooms
- dried mushrooms
- canned button mushrooms

The team defined mushroom portion sizes as three-quarters of a cup of cooked mushrooms per portion, weighing about 150 grams, on average.

To gauge the association between eating mushrooms and MCI risk, the researchers also measured the participants' cognitive abilities. According to first study author Lei Feng, who is an assistant professor at NUS: "People with MCI are still able to carry out their normal daily activities. So, what we had to determine in this study is whether these [people] had poorer performance on standard neuropsychologist tests than other people of the same age and education background."
"Neuropsychological tests are specifically designed tasks that can measure various aspects of a person's cognitive abilities. In fact, some of the tests we used in this study are adopted from commonly used IQ test battery, the Wechsler Adult Intelligence Scale," he adds.

The team also conducted targeted interviews and asked the participants to undergo a series of tests measuring aspects of physical and psychological functioning. "The interview," Feng states, "takes into account demographic information, medical history, psychological factors, and dietary habits."
Then, he continues, "A nurse will measure blood pressure, weight, height, handgrip, and walking speed." Participants "also do a simple screen test on cognition, depression, anxiety."
Finally, the team conducted 2-hour assessments of each person's neuropsychological health and rated them on a dementia symptom scale.

'A dramatic effect on cognitive decline?'

The researchers' analysis revealed that eating more than two portions of cooked mushrooms per week could lead to a 50 percent lower risk of MCI. Feng says that "this correlation is surprising and encouraging." "It seems that a commonly available single ingredient could have a dramatic effect on cognitive decline." Lei Feng. This is only a correlative observation, but the team believes

that there may be a causal relationship involved.Study co-author Dr. Irwin Cheah notes that the scientists are "very interested in a compound called ergothioneine (ET), [...] a unique antioxidant and anti-inflammatory which humans are unable to synthesize on their own."

However, "it can be obtained from dietary sources, one of the main ones being mushrooms." The idea that ET may have a direct effect on the risk of cognitive decline, Dr. Cheah explains, came from a previous study that appeared in the journal Biochemical and Biophysical Research Communications. That research found that people with MCI had lower blood levels of the compound than healthy peers of the same age. Also, the researchers note, mushrooms contain many other substances whose exact role in brain health is not yet clear. These include hericenones, erinacines, scabronines, and dictyophorines — a series of compounds that could contribute to the growth of neurons (brain cells).Substances derived from edible mushrooms could also inhibit the production of beta-amyloid and phosphorylated tau, two toxic proteins whose overaccumulation in the brain coincides with the development of Alzheimer's and other forms of dementia.

In the future, the researchers would like to conduct randomized controlled trial testing the effect of ET and other plant-derived compounds on brain health — specifically verifying their protective role against cognitive decline.

Antioxidants in fruits, veggies may help prevent age-related cataracts

IFT Weekly March 27, 2019

A study published in the American Journal of Clinical Nutrition suggests that eating foods high in antioxidants may lower the risk of developing age-related cataracts (ARC).

Researchers from China and the University of South Australia analyzed 20 studies from around the world looking at the impact of vitamins and carotenoids on cataract risk. Despite some inconsistencies, the findings support the benefits of eating citrus fruits, capsicum, carrots, tomatoes, and dark green vegetables such as spinach, broccoli, and kale to delay the onset of ARC.

“Age-related cataracts are the leading cause of visual impairment among the elderly throughout the world, with unoperated cataracts contributing to 35% of all blindness,” said Ming Li, study author and senior research fellow at the University of South Australia. “Although cataract extraction surgery is an effective method to restore vision, it will have cost society more than $5.7 billion by 2020.”

With the population aging dramatically and an increasing number of people needing surgery, urgent action is needed, the researchers say. “If we could delay the onset of ARC by 10 years, it could halve the number of people requiring surgery,” explained Li. Improvements would rely on global changes to most of the world’s diet, however, with current consumption of antioxidants well below the recommended level to prevent ARC.

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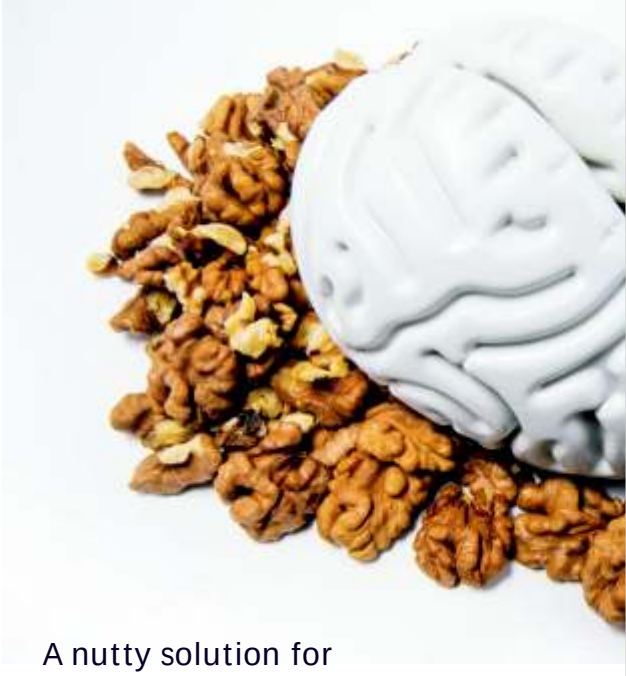

A nutty solution for improving brain health *Solutions for an ageing population*

Science Daily March 19, 2019

Long-term, high nut consumption could be the key to better cognitive health in older people according to new research from the University of South Australia.

In a study of 4822 Chinese adults aged 55+ years, researchers found that eating more than 10 grams of nuts a day was positively associated with better mental functioning, including improved thinking, reasoning and memory.Lead researcher, UniSA's Dr Ming Li, says the study is the first to report an association between cognition and nut intake in older Chinese adults, providing important insights into increasing mental health issues (including dementia) faced by an ageing population.

"Population aging is one of the most substantial challenges of the twenty-first century. Not only are people living longer, but as they age, they require additional health support which is placing unprecedented pressure on aged-care and health services," Dr Li says.


Image © iStock.com/ShidlovskiI

"In China, this is a massive issue, as the population is ageing far more rapidly than almost any other country in the world. Improved and preventative health care -- including dietary modifications -- can help address the challenges that an aging population presents. "By eating more than 10 grams (or two teaspoons) of nuts per day older people could improve their cognitive function by up to 60 per cent-compared to those not eating nuts -- effectively warding off what would normally be experienced as a natural two-year cognition decline."

China has one of the fastest growing aging populations. In 2029, China's population is projected to peak at 1.44 billion, with the ratio of young to old dramatically imbalanced by the rising ranks of the elderly. By 2050, 330 million Chinese will be over age 65, and 90.4 million will be over age 80, representing the world's largest population of this most elderly age group. More broadly, the World Health Organization says that by 2020, the number of people aged 60 years and older will outnumber children younger than five years old.

The UniSA study analysed nine waves of China Health Nutrition Survey data collected over 22 years, finding that 17 per cent of participants were regular consumers of nuts (mostly peanuts). Dr Li says peanuts have specific anti-inflammatory and antioxidant effects which can alleviate and reduce cognitive decline.
"Nuts are known to be high in healthy fats, protein and fibre with nutritional properties that can lower cholesterol and improve cognitive health," Dr Li says."While there is no cure for age-related cognition decline and neurogenerative disease, variations in what people eat are delivering improvements for older people."
The World Health Organization estimates that globally, the number of people living with dementia is at 47 million.By 2030, this is projected to rise to 75 million and by 2050, global dementia cases are estimated to almost triple. China has the largest population of people with dementia.

"As people age, they naturally experience changes to conceptual reasoning, memory, and processing speed. This is all part of the normal ageing process," Dr Li says. "But age is also the strongest known risk factor for cognitive disease. If we can find ways to help older people retain their cognitive health and independence for longer -- even by modifying their diet -- then this absolutely worth the effort."

Eating fish may help prevent asthma

Science Daily March 19, 2019

A scientist from James Cook University in Australia says an innovative study has revealed new evidence that eating fish can help prevent asthma.

Professor Andreas Lopata from JCU's Australian Institute of Tropical Health and Medicine, (AITHM) took part in the study which tested 642 people who worked in a fish processing factory in a small village in South Africa.
"Around 334 million people worldwide have asthma, and about a quarter of a million people die from it every year. In Australia, one in nine have asthma (about 2.7 million), and among Indigenous Australians this rate is almost twice as high. "Asthma incidence has nearly doubled in the past 30 years and about half of asthma patients do not get any benefit from the drugs available to treat it. So there's a growing interest in non-drug treatment options," he said.

Professor Lopata said the current theory is that the dramatic change in diet worldwide is behind the rise of the disease. "There is an increasing consumption of what is known as the n-6 Polyunsaturated Fatty Acid (PUFA) found in vegetable oils and a decline in consumption of n-3 PUFA, which is mainly found in marine oils. Crudely, there has been a global move from fresh fish to fast food," he said. Professor Lopata said the fishing village was chosen for the testing because it had a population with high fish consumption and low socio-economic status, so it would be likely that marine oils from fish and other seafood would be the main source of n-3, rather than supplements.

"We found that certain types of n-3 (from marine oils) were significantly associated with a decreased risk of having asthma or asthma-like symptoms by up to 62%, while high n-6 consumption (from vegetable oils) was associated with an increased risk by up to 67%," he said.


Image © iStock/Radist

He said it was more evidence of the suspected inflammatory role of n-6 in the development of asthma, and more evidence that n-3 gave significant protection.

"Even if you factor in contaminants such as mercury found in some fish populations, the benefits of fish and seafood intake far more outweighs the potential risks," said Professor Lopata. He said further work needed to be done on what effect specific types of n-3 have and how their beneficial role could be optimised, and on minimising the negative effects of n-6.

Green tea cuts obesity, health risks in mice

Science Daily March 14, 2019

Green tea cut obesity and a number of inflammatory biomarkers linked with poor health in a new study.

Mice fed a diet of 2 percent green tea extract fared far better than those that ate a diet without it, a finding that has prompted an upcoming study of green tea's potential benefits in people at high risk of diabetes and heart disease. The benefits seen in the new study, published in the Journal of Nutritional Biochemistry, appear to stem from improved gut health, including more beneficial microbes in the intestines of the mice and less permeability in the intestinal wall -- a condition typically called "leaky gut" in people. "This study provides evidence that green tea encourages the growth of good gut bacteria, and that leads to a series of benefits that significantly lower the risk of obesity," said Richard Bruno, the study's lead author and a professor of human nutrition at The Ohio State University.

Negative changes in the gut microbiome have been previously linked to obesity, and green tea has been shown to promote healthy bacteria. The Ohio State team wanted to explore whether there was an argument for green tea preventing obesity, inflammation and other factors connected to poor metabolic health, said Bruno, who is also a member of the Ohio Agricultural Research and Development Center. "The results of studies looking at obesity management so far have been a real mixed bag. Some seem to support green tea for weight loss, but a lot of other research has shown no effect, likely due to the complexity of the diet relative to a number of lifestyle factors. Our goal is to figure out how it prevents weight gain," he said. "This will lead to better health recommendations."


Image © iStock.com/ katerinasergeevna

Green tea has a rich history in Asian countries and has been increasingly embraced in the West, in part for its potential health benefits. Catechins, anti-inflammatory polyphenols found in green tea, have been linked to anti-cancer activity and lower risk of heart and liver disease. Bruno and his colleagues suspected that green tea might prevent obesity and protect against inflammation in the gut based on previous studies, so they devised an experiment that examined green tea's effects in male mice fed a normal diet and a high-fat diet designed to cause obesity. (Female mice are resistant to diet-induced obesity and insulin resistance, a precursor to diabetes, so they weren't included.)

For eight weeks, half of the animals ate a high-fat diet designed to lead to obesity and half were fed a regular diet. In each of those groups, half ate green tea extract mixed in with their food.

Then the researchers measured body and fat tissue weight, insulin resistance and other factors that included:

- Gut permeability, or how 'leaky' the gut was
- Endotoxin translocation, or the movement of a gut bacteria-derived component to the bloodstream, where it provokes inflammation and insulin resistance
- Inflammation in the fat tissue and intestines
- The composition of the gut microbes, which are known to contribute to a variety of health factors

The mice fed a high-fat diet supplemented with green tea gained about 20 percent less weight and had lower insulin resistance than mice fed an otherwise identical diet without tea. Those mice also had less inflammation within fat tissue and the intestine. Furthermore, the green tea appeared to protect against the movement of endotoxin, the toxic bacterial component, out of their guts and into the bloodstream. Plus, the researchers found evidence of stronger -- less "leaky" -- guts in these mice. Leaky gut is a problem in humans that contributes to widespread low-grade inflammation and has been implicated in a number of health problems.

The researchers also found that the green tea appeared to contribute to a healthier microbial community in the guts of the mice fed a high-fat diet. Mice fed the normal, or low-fat, diet supplemented with green tea also had benefits including reduced weight gain and lower endotoxin levels and markers of leaky gut, but these were relatively modest compared with the effects seen in mice fed the high-fat diet.

Green tea consumption in the experiment would be equivalent to about 10 cups of green tea throughout the day for a person, Bruno said."It might seem like a lot of tea, but it's not highly unusual in certain parts of the world," he said.
Bruno is currently working on a human study that will explore the effects of green tea on leaky gut in people with metabolic syndrome -- a condition that predisposes people to Type 2 diabetes and heart disease.

For now, he said, it's too soon to extrapolate the findings in animals to people. He also cautioned that -- should the benefits prove true in humans -- green tea supplements would not be an obvious substitute for drinking the beverage over the course of a day, because of how the body metabolizes the catechins in the tea. "Consuming a little throughout the course of a day with food -- like the mice did in this study -- might be better," Bruno said.
He said he's hopeful that future research will determine whether drinking green tea might be a good strategy for those looking to reduce their chances of becoming obese. "Two-thirds of American adults are overweight or obese, and we know that just telling people to eat less and exercise more isn't working. It's important to establish complementary health-promoting approaches that can prevent obesity and related problems," Bruno said.

Danger of vitamin B12 deficiency

Science Daily March 13, 2019

Using roundworms, one of Earth's simplest animals, Rice University bioscientists have found the first direct link between a diet with too little vitamin B12 and an increased risk of infection by two potentially deadly pathogens.

Despite their simplicity, 1-millimeter-long nematodes called Caenorhabditis elegans (C. elegans) share an important limitation with humans: They cannot make B12 and must get all they need from their diet. In a study published today in PLOS Genetics, researchers from the lab of Rice biochemist and cancer researcher Natasha Kirienko describe how a B12-deficient diet harms C. elegans' health at a cellular level, reducing the worms' ability to metabolize branched-chain amino acids (BCAA). The research showed that the reduced ability to break down BCAAs led to a toxic buildup of partially metabolized BCAA byproducts that damaged mitochondrial health.

Researchers studied the health of two populations of worms, one with a diet sufficient in B12 and another that got too little B12 from its diet. Like the second population of worms, at least 10 percent of U.S. adults get too little B12 in their diet, a risk that increases with age. "We used C. elegans to study the effect of diet on a host and found that one kind of food was able to dramatically increase resistance to multiple stressors -- like heat and free radicals -- as well as to pathogens," said Kirienko, assistant professor of biosciences and a CPRIT Scholar in Cancer Research at Rice. The lead scientist and co-author of the study, Kirienko said the B12 finding came as a surprise to her team, which first noticed the effect in experiments designed to investigate the mechanisms of pathogenesis of Pseudomonas aeruginosa (P. aeruginosa), a potentially deadly disease in both worms and humans that infects some 51,000 U.S. hospital patients each year, according to the Centers for Disease Control.

Her lab, like thousands of others worldwide, uses C. elegans as a model organism to study the effects of disease, drugs, toxins and other processes that affect humans and animals. In many C. elegans research labs worms are fed Escherichia coli (E. coli), a common human gut bacteria that is itself a model organism. "We found that switching between E. coli strain OP50 and strain HT115 dramatically altered the worm's stress tolerance," Kirienko said. She said it took about two years of follow-up studies to isolate the biochemical mechanism of stress and pathogen resistance. Her research team included study lead co-author Alexey Revtovich and co-author Ryan Lee. "The key difference between the two diets is the ability of HT115 and OP50 to acquire B12 from the environment," said Revtovich, a research scientist. "We showed that HT115 is far more efficient at this, making about eight times as much of the protein that it needs to harvest B12 as compared to OP50."

The researchers used numerous tests to confirm their results and rule out other possible mechanisms for the effect. They also found that C. elegans on an HT115 diet had the ability to resist infection by another deadly human pathogen, Enterococcus faecalis. Lee, a Rice undergraduate student, said the study highlights the need for C. elegans labs worldwide to pay attention to the possible differential impacts of diet on experimental outcomes.

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"Some labs use OP50 as their standard food, and others use HT115 or even another strain of E. coli," Lee said. "Our results show there are significant metabolic differences between these diets, and it's likely those differences could contribute to substantial uncertainty in research outcomes."

Kirienko joined Rice's faculty in 2015 thanks to a recruitment grant from the Cancer Prevention and Research Institute of Texas (CPRIT), a state ballot initiative approved in 2007 to provide $3 billion to support cancer research statewide. To date, CPRIT has awarded $2.2 billion in grants to Texas researchers, institutions and organizations through its academic research, prevention and product development research programs. "This work is related in the sense that it focuses on mitochondrial health," Kirienko said. "In this case, we are working to improve mitochondrial health to help fight infections. For CPRIT, we're trying to do the opposite. We want to damage mitochondria in cancer cells to kill them. So, actually, now that we know this is important, it gives us another potential target in cancer cells."

Bedtime protein for bigger gains? Here's the scoop

Science Daily March 6, 2019

Drinking a casein shake just before overnight sleep increases gains in muscle mass and strength in response to resistance exercise.

But to date, no study has directly addressed whether this effect is due to increased total protein intake only, or if a bedtime beverage is better. According to a review published in Frontiers in Nutrition, existing findings nevertheless suggest that overnight sleep is a unique nutritional window for boosting muscle gains -- while late-night protein calories needn't increase body fat.

Casein point: Snijders' seminal study "Several one-night studies have shown that pre-sleep protein intake increases muscle protein synthesis during overnight sleep in young adults" says lead author Dr. Tim Snijders, Assistant Professor at Maastricht University. "These have fueled the idea that over a longer period, a pre-sleep protein supplement can maximize the strength and muscle mass gains during regular resistance exercise training." Snijders' 2015 study is the most compelling demonstration to date for this. His team put 44 healthy young men on a 12-week lifting program. Half were given a nightly pre-sleep protein shake with about 30g of casein and 15 grams of carbs, while the other half got an energy-free drink. The training was effective -- both groups ended with a bigger squat (one rep max) and bigger quads -- but the protein-before-bed group gained significantly more muscle strength and size.

Is pre-sleep protein consumption better?

But are muscle gains boosted by pre-sleep protein per se, or just higher total intake of protein and calories? Just one study has attempted -- unsuccessfully -- to test this question. It showed that fat-free mass gains over 8 weeks of unaltered training in regular lifters were greater (+1.2 kg vs +0.4 kg) with a nightly casein supplement, compared to the same supplement taken in the morning. The difference was not statistically significant however, perhaps because there were only 26 participants. "Based on our own studies, we calculated that a huge number of participants would be needed to prove whether a difference might exist in response to pre-sleep protein, versus protein intake at other times of the day," explains Snijders.

However, there are already numerous indirect indicators that pre-sleep protein specifically is beneficial for healthy young lifters. Sleep is a unique opportunity for muscle recovery and growth Fundamentally, pre-sleep protein can be used to improve protein intake distribution over the day, says Snijders. Muscles can only grow and repair themselves when the right building blocks -- amino acids from protein -- are available in the blood. But unlike blood glucose, the body does not store and release amino acids to maintain near-constant circulating levels. "A survey of over 500 athletes found they were typically consuming at total of more than 1.2g protein per kilo of bodyweight across three main meals, but only a paltry 7g of protein as an evening snack. As a result, lower levels of amino acids would be available for muscle growth during overnight sleep." But if pre-sleep protein consumption allows muscles to cram in more amino acids at night, will they simply use less during the day? Apparently not, claims Snijders.

"The muscle-building effects of protein supplementation at each meal seem to be additive. In one study we found that the consumption of ample amounts of protein (60g whey) before overnight sleep did not alter the muscle protein synthetic response to a high-protein breakfast the following morning.


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"What's more, others have shown that adding a protein supplement at bedtime does not affect appetite the following morning -- so it is unlikely to compromise total protein or calorie intake."

Bedtime protein won't 'make you fat' or ruin your sleep

While the case for pre-sleep protein remains preliminary, is there any harm in trying it? After all, it does involve consuming calories just before a long period of inactivity. The evidence is sparse, but encouraging.

"In the 8-week morning vs evening casein study, the additional consumption of protein calories did not result in any increase in fat mass despite the fact that exercise volume did not change," reports Snijders. "But again, these results should be interpreted with caution due to the low number of volunteers included.

"Supporting this, another group found in 11 young active men that a pre-sleep casein shake actually increased the rate of fat burning the following day. This might be because casein ingestion reduces the insulin response to subsequent meals, which pushes your body to use more fat."

Based on the results of these studies at least, pre-bed protein consumption, especially casein, doesn't appear to 'make you fat.' Indeed, it appears to actually increase fat metabolism. Finally, pre-sleep protein may be what keeps Snijders up at night -- but it won't stop you getting your well-earned rest.

"It has been consistently shown that pre-sleep protein ingestion has no effect on sleep onset latency or sleep quality."

In conclusion: we don't yet have conclusive evidence for adding pre-sleep protein supplement to your fitness regime: but it's worth a try -- and it's worth further research.

Image © iStock.com/FatCamera

Want a healthy heart? Turn off the TV and eat a good breakfast

Science Daily March 6, 2019

The small lifestyle choices we make each day add up when it comes to heart health.

In a new two-pronged study being presented at the American College of Cardiology's 68th Annual Scientific Session, people who spent less time watching TV and regularly ate an energy-rich breakfast showed significantly less plaque and stiffness in their arteries, indicating a lower chance of developing heart disease or suffering a stroke. "Environmental and lifestyle factors are important but underestimated risk factors for cardiovascular diseases," said Sotirios Tsalamandris, MD, a cardiologist at the First Cardiology Clinic at National and Kapodistrian University of Athens, Greece, and the study's lead author. "These two studies emphasize the many factors that impact heart disease and the need for holistic preventive approaches."

Researchers assessed markers of heart health along with a variety of environmental exposures and lifestyle factors in 2,000 people living in Corinthia, Greece. Participants represented a broad spectrum of the general public, including healthy people as well as those with cardiovascular risk factors and established heart disease. They ranged in age from 40 to 99 years, with an average age of 63 years old.

Detailed questionnaires were used to assess participants' physical activity levels and eating habits, while two non-invasive tests were used to assess the condition of participants' arteries. The first test, carotid femoral pulse wave velocity, measured the speed of pressure waves that move along the arteries to detect stiffening of the arteries, or atherosclerosis. The second test used ultrasound imaging to measure the thickness of the inner part of the arterial wall. Thickening of the arterial walls reflects plaque buildup and is associated with an increased risk of stroke.

Downsides of Too Much TV

For the first prong of the study, researchers divided participants into three groups according to the number of hours spent watching television or videos each week: a low amount (seven hours or fewer), a moderate amount (seven to 21 hours) or a high amount (more than 21 hours). After accounting for cardiovascular risk factors and heart disease status, researchers found those watching the most TV per week were almost twice as likely to have plaque buildup in the arteries compared with those watching the least. "Our results emphasize the importance of avoiding prolonged periods of sedentary behavior," Tsalamandris said. "These findings suggest a clear message to hit the 'off' button on your TV and abandon your sofa. Even activities of low energy expenditure, such as socializing with friends or housekeeping activities, may have a substantial benefit to your health compared to time spent sitting and watching TV."

The study also found that watching more TV was associated with an increased risk of other cardiovascular risk factors, including high blood pressure and diabetes. Compared to those watching less than seven hours of TV per week, those watching more than 21 hours per week were 68 percent more likely to have high blood pressure and 50 percent more likely to have diabetes. "Since our results emphasize the clinical benefit of low energy expenditure activities, performing recreational activities, weight lifting, stretching bands or treadmill exercise while watching TV may be a healthy alternative," Tsalamandris said.

Benefits of a High-Energy Breakfast

In the second part of the study, participants were divided into three groups based on how much of their daily caloric intake came from breakfast: high-energy (breakfast contributing more than 20 percent of daily calories), low-energy (5-20 percent of daily calories) or skipped breakfast (less than 5 percent of daily calories). In total, about 240 people reported a high-energy breakfast, nearly 900 ate a low-energy breakfast and about 680 skipped breakfast. Breakfast foods commonly eaten by those in the high-energy group included milk, cheese, cereals, bread and honey. Breakfast for those in the low-energy group typically included coffee or low-fat milk along with bread with butter, honey, olives or fruit. The researchers found those who ate a high-energy breakfast tended to have significantly healthier arteries than those who ate little or no breakfast. Even after accounting for cardiovascular risk factors, both pulse wave velocity and arterial thickness were, on average, highest in those skipping breakfast and lowest in those eating a high-energy breakfast.

Specifically, arterial stiffness was abnormal in 15 percent of those skipping breakfast, 9.5 percent of those consuming a low-energy breakfast and 8.7 percent of those consuming a high-energy breakfast.

Similarly, more plaque was found in in the carotid arteries of 28 percent of people skipping breakfast, 26 percent of those consuming a low-energy breakfast and 18 percent of those consuming a high-energy breakfast. "A high-energy breakfast should be part of a healthy lifestyle," Tsalamandris said. "Eating a breakfast constituting more than 20 percent of the total daily caloric intake may be of equal or even greater importance than a person's specific dietary pattern, such as whether they follow the Mediterranean diet, a low-fat diet or other dietary pattern."
However, Tsalamandris also indicated that because most study participants followed a Mediterranean diet overall, it is unknown how the study findings translate to people following different dietary patterns.

Since the research was observational, the study does not prove cause and effect, and the reason for the association between a high-energy breakfast and better heart health is not known. Based on previous studies, the researchers offered two possible explanations. One is that people who eat breakfast tend to eat healthier food overall and have fewer unhealthy lifestyle patterns such as smoking and sedentary behavior than those who skip breakfast. Another is that the specific breakfast foods consumed in the high-energy group, such as dairy products, may benefit heart health.

The researchers plan to continue to track health outcomes in the study participants for at least 10 years, with a primary focus on assessing potential impacts of environmental exposures.
This study was supported by a grant from the Hellenic Cardiology Society. Tsalamandris will present the study, "The Impact of Sedentary Behavior Patterns on Carotid Atherosclerotic Burden: Inferences from the Corinthia Epidemiological Study," on Sunday, March 17, at 9:45 a.m. CT in Poster Hall, Hall F, and will present the study, "Breakfast Association With Arterial Stiffness And Carotid Atherosclerotic Burden. Insights From The Corinthia Study," on Sunday, March 17.

Green tea and carrots could treat Alzheimer symptoms, study finds

11 Mar 2019 Nutrition Insight

A diet containing compounds found in green tea and carrots reversed symptoms linked to Alzheimer's in mice genetically programmed to develop the disease, University of Southern California (USC) researchers say.

The team emphasizes that the study, recently published in the Journal of Biological Chemistry, was in mice and many mouse discoveries do not translate into human treatments. Nevertheless, the findings lend credence to the idea that certain readily available, plant-based supplements might offer some protection against dementia in humans. "You don't have to wait 10 to 12 years for a designer drug to make it to market; you can make these dietary changes today," says senior author Terrence Town, Professor of Physiology and Neuroscience at the Keck School of Medicine of USC's Zilkha Neurogenetic Institute. "I find that very encouraging."

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The study also supports the idea that combination therapy, rather than a single "silver bullet," may offer the best approach to treating the 5.7 million Americans living with Alzheimer's. Combination treatment is already the standard of care for diseases such as cancer, HIV infection and rheumatoid arthritis.
The researchers took a look at two compounds: epigallocatechin-3-gallate (EGCG), a key ingredient in green tea, and ferulic acid (FA), which is found in carrots, tomatoes, rice, wheat and oats. The researchers randomly assigned 32 mice with Alzheimer's-like symptoms to one of four groups with an equal number of males and females. For comparison, each group also contained an equal number of healthy mice. For three months, the mice consumed a combination of EGCG and FA, or EGCG or FA only, or a placebo. The dosage was 30 mg per kilogram of body weight – a dosage well-tolerated by humans and easily consumed as part of a healthy, plant-based diet or in the form of supplements.

Before and after the three-month special diet, scientists ran the mice through a range of neuropsychological tests that are roughly analogous to the thinking and memory tests that assess dementia in humans, according to the researchers. Of particular note was a maze in the shape of a "Y", which tests a mouse's spatial working memory – a skill that humans use to find their way out of a building. The findings showed that healthy mice instinctively explored each arm of the Y maze, looking for food or a route to escape and entering the three arms in sequence more often than by chance alone. Impaired mice could not do this as well as their mentally healthy counterparts. "After three months, combination treatment completely restored working memory and the Alzheimer's mice performed just as well as the healthy comparison mice," says Town.

One mechanism at play here appeared to be the substances' ability to prevent amyloid precursor proteins from breaking up into the smaller proteins called amyloid beta that gum up Alzheimer patients' brains, Town explains. In addition, the compounds appeared to reduce neuroinflammation and oxidative stress in the brain, which are key aspects of Alzheimer's pathology in humans.
Town concludes that he and his laboratory will continue exploring combination treatment, with a focus on plant-derived substances that inhibit production of the sticky amyloid beta plaques.

In related news, a 2018 study published in Aging found that Matcha green tea holds potential as a natural treatment for cancer, finding that the ingredient can kill breast cancer cells by preventing them from "refueling." In a further study, mannose sugar, a widely available nutritional supplement, was found to both slow tumor growth and enhance the effects of chemotherapy in mice with multiple types of cancer.

Arjuna touts Indian gooseberry potential for improved heart health

14 Mar 2019 Nutrition Insight

Arjuna Natural Ltd.'s new ingredient Tri-Low, a full extract of amla (Phyllanthus emblica), the Indian gooseberry, is touted as alleviating dyslipidemia, a leading contributing risk factor to the development of atherosclerosis. This is according to an Arjuna endorsed study.

The amla extract "has shown significant potential in reducing total cholesterol and triglyceride levels and in stimulating a more favorable balance of lipid ratios," the company notes.
These results confirm Tri-Low's functionality as a superior, clean-label cardiac health supplement.
The study, led by Dr. Haridas Upadya, was published in the BMC Journal of Complementary and Alternative Medicine.

In this double-blind, placebo-controlled, multicenter clinical trial, 500 mg amla extract or a matching placebo capsule was administered to 98 dyslipidemia patients twice daily for 12 weeks.
Following the 12-week trial, major lipids including total cholesterol, triglycerides, LDL cholesterol and VLDL were significantly lower in the amla group compared to the placebo group. At the same time anti-atherogenic lipoproteins, such as HDL-cholesterol, were maintained at optimum levels. A 39 percent reduction in the atherogenic index of the plasma (AIP) – a key indicator of cardiac health – was also noted in the amla group. Lipid balance was achieved with no concomitant reduction of plasma CoQ10 levels, a phenomenon typically associated with a number of lipid-lowering drugs. Other related parameters, such as fasting blood glucose, homocysteine levels, and apo-B/apolipoprotein levels, also tended to lower. This potentially widens Tri-Low's scope for targeting diabetic dyslipidemia, says Arjuna. Tri-Low delivers the full spectrum of bioactive ingredients extracted from wild, fresh, ripe Indian gooseberry. It is the first of its kind standardized with diacylglycerides of ALA –α-Linolenic acid (an omega 3 fatty acid) and polyphenols.

Image © iStock/Arundhati Sathe

The patented product is available in powder form and can be used straight or in combination with other cardiovascular health supplements. “Tri-Low is available in powder form for use in nutraceuticals either as capsules or tablets. It is also available as water dispersible powder for use in beverages, in sachets or stick packs,” Dr. Benny Anthony, Joint Managing Director for Arjuna tells FoodIngredientsFirst.

Tri-Low is good at reducing visceral fat and obesity, according to Dr. Anthony. “The toxic combination of high cholesterol, the stress of modern life and the wide availability of junk food are factors that are known to aggravate cardiovascular diseases (CVD),” he explains. “The sacred Indian gooseberry, or amla, has been used for centuries in many Ayurvedic formulations as a Rasayanic, something known for its all-around health benefits and outstanding safety. Today we increasingly realize its place as an all-powerful cardiac protector – even in stubborn cases of unhealthy lipid profiles. Arjuna offers the same nutraceutical in an improved, more bioactive, and highly concentrated form.” Indian gooseberry is available in some other tropical countries also, says Dr. Anthony. “But we select only the wild berries of Phyllanthus emblica from India only.”

The project started in 2005 and according to Dr. Anthony, it took Arjuna “several years to understand the active fraction in amla and we are the first to standardize the presence of omega 3 fatty acids in amla extract.” Arjuna’s unique and proprietary, gentle extraction process preserves ingredient functionality and ensures potency. Amla extracts typically are manufactured from dried amla and can differ fundamentally from Tri-Low in quality and activity.

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Citrus fruit flavonoids hold untapped weight management potential, study finds

25 Mar 2019 Nutrition Insight

Naringenin, a flavonoid found in oranges and other citrus fruits, could hold potential for weight management.

The chemical can control blood glucose levels and increase the amount of calories burned, according to a recent study by researchers from Louisiana State University’s Pennington Biomedical Research Center. Since people with obesity have notably more white fat than brown fat, converting white fat to beige fat can be beneficial strategy, note the researchers. More beige fat means that more calories from fat and glucose can be burned, benefitting people with obesity or diabetes. “We found that naringenin activates the genes that are responsible for improving blood glucose control and increasing the amount of calories we burn,” says Dr. Rebello, Ph.D., Postdoctoral Researcher in Pennington Biomedical’s Pharmacology-Based Clinical Trials Unit. “Our studies on human fat tissue suggest that naringenin could be used to convert white fat to beige fat in human subjects.”
Brown adipose tissue (fat) is a type of fat that burns more calories than white fat. White fat in rodents exposed to cold converts to a type of brown fat called beige fat and having more beige fat can help prevent diet-induced weight gain and improve how the body uses blood sugar and cholesterol. Previous studies have also shown that naringenin increases brown fat levels in rodents.

Flavonoids are classified as polyphenols, which are a large group of chemical compounds synthesized by fruits, vegetables, teas, cocoa and other plants that possess certain health benefits. Innovation in this space has been ubiquitous over the past year. French producer of natural ingredients Fytexia has previously highlighted the potential for weight management ingredients as part of an active lifestyle, combining citrus polyphenols, guarana and L-carnitine to support weight loss and healthier body composition. One of its key ingredients is Sinetrol, which is derived from citrus fruits.

Last year, Diana Foods set out to explore the positive impact of polyphenols on the modulation of gut microbiota by creating a research chair to study the prebiotic role of polyphenols.
“The health benefits of polyphenols are well understood. These can go from very general health benefits around antioxidants to some things that are far more specific, such as the role of proanthocyanidins (PACs),” Stephanie Pretesacque, Global Category Director Consumer Health at Diana Food, told NutritionInsight at Vitafoods Europe 2018. The company is working in close cooperation with Université Laval and its Institute of Nutrition and Functional Foods (INAF - Quebec), as well as Canada’s Natural Sciences and Engineering Research Council (CRSNG). The program was set up to explore the effects of fruit and vegetable polyphenols on the modulation of gut microbiota and find out more about the underlying mechanisms of action of these bioactive compounds, alone or combined with probiotic bacteria.

FOOD SCIENCE & INDUSTRY NEWS

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Avoiding "dietary monotony"

25 Feb 2019 Nutrition Insight

Food security, optimal nutrition and biodiversity are threatened by the lack of diversity in our diets, notes a recent report released by Knorr and The World Wide Fund for Nature (WWF).

Coined the Future 50 Foods report, the companies have teamed up with scientists, nutritionists and agricultural experts to offer a "tangible solution" to monotonous diets: 50 foods that the global population should eat more of to promote a sustainable global food system. As well as highlighting ingredients with potential, the report offers recipe tips and ideas for consumers to incorporate them into their diets. "Diversified diets not only improve human health but benefit the environment through diversified production systems that encourage wildlife and more sustainable use of resources," Peter Gregory, Research Advisor, Crops For the Future, says in the report.

A rapidly increasing global population and growing knowledge on the impact of the food system on the environment has spurred a number of investigations into how we can eat more sustainably. Published last month, an EAT Lancet study provided a new dietary global pattern that would require a drastic reduction of about 50 percent in the worldwide consumption of foods such as red meat and sugar, while the consumption of nuts, fruits, vegetables and legumes would have to double. This environmental diet is, according to the report, necessary to feed a growing population of 10 billion people by 2050.

While the Food and Agricultural Organization of the United Nations (FAO) recently released a first of its kind report that highlights how biodiversity that is vital for the sustainability of agricultural and the world's food systems is in rapid decline and presents a growing threat to food security and supply. This report similar notes the lack of plant diversity in farmers' fields and also mentions that among the leading causes of biodiversity loss is overexploitation and overharvesting as well as population growth and urbanization.

The focus on plant-based nourishment continues in the Future Foods report, with all 50 ingredients mentioned falling into the vegan category: 13 cereals, grains and tubers, 12 beans, legumes and sprouts, 18 vegetables, three mushrooms and four nuts and seeds.

Within the plant-based collection are some familiar ingredients, such as lentils, wild rice and kale, as well as less well-known foods like fonio, pumpkin flowers and cactus. Notably, many of the ingredients that have made the cut have higher yields that common crops and several are tolerant of challenging weather and environmental conditions. This means they would not only reduce the land required for crops but also prove valuable in the face of growing climate uncertainty. "The future 50 Foods have been selected based on their high nutritional value, relative environmental impact, flavor, accessibility, acceptability and affordability. This set of criteria is modeled after the FAO definition of sustainable diets," says the report.

Ingredients in focus

Algae

Within the algae section are laver seaweed, also known as nori, and wakame seaweed, which is increasingly eaten across the globe in seaweed salads. "Algae are nutrient-rich and critical to our existence on the planet. They are responsible for half of all oxygen production on Earth and all aquatic ecosystems depend on them. They contain essential fatty acids and are an excellent source of antioxidants. Algae can be rich in protein and have a meat-like umami flavor,


Image © iStock.com/ JMWScout

making them a potential replacement for meat," the report describes.

Beans and pulses

Pulses are nutritious and sustainable sources of plant-based protein – a staple food for a healthier diet and planet – and have long been enjoyed in global diets. Included in this category are a range of more well-known beans and pulses, such as soybeans, mung beans and lentils, as well as some "newcomers." For example, the report highlights Bambara groundnuts (Vigna subterranea) which are the third most important legume in Africa but have recently garnered attention as it can grow in challenging environments, including highly acidic soils. The beans also have nitrogen-fixing nodules, which means the roots fix nitrogen from the air which the plant can use as a fertilizer to produce the bean. Some of the nitrogen is then returned to the soil which improves fertility and boosts yields when the plant is intercropped with other plants.

Cacti

While often used as decorative plants in homes around the world, many species of cacti are cultivated for consumption, the report explains. "Also known as succulents, cacti store water, which allows them to grow in arid climates and tolerate drought. They also contain substantial amounts of vitamins C and E, carotenoids, fiber and amino acids. Edible cacti have long been a part of Mexican cuisine and the delicious young stem segments, usually called nopales, are the part most commonly used in recipes."

Nopales, also known as the prickly pear or cactus pear are widely cultivated in Central and South America and the Middle East and are beginning to increase in popularity in Australia and Europe. The plant has nutritional potential as well as for use in animal feed and to produce biogas, which is a renewable energy source. Some clinical studies suggest that nopales can even help with weight loss, due to their low calorie and high fiber content, but the benefits are yet to be proven, the report adds. Cacti extract has featured in some weight management ingredients, such as NeOpuntia and Cacti-Nea from Nexira which are derived from the desert plant.

Sprouts

According to the report, the sprouting process doubles, and in some cases, triples the nutritional value of a plant. The nutritious bundles included in this group are alfalfa sprouts, sprouted kidney beans and sprouted chickpeas. Alfalfa sprouts are believed to have originated in Iran, have a long growing season and enrich the soil it inhabits. "Gaining recent attention from health food enthusiasts, the immature and nutrient-dense alfalfa sprouts are used as an ingredient in a wide variety of dishes, ranging from raw salads to cooked stir-fries and pad thai," says the report. Sprouted chickpeas (garbanzo beans) have become very popular in recent times in Western countries, often being added to salads and featuring in spreads such as hummus. The report notes that chickpeas are one of the easier beans to sprouts and that, "doing so neutralizes the phytic acid and allows the body to better absorb the nutrients, such as calcium, magnesium and zinc."

Cereals and grains

Cereals and grains have long been a significant source of nutrition for the global population and as knowledge of some of the benefits of meat-free diets rise, they are increasingly coming into focus. However, despite their rising reputation, many people are still falling short when it comes to consumption. New and "exotic" cereals and grains have been met with widespread enthusiasm in the US and Europe, such as some included in the report's list: Buckwheat, amaranth, quinoa, spelt, teff and wild rice.

The report highlights Khorasan wheat which is grown in 40 countries globally and is known for its ability to tolerate different climates without the use of artificial pesticides or fertilizers. Khorasan wheat is high in fiber, a good source of the minerals magnesium and selenium and contains antioxidants. Also highlighted is Fonio, which the report describes as "Africa's oldest cultivated cereal." Fonio is drought resistant and can grow in sandy or acidic oil, is gluten-free and highly nutritious, containing zinc, magnesium and phytonutrients.

Leafy greens

Leafy greens are typically grown as part of other vegetables, such as beets, but they contain a large amount of dietary fiber and vitamins and minerals, the report notes. Leafy greens that made it into the 50 future foods list included moringa and kale, as well as beet greens and broccoli rabe. Beets have become increasingly popular as a vegetable in its own right in recent times, but it's greens are also associated with a variety of health benefits. "With a flavor and nutrition profile similar to that of Swiss chard, beet greens are rich in vitamins K and A. However, the leafy green part of the beetroot is the most nutritious part of the plant and is often overlooked and left unused." A further example in this category is broccoli rabe which is related to turnips and mustard greens – not broccoli, however.

"Broccoli rabe is higher in folate than both mustard greens and turnips and, like kale, is a source of vitamins A, C and K42. Common in Italy, Portugal, Poland and Ukraine, broccoli rabe – or Italian broccoli as it's also known – is easy to grow and can be harvested within seven to eight weeks of planting," says the report.

Mushrooms

According to the report, there are more than 2,000 edible varieties of mushrooms, often cultivated for their nutritional value. Mushrooms are rich in vitamin D and B vitamins. The report highlights enoki, maitake and saffron milk cap mushrooms.

Fruit vegetables

Fruit vegetables are often eaten as vegetables and are commonly mistaken for them despite their sweeter taste and higher water content. Included in this group are pumpkin flowers, okra and orange tomatoes.

Nuts and seeds

Nuts and seeds have long been touted as healthy dietary additions for their protein, vitamin E and healthy fat content. The report notes that walnuts, sesame seeds and flax seeds are strong ingredients in this category. It also highlights hemp seeds from the cannabis sativa. "While not currently one of the most commonly consumed seeds, they have been a part of the diets of people in China and India for many centuries. They are the same species as cannabis, but hemp seeds don't contain THC, the compound that causes the drug-like effects of marijuana," says the report. The small seeds offer omega 3 and 6 fatty acids as well as containing fiber, protein and various vitamins and minerals.


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Root vegetables

Within the root vegetable category, the report points to black salsify, parsley root and white icicle radish (winter radish) as ingredients with potential. Black salsify is not widely known, according to the report, but it's part of the sunflower family and is high in fiber, vitamin E and iron. The root grows well in countries such as France, the Netherlands and Germany. Winter radish resembles carrots in appearance, containing vitamin C and aids digestion.

Tubers

Within the last group of future ingredients are lotus root, Ube (purple yam), yam bean root and sweet potatoes. Tubers are foods that grow downward, anchoring the plant into the ground where they are said to absorb and store valuable nutrients.

Concluding note

Seventy-five percent of the global food supply comes from only 12 plant and five animal species. Just three (rice, maize, wheat) make up nearly 60 percent of calories from plants in the entire human diet, notes the report citing UN Food and Agriculture Organization (FAO) data. Such dietary monotony is linked to a decline in the biodiversity of plants and animals and thereby threatens the resilience of the food system. It is hoped that by increasing the consumption and cultivation of the 50 listed foods, as well as providing recipes that consumers can incorporate into their diet, healthy and sustainable diets can be achieved as the global population grows.

By Laxmi Haigh


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Influence of social media on children's food intake

IFT Weekly March 13, 2019

A study published in the journal Pediatrics suggests that social media may have a negative influence on children's food intake.

Current research shows celebrity endorsement and television advertising of unhealthy foods increases children's intake of these foods. However, children are increasingly exposed to marketing through digital avenues, such as on social media, and the impact of marketing by YouTube video bloggers (vloggers) on these outcomes has, until now, not been known.

The researchers conducted a study to examine the effect of social media marketing of snack foods (healthy and unhealthy), via vloggers' Instagram pages, on children's snack intake. During the study 176 children, aged 9–11, were randomly split into three equal groups and were shown artificially created, but realistic, Instagram pages of popular vloggers (each has millions of followers).

One group was shown images of the vlogger with unhealthy snacks, the second group was shown images of the vlogger with healthy snacks, and the third group was shown images of the vlogger with non-food products. The participants' subsequent intake of snacks (healthy and unhealthy options) were measured.

The researchers found that the children in the group that viewed the unhealthy snack images consumed 32% more kcals from unhealthy snacks specifically and 26% more kcals in total (from healthy and unhealthy snacks) compared with children who saw the non-food images. There was no significant difference in total kcal intake, or healthy snack kcal intake, between children who saw the Instagram profile with healthy images and those who saw the non-food images.

"These findings suggest that the marketing of unhealthy foods, via vloggers' Instagram pages, increases children's immediate energy intake," said Anna Coates, PhD student from Liverpool University. "The results are supported by celebrity endorsement data, which show unhealthy food endorsements increase children's unhealthy food intake, but healthy food endorsements have little or no effect on healthy food intake."

Eating healthy on a limited budget is possible, researchers find

Science Daily March 6, 2019

The affordability of healthy food is often cited as a barrier to low-income families eating nutritious meals.

A new study published in the Journal of Nutrition Education and Behavior found that with menu planning and access to stores selling items in bulk, the average daily cost for serving healthy meals to a family of four was $25 in 2010 dollars. This cost was consistent with the US Department of Agriculture (USDA) low-income cost of food meal plan, but higher than the cost of the USDA Thrifty Food Plan. The Thrifty Food Plan is the meal plan used by the USDA to determine food assistance benefits.

"This study determined the likelihood that families living in low-income households could create meals that meet the USDA dietary guidelines presented in MyPlate nutrition education materials," said lead author Karen M. Jetter, PhD, Agricultural Issues Center, University of California Division of Agriculture and Natural Resources, Davis, CA, USA. "In addition to food cost, the other factors considered were access to stores, time for meal preparation, and whether the menus included culturally appropriate foods."

This research was part of a larger study to train community members in research methods using community-based participatory research principles. This project was conducted in collaboration with Northern Valley Indian Health, Inc., and the Mechoopda Indian Tribe (MIT) of Chico Rancheria where 88 percent of the population surveyed lived in households with an income of less than or equal to $35,000 a year. The menus were created to feed a household with a father, mother, and children ages 7 and 10 with foods the MIT community liked to eat; met USDA guidelines for healthy eating; and had realistic portions. Menus did not rely on processed foods to reduce the amount of fat and salt in the family diet; were varied so the family would not become bored eating the same foods; did not always require hot meal preparation; and were affordable.

By working closely with the MIT community researchers, two-weeks of daily menus were developed using meal plans provided by the MIT community. Although these plans did not meet the nutritional guidelines every day, all categories achieved the recommended levels on average at the end of a two-week period. "These menus showed that a healthy diet on a budget was achieved by balancing daily targets over two weeks, not every day. This focuses healthy eating on balance rather than being deprived," said Dr. Jetter.

Once the menus were determined, the MIT community researchers visited 13 grocery stores in Chico, CA to ascertain menu costs. The stores visited were within a 10-minute car ride of 76 percent of the MIT community members and were classified as bulk supermarket, general supermarket, discount market, or specialty market such as a local co-op. Both bulk and general supermarkets had the highest availability of the items needed for a two-week shopping list, whereas specialty and discount markets lacked as many as 52 of the items needed. Bulk and discount market baskets had the lowest average daily cost of $25, while the specialty market had the highest average cost of $39 per day.

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One limitation of the study was the focus on the actual cost of food without considering transactional costs such as the time needed to plan menus, develop shopping lists, research store advertisements, and travel to the bulk supermarket that offered the lowest cost. All of these factors influence a family's ability to sustain a healthy eating plan. "This research demonstrates that menus that meet USDA guidelines can be purchased by a family of four when shopping at a bulk supermarket, but any reduction in SNAP benefits or increase in food costs would make it difficult for these economically vulnerable families to maintain a healthy lifestyle," stressed Dr. Jetter.

Growing oat potential: Finnish project highlights advanced technologies to develop novel innovation

Nutrition Insight 04 Mar 2019

A new initiative aimed at promoting oat consumption and boosting the export potential for high-quality oat products made by the Finnish food industry is currently underway.

As a nutritional, sustainable ingredient, oats and oat-based products hold significant global potential – and now thanks to the OatHow project, headway could be made to bring oats further to the fore. Finland is one of the world's largest oats producers with oats consumption per capita around 7.3 kg. Moreover, the consumption of oats is increasing by approximately 10 percent a year. The health-promoting properties of this ingredient are well-known in the country and oats are applied to a diverse range of uses, particularly as a raw material for innovative food products. The OatHow project, funded by Business Finland, a Finnish consortium will "produce new information on oat-based raw materials for the development of novel oat innovation through research and business development."

Project coordinators VTT Technical Research Centre of Finland Ltd. (VTT), want to get a better understanding of the impact of oat cultivars and oat crop batches on oat processability and quality which may challenge the increase in oat consumption and export. The growing global interest in oat products gives oat-producing countries like Finland, an opportunity to enter the global oats trade and oat products market with significant volumes, according to VTT.

However, NPD is held back by insufficient understanding of how the quality and composition of oat crop batches affect the oat processability and end product quality. The lack of practical indicators of oat quality and applicability to various food processes is a challenge, notes VTT. "Consumers are on the lookout for new and health beneficial products that are produced in a sustainable way, so there really is great export potential for high-quality oat products made by the Finnish food industry," says Emilia Nordlund, Coordinator of the OatHow project at VTT.

In addition to the oat cultivar, the quality characteristics of oats are affected by the growth conditions during the crop year. The varying quality of oat crop batches causes difficulties for the industry when there is no knowledge on how the production processes should be adjusted in accordance with the ingredient quality. For example, the dough sticks to mixing bowls, unnecessary waste is generated and the end product may not meet consumer expectations. The food industry can deal with these types of variations in relation to wheat and malt barley because analysis methods that measure the material quality to predict the composition of the crop batches are well-established.

The launch of the OatHow project comes amid growing oat innovation with a number of key companies within the food ingredients and nutraceutical industries unveiling NPD recently. Naturex showcased its selection of cutting-edge plant-based health and wellness solutions during SupplySide West Expo in Las Vegas in November 2018. These included SWEOATBran, a high-quality oat fiber bran ingredient rich in beta-glucan which clinical studies claim can reduce cholesterol and can contribute to the reduction of blood glucose rise after a meal. There was also a focus on the clinically-validated heart health benefits delivered by Aronox aronia extract and SWEOAT oat beta-glucan.

Swedish company Oatly has been innovating in the oats space for several years, using its patented enzyme technology to turn fiber rich oats into nutritional liquid food. It was the first company to commercialize oat milk and its portfolio of oat-based products includes other oat-based beverages, yogurt and creme fraiche alternatives, flavored spreads and ice cream. Earlier this year, Califia Farms further diversified its plant-based offerings with the launch of a new oatmilk line made with North American whole grain, gluten-free oats. This range includes an Oat Barista Blend (launched in February) and an Unsweetened Oatmilk to be unveiled in April 2019.

Analysis methods for oats
The purpose of the OatHow project, based on collaboration between research institutes and universities studying oats and industries using oats in their food products, is to find similarly global relevant analysis methods for oats. The idea is to make it easy for the producers to select the oat ingredient that best suits the product. New analysis methods can also be used for ensuring the quality of oat crop batches in the grain trade. The project, which is running throughout this year and 2020, focuses particularly on finding links between the processability of oats and the properties measured from oat materials. The project studies what kind of parameters (e.g. chemical composition and physical characteristics) need to and can be measured from oat crop batches to make it possible for the processors to make decisions on the processing methods and oats applicability to different food processes.
The processing quality is examined by testing the effect of distinct oats on quality parameters of various foods from solid to moist product types.

The research is based on large volumes of data measured from grains. Machine learning (an application of artificial intelligence that gives systems the ability to automatically learn and improve from experience without being explicitly programed) can be used to help determine whether the specific oat batch is suited for bakery products or dairy alternatives, for example.
The project seeks to identify the strengths of Finnish oats in comparison to oats grown elsewhere, as well as bringing new feasible tools for oat users globally.

IFE 2019: The free-from market expands and diversifies, while fiber could overtake protein in NPD

21 Mar 2019 Nutrition Insight

Innovation in the realms of plant-based foods, the "free-from" movement and beverages was on full display at the International Food & Drink Event (IFE) show in London, March 17-20.

"Good for the gut" offerings were also prominent, with fermented foods such as kombucha and kefir standing out among the stands. NutritionInsight spoke to some notable companies and start-ups present at the show about navigating these interesting spaces, albeit amid Brexit uncertainties. Plant-based offerings were extremely widespread, ranging from snack applications to frozen meals, desserts and beverages. However, amid a bustling vegan marketplace, some companies were going "one step further" and pushing the "free-from allergens" status of their food as a real differentiator. These products were free of all, or some, of the official 14 allergens. This includes cereals containing gluten, crustaceans, eggs, fish, peanuts, soybeans, milk, nuts, celery, mustard, sesame seeds, sulfur dioxide and sulfites, lupin and molluscs. Free-from foods have gone far beyond the niche in recent years and this dynamic has not really slowed. Innova Market Insights reports a 16 percent CAGR in food & beverage launches with a free-from claim in recent years (Global, 2013-2017). These products accounted for 24 percent of food & beverage launches reported in 2017. An International Food Information Council (IFIC) Foundation survey also highlighted that 2019 is set to bring a broader focus on the food journey and greater attention to food safety and allergens, among other drivers.

Creative Nature Superfoods stand at the show. Free-from surge?

Recent headline-grabbing incidents have drawn attention to the risk many people with allergies face when eating out or purchasing snacks. Research from the UK Food Standards Agency (FSA), in partnership with Allergy UK (AUK) and the Anaphylaxis Campaign (AC), last year also noted that over half of young people with a food allergy or intolerance have avoided eating out in the last six months due to their condition. This highlights the shift needed in the industry to cater to such consumers. Speaking to NutritionInsight, Julianne Ponan, Founder of Creative Nature Superfoods and speaker on issues facing people with allergies, notes the growing business potential in the free-from market. This increasingly lively space is set to be worth 899 million by 2021, she notes at the show.

The demand for transparent and trustworthy free-from products is also increasing. Ponan describes the 10.2 million school children who are not allowed to bring nuts into schools as an example.
Creative Nature Superfoods' ranges include super foods, bars and premade baking mixes which are free of the 14 official allergens.

Speaking on how the free-from market can improve as it continues to grow, Ponan notes that both the taste element and consumer trust need to improve. “There is still room for innovation. The taste is still not there for some free-from products, for example. But we are constantly innovating. We are finding the ingredients that have the best tastes from around the world and trying to bring those Essential to the launch of Qwrkee's pea M'lk is the product's allergen-free status.global tastes into the UK is a big focus for us. One to watch is mangosteen and also lotus seeds,” Ponan notes.

To improve consumer trust and transparency in allergen-free products, companies can work with laboratories to receive adequate scientific backing. By doing so, products can meticulously be tested for allergens, she explains.

Under current rules, food prepared on premises in which it is sold is not required to display allergen information on the package – but rules proposed by the UK government in January could go as far as seeing full ingredients labeling required by law. This move is fully supported by Ponan. Also in this space, UK start-up Qwrkee launched its pea-based M’lk at the show. Essential to this launch is the product's allergen-free status, Vishal Madhu, Founder of Qwrkee Foods Ltd, tells NutritionInsight. “One of the most important parts of this product is that it is allergen free. There is no allergen in this product and it has no nuts, no lactose no dairy and no soy. It clearly says it on the pack. This is also the point of difference – we also wanted to deliver high on protein, but without using soy because its an allergen,” Madhu explains.

Among the healthy snack launches, one particular ingredient popped up numerous times – lotus seeds. Lotus seeds were also pegged by Ponan as an ingredient to watch in allergen-free NPD. The Indian seeds are touted as being gluten-free and suitable for people with nut allergies, as well as boasting wide micronutrient profile. At IFE, a number of companies were exhibiting lotus seed based products, such as Guruji who launched their range of popped lotus seed snacks. For founder Akhil Kumar, lotus seeds were a reliable alternative to nut-based snacks for him as a child, due to his nut allergy.


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Move over protein; fiber is here

Many of the launches and significant products at the show fell within plant-based, free-from and functional beverage categories.

An interesting variation within these categories was a gradual shift from protein towards fiber. Within the beverages space, brand new start-up Eaulabs were launching its waters with added benefits. One launch that Founder Sean Moran wished to particularly highlight was its fiber water. “The idea came from the fact that the bottled water sector has been pitching hydration for about 40 years, and for the last ten years the latest innovations have been lemon and lime flavored water in plastic bottles. We looked and thought that we can do better,” he told NutritionInsight at the show. “In the beverage sector at large you see function everywhere and people are expecting function from their beverages. So, we bring natural, plant-based functionalities to our water. From boosting immunity, to a clean energy boost to a fiber injection,” he says. Moran notes that gut and digestive health are hot topics, yet most consumers do not get enough daily fiber. “We now need to tackle getting fiber into our guts healthily and easily,” he says.

In the snacking space, Jorge Longman, Sales Manager Natural Balance Foods – supplier of Nakd and Trek bars – also notes there has been a shift away from protein in the snack bar space. This shift is evident when looking around IFE at the trending products, he explains. “The protein market has boomed, but we have seen less this year than last year. There are more low-sugar and fiber offers now. In this show, in particular, I see low-sugar, high-fiber, wheat-free, dairy-free and gluten-free offerings, as well as functional water.”

Fiber has been predicted to be a mammoth trend for the year, and this prediction appears to be accurate. Innova Market Insights has tipped “A Fresh Look at Fiber” within its top 2019 trends. According to a consumer survey (2018) conducted by Innova Market Insights, 44 percent of US consumer are increasing their consumption of fiber, with 33 percent of UK consumers doing so. At the same time, 21 percent average annual growth has been reported in new product launches carrying a fiber claim. The suppliers at IFE exhibited the innovation present in the UK food and beverage scene and how thriving the start-up space is. However, these are uncertain times for the UK and the EU as the state of Brexit fluctuates daily and the industry is left uncertain of its future. According to Ian Wright, CEO of the Food and Drink Federation (FDF), who spoke to NutritionInsight at the show, UK business has failed to make its case in the Brexit process, which could have a detrimental impact on the thriving start-up atmosphere in the UK.

By Laxmi Haigh

821 million people globally now facing chronic food deprivation, warns Global Food Policy Report

27 Mar 2019 Nutrition Insight

A revitalization of rural areas is urgently needed to stop rising malnutrition rates, according to the Global Food Policy Report, published by the International Food Policy Research Institute (IFPRI).

Such revitalization could address the multiple crises facing rural areas, including malnutrition rates. The report notes that in 2018, malnutrition jumped for the third year in a row, with 821 million people globally now facing chronic food deprivation. The report also underscores the continuing need for improved nutritional development and innovation to tackle the myriad of issues laid out in the IFPRI report.

Many of the world's poorest and most malnourished people live in rural areas, so, addressing development here is vital to achieving the Sustainable Development Goals (SDG's), which are a collection of 17 goals covering key social and economic development issues, such as poverty, hunger and gender equality. Rural populations account for 45.3 percent of the world's population, but 70 percent of "the extremely poor." Rural communities have continued to find themselves in a "state of crisis," marked by a deepening cycle of hunger and malnutrition, persistent poverty, limited economic opportunities and environmental degradation, the report notes

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The role of nutrition-innovation

The global food system has recently come under increased scrutiny. According to the InterAcademy Partnership (IAP), for example, global food systems are failing and urgently need to be turned around to avoid catastrophic climate change. The current approach to food, nutrition, agriculture and the environment is "unsustainable and must change" – and there is "no time to waste." This is according to the 130 national academies of science and medicine, across Africa, Asia, the Americas and Europe, that make up the IAP.

Meanwhile, it was highlighted that more than 14 million adults and 4.7 million children in Europe and Central Asia (ECA) suffer from "severe food insecurity" in a report released in December by the United Nations Food and Agriculture (UN FAO) agency. The region has made good progress on eradicating hunger but continues to be thwarted by the persistence of the triple burden of malnutrition – overweight and obesity in combination with undernourishment and micronutrient deficiencies. Nutrition-sensitive innovations to improve diets have the potential to improve rural livelihoods.

According to the Global Food Policy Report, in order to meet the needs of the poorest and most vulnerable by 2030, rural revitalization must begin now. Different regions, however, have different needs, it notes. In Africa, the focus needs to examine agricultural and rural development; in South Asia, diversifying the rural economy to expand rural employment and stem migration is likely to be a priority; and in China, improving the rural environment and living conditions to attract young people back to the countryside will be critical. Significantly, transforming agrifood systems to benefit rural areas will be paramount to reducing malnutrition, the report explains. Investments in agricultural research and development, postharvest rural activities and climate-smart and nutrition-sensitive innovations have the potential to transform key components of the agrifood system, improve diets, strengthen rural economies and improve rural livelihoods.

Investment in health services can also serve as a "linchpin" to improving nutrition, the report says. Direct nutrition interventions, such as the promotion of breastfeeding or food fortification and indirect interventions such as providing clean water can drive advances in increasing dietary diversity, eliminating childhood stunting and reducing poverty. The report's conclusions will raise discussion around the role for nutrition innovations within this environment. These could include the use of biofortification techniques, which can make the processing of food easier in countries where commercial food processing is less developed and where people are suffering from heightened malnutrition.

Fortification is a further method that has spurred positive results in nutrition interventions. The World Health Organization (WHO) has described food fortification as the most cost-effective strategy for preventing and addressing micronutrient deficiencies in both developed and developing countries around the world.A method for improve rural areas outlined in the report includes ensuring the health of the ecosystem.


Image © iStock.com/triloks

Rural revitalization: The wider picture

Rural areas struggle with the environmental crisis in China; severe agrarian crisis in India, and acute shortage of jobs for the growing youth populations in Africa, for example. To overcome these challenges, the report calls for rural revitalization, highlighting policies, institutions, and investments that can transform rural areas into vibrant and healthy places to live, work and raise families. Some methods outlined in the report include increasing employment opportunities, ensuring the health of the ecosystem, working toward gender equality and giving a voice to rural populations on the world stage.

The report notes that 2018 was "framed by deteriorating world conditions." These were related to increased interest rates in the US, a softening world economy, escalating trade disputes and geopolitical uncertainties. Such negative trends are likely to deepen in 2019, stresses the report, necessitating action from the private and public sectors. "With perseverance, 2019 can become the year when the will to eliminate hunger and malnutrition finally gathers momentum, forging a bright future for poor people around the world," says Shenggen Fan, Director General of the, IFPRI. The report predicts that rural areas could become premiere hubs of innovations in just under a decade. Revitalization of rural areas could increase life quality, health and nutrition outcomes and economic futures. "I hope this report spurs action by policymakers as well as academics and members of the business community, civil society, and the media, all of whom have a stake in food policies that benefit the world's poorest and most vulnerable people," Fan concludes.
By Laxmi Haigh

Can India double dairy farmers' incomes in three years?

By Richard Whitehead
13-Feb-2019 – Dairy Reporter

The phrase "doubling farmers' incomes by 2022" is in danger of toppling "Jai Hind" as India's most popular rallycall. From bag carriers to the prime minister himself, anyone who matters has been seen uttering the line often and with great meaning.

It began in 2016 when Narendra Modi was in his second year as prime minister."By the time the country celebrates its 75th independence anniversary in 2022, farmers' incomes will have doubled.That is my dream," he boomed at a rally in Uttar Pradesh, heralding his government's new approach toagricultural enrichment.

Most recently, agriculture minister Radha Mohan Singh adapted the quote to the dairy sector this week, when he trumpeted how "the government is committed to doubling farmers' incomes by 2022 by providing greater access to rural milk producers and strengthening dairy infrastructure in order to help generate year-round income andgainful employment. "

Before that, in December, the cabinet gave its approval for a new agri-export bill that not only sought todouble farmers' incomes, but also overall Indian exports to the tune of $60bn. The bill had been set in motionin 2017 by a policy paper by National Institution for Transforming India (NITI Aayog), a government think tank,entitled "Doubling Farmers' Incomes: Rationale, Strategy, Prospects and Action Plan ". One can clearly see a pattern.

Farmers need a break

When farmers account for 40% of the population—and therefore the electorate—it isn't difficult to divine whythe statement is so popular. In fairness, Indian farmers could do with a break.In 2016, the average monthly income of farming household was about INR9,000 ($126), according to asurvey conducted by the National Bank for Agriculture and Rural Development. More recent data isunavailable but experts believe it hasn't changed much. A crumbling supply chain riddled with corruption andat the mercy of middle-men also hasn't been helping their lot.

Like Jai Hind, the doubling incomes message appears to have inspired politicians and civil servants as theyscurry the length and breadth of the country to proclaim it to others with the zeal of converts.

This week Minister Singh told a meeting of the agriculture ministry's consultative committee that thegovernment had been "making efforts to strengthen the infrastructure for the production of quality milk,procurement, processing and marketing of milk and milk products."

It has been doing this, he said, through a number of acronym-led "dairy development schemes, " including theNational Programme for Dairy Development (NPDD), National Dairy Plan Phase-I (NDPPI) and DairyEntrepreneurship Development Scheme (DEDS).In addition, a Dairy Processing & Infrastructure Development Fund (DPIDF) has been set up with an initialinvestment of INR80bn ($1.1bn) to equip dairy farmers with cooling technology and milk testing equipment, aswell as expanding dairy product manufacturing facilities at village level.Singh also announced that 22 dairy sub-projects have gained approval in the states of Punjab, Haryana,Gujarat, Karnataka and Maharashtra to the tune of INR31bn ($442m).

High growth rate needed

With a target to increase milk production to more than 250m tonnes in the next three years, requiring anannual growth rate of 8.56%, the ministry has its work cut out for it. This is especially so as the segmentcurrently produces 176m tonnes of milk and has been registering growth of just 6.62% last year.If the targets are somehow achieved, India would see an increase in the availability of milk to 515 grams perday per person by 2022—from the current per-capita level of 375 grams per day—in a bid to address thenutritional needs of a growing population.Other dairy goals for the ministry include an increase in organized milk handling from the present 21% to 41%by March 2022 while doubling the cooperative share to 20%.

Realistic?

With all the rhetoric, the policies and the initials it looks like everyone who counts is on-board with Indian's newagriculture development policies. But how likely are they to make farmers twice as wealthy in just three years?NITI Aayog said in its 2017 report that for farmers' income to double by 2022, the overall agricultural sectorneeds to grow at an annual rate of 10.4%. Experts believe farming hasn't been performing anywhere near thiswell, however, with some suggesting the target should actually be more than 13% due to the officialcalculation relying on outdated figures.

Moreover, many of India's farmers, dairy or otherwise, work on small or marginal holdings.This makesachieving efficiencies through economies of scale more difficult, particularly when they rely on old techniques.

New methods

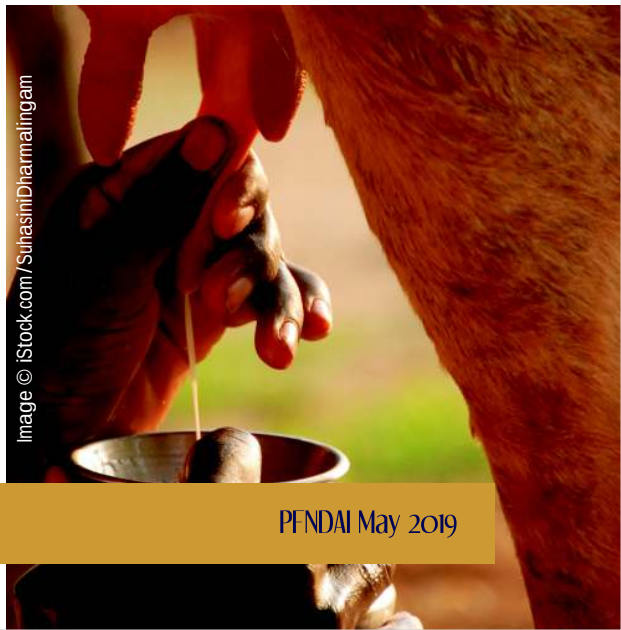
Alternative means are needed to boost dairy farmers' fortunes, says RG Chandramogan, managing director ofHatsun, India's biggest private dairy company."To double farmers' incomes, what we need is a new market intelligence-based framework for handling surpluses,besides a focus on reducing production costs ," he wrote in a newspaper op-ed this week. Chandramogan helpfully went on to illustrate strategies Hatsun has been undertaking to boost productivityand increase efficiency in farms in South India.

These include the production of bajra-napier fodder grass hybrids in paddocks. By feeding these high-yieldingprotein-rich grasses to their animals, farmers can "more than meet"the recommended daily target of 750grams crude protein inputs daily, Chandramogan argued."For a farmer keeping 30 cows and exclusively growing bajra-napier fodder on five acres, the annual savings from anaverage sale of 250 litres daily would come to INR460,000. These savings would be nothing but additional income,"he mooted.

Dairy farmers' incomes can similarly improve after cutting out the middleman—the scourge of Indian farming—a fact evidenced by Hatsun's past experience."We were the first dairy to go beyond direct procurement of milk to making payments directly into farmers' bankaccounts—even before demonetisation happened," he said."When farmers have money in their accounts, bankers start viewing them as creditworthy customers. They can nowborrow at 10-12%, as against 48-72% charged by loan sharks."

While doubling farmers' incomes is a "laudable objective ", "the reality today is that farmers are suffering stress, ifnot shrinkage, in their incomes ," Chandramogan added."The demand for loan waivers, and political pressures to implement these, is only a reflection of this underlyingreality vis- à -vis well-intentioned goals ."

On this evidence, it will take a lot more than a catchphrase and some frenzied committee meetings for thegovernment to really double farmers' income. It must also consider new ways to promote efficiency and raisethe standard of dairy farming practices in India.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Five health & wellness trends transforming packaged food strategies

By Natasha Spencer 28-Feb-2019 – Food Navigator

As health and wellness and snacking trends emerge asleading influences in the packaged food industry, weexplore how food manufacturers and brands can appealto consumer needs in this competitive landscape.

Market research provider, Euromonitor International reveals thatrecent data demonstrates how global and European sales ofpackaged food have steadily risen.In 2015, the global packaged food market stood at a retail value of $2,078,889.5 (€1,829,498.68). In 2018,this reached $2,349,504.7 (€2,067,649.94) and represented a 4.5% year- on-year (YOY) growth (2017-2018).If we look at Europe in specific detail, the story is somewhat different.Both Western and Eastern Europe have witnessed increases in the retail value of packaged food between2015 and 2018, Euromonitor reveals.

However, although Western Europe's growth has slowed since 2017, it has seen YOY growth rise from 1.2%in 2015-2016 to 1.9% in 2016-2017 and 2.00% in 2017-2018.In Eastern Europe, however, the YOY growth of packaged food has dropped from 5.6% in 2015-2016 to5.4% in 2016-2017 and 5.0% in 2017-2018.In February 2019, the market research provider revealed its latest findings on competitor strategies in thepackaged food environment.

Packaged Food Sales in Europe

If we look at Europe in specific detail, the story is somewhat different.
Both Western and Eastern Europe have witnessed increases in the retail value of packaged food between2015 and 2018, Euromonitor reveals. However, although Western Europe's growth has slowed since 2017, it has seen YOY growth rise from 1.2% in 2015-2016 to 1.9% in 2016-2017 and 2.00% in 2017-2018.In Eastern Europe, however, the YOY growth of packaged food has dropped from 5.6% in 2015-2016 to 5.4% in 2016-2017 and 5.0% in 2017-2018.

Health and Wellness Spurs Growth
In February 2019, the market research provider revealed its latest findings on competitor strategies in the packaged food environment. Identifying health and wellness, snacking and sustainability as core trends driving the packaged foodmarket, and in light of sales in recent years, we explore how food packaging brands are increasingly turning their attention to health and wellness.

According to market research provider, Euromonitor International, the international health and wellness packaged food industry hit $446 billion (€392.5 billion) in 2018, growing at 2.1% CAGR since 2012. The segment grew faster than overall packaged food, which increased at a rate of 1.7%. Western Europesits behind both North America — the largest market — and now Asia Pacific, which surpassed WesternEurope in 2015. Here are the top five health and wellness packaged food trends:

#1: Free From Foods

As consumers opt for free-from products, the category has overtaken intolerance in terms of dynamicgrowth in the health and wellness arena.Commenting on new data released from Euromonitor International in February 2019, John George, ProjectManager Food & Nutrition at Euromonitor International stated how the "consumption of free from foods hasmoved beyond intolerances and allergies, being already valued at $56 billion (€49 billion) globally in 2018" .

"Health-conscious consumers, those concerned about sustainability issues as well as the ones that enjoy the taste are driving growth of dairy alternatives, meat substitutes and gluten-free baked goods," George went on to say.

#2: Organic Opportunities

Demand for safe and natural foods are impacting consumers' purchasing decisions. While the US is thelargest organic market by a significant amount, in Europe, increased growth opportunities are expected tocome from France and Italy.The new data indicates calls for "greater transparency in their food and drinks" , and so consumers "are willingto pay a premium in order to support ethical responsibilities and human rights".

As a result, "organic ranges fit into these trends and therefore are increasingly desired, estimated to grow by $24billion (€21 billion) absolute growth by 2023 – these trends are more apparent in developed countries butemerging countries are following on the footsteps", highlighted George.

#3: Fortified Foods

Emerging markets in the food packaging landscape are also developing strategies directed towardsfortified/functional foods. While the Western world has seen a loss of traction, emerging markets canexpect to see micronutrient fortification tackle malnutrition, resulting in increased growth looking ahead.

Image © iStock.com/Deagreez

#4: Energy-Boosting Foods
Consumers are choosing packaged foods rich in energy to contribute to a holistic diet. In Europe, Slovakiais set to see the popularity of energy bars skyrocket. In addition, developed markets such as the UK willspearhead innovative products and continue to hold a competitive edge.

#5: Subscription Meal Kits
Targeting specific audiences with health and wellness subscription meal boxes is also on the up. In thecoming years, the marketplace can expect to see innovation and brand differentiation to createopportunities for packaged food companies.

Government tapping into tech, R&D and farming to up functional food distribution in India

By Cheryl Tay 19-Mar-2019 – NutraIngredients Asia

The Indian government is stepping up efforts to improve the nutritional status of residents in rural areas of the country, with a new three-year project to drive R&D in functional foods.

The project will cost US$212,760 (?14,900,000) and comprise of two main components: R&D, and a public nutrition programme. So far, the Ministry of Environment, Forest and Climate Change has sanctioned the establishment of a Functional Foods Research and Development and Dissemination Centre at the Dr Yashwant Singh Parmar University of Horticulture and Forestry. The main goal of the centre is to refine training on the processing of functional foods, as well as to promote the development of infrastructure for R&D in this area.

Beyond the basics

Focusing on goods and ingredients that offer health benefits exceeding basic nutrition, researchers in the university's Department of Food Science & Technology (part of its College of Horticulture) will assess and experiment on fruits, vegetables, spices, aromatic and medicinal plants, spices, pulses, cereals and oilseeds in order to develop functional food products.

The technology used to develop these products will then be provided to agrarian women residing in the remote Indian districts of Chamba, Kinnaur, Lahaul-Spiti and Shimla. To ensure they are able to effectively harness this technology to create a sustainable avenue of sustenance, the researchers will conduct 60 three-day training sessions, each for a group of 20 to 25 women in each district. Principal project investigator Dr KD Sharma, a professor in the Department of Food Science and Technology, said that if successfully implemented, the project would result in the production of a wide range of functional food products. It would also pave the way for the establishment of more processing units across the private, co-operative and self-help group sectors in the remote areas of Himachal and the adjoining Uttarakhand, as well as improve dietary standards.

In addition, it would increase farmers' salaries, create more jobs for rural youth, and aid in the prevention of post-harvest spoilage of 15% to 40% (depending on the type of agro-commodity). Furthermore, a higher volume of local produce in otherwise underdeveloped areas would, according to the university's vice-chancellor Dr HC Sharma, lead to the preservation of Himalayan biodiversity.

Customising commodities

Speaking to NutraIngredients-Asia , Dr Anju Kumar, head of the College of Horticulture's Department of Food Science & Technology, acknowledged that it was important to remember to avoid a one-size-fits-all approach. Women and children in India have long been disproportionately affected by malnutrition, but nutritional needs still differ among different areas. Kumari said: "We will concentrate on women in remote areas, so they can our technologies and products to enhance the nutritional status of the areas they live in. At the same time, we are looking into what components and ingredients can be used to produce different functional foods. Depending on the nutritional status of a particular rural area, which ingredients and foods are suitable will differ.

"We will take that into account, and accordingly, we will prepare the necessary recipes and products, then transfer it to the people in these rural areas. These products must be feasible for them — they must suit their lifestyle patterns and dietary habits and be convenient for them to take, so compliance will be higher."She added that her team would concentrate on R&D for the first two years of the project, and make the functional foods they have developed available to the public in the aforementioned districts in India in the last year.


Image © iStock.com/rvimages

Investing in the Future of Food: Unique technology can offer start-ups protection from competitors

By Elizabeth Crawford 27-Feb-2019 – Food Navigator USA

As recently as a few years ago, the words food and tech were incongruous together, buttoday they signal a booming industry that is ripe for innovation, and according to the VPof business development at the Israel-based incubator The Kitchen, the combination ofthe two can provide entrepreneurs with an added layer of competitive protection.

"The companies that we invest in are all tech-based. It can be different types of technology from material science to biotech from software and algorithms to digital technologies and applications. But it has to have a strong technological backbone," said Amir Zaidman, VP business development at The Kitchen – a food-tech Hub by Strauss.

He explained that the technological component is important because it creates a barrier for entry for the competition and makes it more difficult for copycats and me-too products to come to market and steal share. He also noted there is significant white space within food-tech and that startups, which tend to be more agile than larger established companies, are well suited to bring much-needed innovation.

A diverse portfolio that represents the broad potential of food-tech With that in mind, he said, The Kitchen is zeroing in on a few promising areas of development within the food tech segment. The first area is alternative proteins and plant-based foods, he said, noting

The Kitchen has invested in several companies in this space: Aleph Farms "a leading company in cell-based meat developing the first 3D structuredmeat chunks," Rilbite , which is a plant-based replica of minced-meat and is completely clean label, and Flying Spark , which is developing protein powder and oil from fruit fly larva.

Image © iStock.com/Martin Barraud

"We are also very interested in the area of reduction of sugar," and have invested in two companies in that space, Zaidman said. Amai Proteins creates "designer proteins" that replace sugar. The proteins come from the equatorial belt and with the help of Agile Integrative Computational Protein Design and fermentation, the company is making the proteins fit for mass consumption.

Better Juice has developed a technology that converts and reduces the natural sugars in fruit juice so that consumers can enjoy the nutritious benefits of the beverage with less sugar. Food safety and traceability are two other "big issues" on which The Kitchen is focusing, Zaidman said, pointing to two companies in its portfolio that work on this area: Bactusense and BioFence. The Kitchen is also interested in advanced packaging, such as biodegradable or biocompostable packages, and the area of food waste reduction, but Zaidman says it has yet to make investments in that space. Finally, Zaidman said, The Kitchen is "working to get more into retail technologies for groceries, mainly optimization of last mile delivery and making the grocery store smarter," such as with cashierless stores.

What The Kitchen offers startups

Unlike other incubators or accelerators that accept classes of entrepreneurs in different waves, The Kitchen is more akin to a venture capital group in that it screens potential partners on a rolling basis. Once it finds a match, it invests roughly $600,000 in seed funding and provides support in all areas of launching a startup in exchange for equity. In addition to the funds, some of which comes from the Israel Innovation Authority, The Kitchen offers startups access to knowledge from the Strauss Group, which is one of Israel's largest food companies.

Through this approach, Zaidman said The Kitchen hopes to align with companies that not only have strong business potential but that also will 'do good' for the world more broadly. "Our mission statement is better industry, better food, better world. If you look at our portfolio you will see all of our investments are impact-related investments – so double bottom line doing well by doing good," he said. "I know those are all high words, but this is what gets us out of bed in the morning – trying to help the companies that are helping the food industry and through the food industry the entire planet."

REGULATORY NEWS

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USDA, FDA agree to jointly regulate cell-cultured meat

IFT Weekly March 13, 2019

The U.S. Dept. of Agriculture's (USDA) Food Safety and Inspection Service (FSIS) and the U.S. Dept. of Health and Human Services' (HHS) Food and Drug Administration (FDA) have announced a formal agreement to jointly oversee the production of human food products derived from the cells of livestock and poultry.

Under the formal agreement, the agencies agree upon a joint regulatory framework wherein FDA oversees cell collection, cell banks, and cell growth and differentiation. A transition from FDA to FSIS oversight will occur during the cell harvest stage.

FSIS will oversee the production and labeling of human food products derived from the cells of livestock and poultry. This shared regulatory approach will ensure that cell-cultured products derived from the cell lines of livestock and poultry are produced safely and are accurately labeled.

"We recognize that our stakeholders want clarity on how we will move forward with a regulatory regime to ensure the safety and proper labeling of these cell-cultured human food products while continuing to encourage innovation," said Frank Yiannas, FDA deputy commissioner for food policy and response.

"Collaboration between USDA and FDA will allow us to draw upon the unique expertise of each agency in addressing the many important technical and regulatory considerations that can arise with the development of animal cell-cultured food products for human consumption."

Consumers view nutrition and health claims differently than regulators

Science Daily March 28, 2019

During this unique study an international team of researchers led by the University of Surrey investigated whether consumers in the United Kingdom, Slovenia, Germany, Spain and the Netherlands were able to differentiate between the various health and nutrition claims on food items that are required by EU regulation.

Regulations, such as the Nutrition and Health Claims Regulation EC No 1924/2006, seek to eliminate unsubstantiated and potentially misleading claims from about foods

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and provide an appropriate level of consumer protection. This regulation differentiates between nutrition claims (i.e. a claim that states that a food contains a particular element) and health claims (i.e. claims implying a health benefit of consuming a food).

The level of evidence needed to support a health claim is more extensive as it needs to substantiate that the health benefit exists. However, there is doubt as to whether consumers make a distinction between these two types of claims.

Results show that consumers may not consciously differentiate between a nutrition claim and a health claim in the way that regulatory experts do. Researchers found that consumers' pre-determined beliefs about nutrients and their relationship with health outcomes are key drivers in the way they interpret and understand claims.

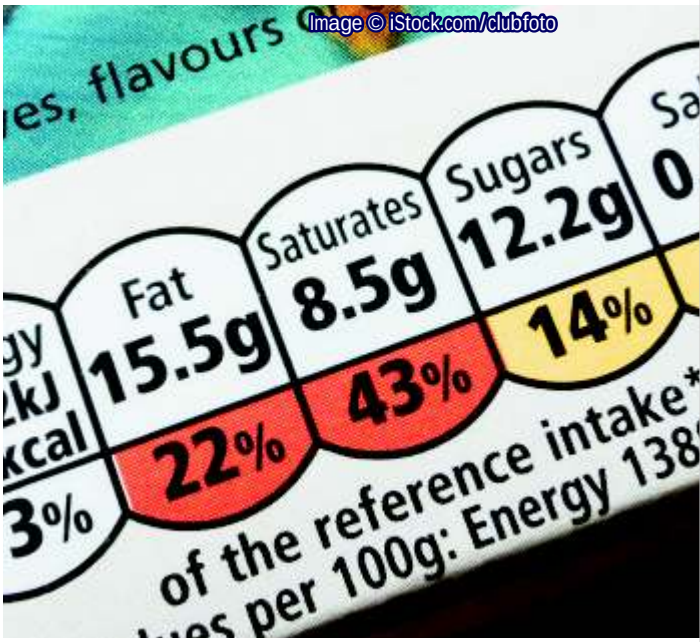
When nutrients in the claim are familiar and personally relevant to the consumer there is the potential for them to 'upgrade' the nutrition claims to health claims simply based on their previous knowledge.

Researchers believe that regulators need to consider making information available to ensure consumers' knowledge and beliefs are correct and well-informed so they can understand and respond appropriately to claims in the marketplace.

Professor Monique Raats, Director of the Food, Consumer Behaviour and Health Research Centre at the University of Surrey, who led the research, said:
"Labelling food products with health claims could help people make better food choices but what we have found is that they don't always interpret claims in the way we assume they do. It is important that consumer perspectives are taken into consideration when developing policy."

Signaling better options? Traffic light labeling in canteens encourages healthier choices, study suggests

21 Mar 2019 Nutrition Insight



The chances of consumers opting for healthier and more sustainable canteen meals rise significantly when those meals are labeled with a traffic light system. This is according to a Queen Mary University of London study, published in the journal Appetite.

The study also found that people tend to choose “greener” meals over “healthier” ones. The researchers note that the traffic light system “works intuitively for most people,” underlining the idea that such a labeling system could spark a shift towards more positive nutritional and environmental habits.

The traffic light system labels food according to the content of fat, sugar and salt it contains, with red meaning a high or unhealthy level of these ingredients.

The research simulated a lunchtime canteen set up to examine choices made when given different options. Colors such as red, amber and green were used to indicate how environmentally-friendly and how healthy the meal options actually were. The idea behind the study was that when people would notice the traffic lights associated with the food options they would opt for the more sustainable and healthy ones, say the researchers.

Previous studies have shown that traffic light systems influence consumer choices when it comes to individual products, but this new study examined how they may impact nutritional choices in a simulated lunchtime environment, where people have to make entire meal choices.

This kind of behavioral intervention designed to improve day-to-day decisions in real time is commonly known as a “nudge.”

Another novel aspect of the study is that it compared the relative impact of traffic lights, as nudges, to support positive changes in behavior when the traffic lights indicated healthy eating or when they indicated environmental consciousness.

The findings highlighted that positive changes towards better overall choices were boosted by the addition of more information on what the traffic light labeling meant. For example, the levels of carbon emissions required for the production of each meal or their caloric content in relation to the daily recommended intake.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"We show that using traffic light labels on menus influences the meals people choose, and so this simple technique could easily be implemented on menus in bars, cafes, restaurants as well as canteens, to indicate to people the greenness as well as the healthiness of food items," says lead author Dr. Magda Osman of the study from Queen Mary University of London.

"In addition, and more importantly, the findings show that the persuasive effects are boosted by general information about daily calorie intakes and acceptable levels of carbon emissions associated with meals," she notes.

This means, that while traffic light nudges are intuitive to understand, people need additional information to interpret more precisely what the different colors of traffic lights actually refer to, according to Osman.

The study involved seeing pictures of meals available during lunch that participants could choose from where the range of meals were more or less healthy, and more or less environmentally-friendly.

The experiment compared meal choices when no traffic lights were present, and then when they were present, and it looked at the changes in meal choices based on the presence of those traffic lights.

Although presenting two traffic lights, one indicating "greener" meals and the other indicating "healthier" meals, at the same time might overload the consumer, the researchers found that presenting both compared to just one actually boosted the positive effect on consumer meal choices.

"Given the current social policy interests in persuading people to make choices that mean we eat more sustainably, which means eating less red meat, less of depleted fish stocks, less dairy, and move towards eating more vegetables, then studies like this help to show what methods could be used to inform people about sustainable meal options in a clear and intuitive manner," Osman concludes.

Food labeling is increasingly coming to the fore as it makes for an impactful method to influence consumers towards making better choices. In this space, KIND Healthy Snacks (KIND), backed by several health and nutrition experts, recently filed a citizen petition to prompt the US Food & Drug Administration (FDA) to amend its nutrient content claims regulation.

The existing regulation notes the quantity of a nutrient added to a product, instead of the product's overall quality, which could lead to consumers purchasing products that may be perceived as healthy, when actually they are not. KIND has also requested that the agency allow nutrient content claims on items that contain a "meaningful amount of healthy ingredients," such as vegetables and whole grains.

Additionally, according to the findings of 4-year EU-funded research project, CLYMBOL – Role of Health-related Claims and Symbols in Consumer Behavior – health and nutrition messaging on packaging should be as simple as possible, as well as scientifically substantiated. The project studied consumer understanding of health claims and symbols on packaging.

The researchers hope that the findings will inform future policy development to align "consumer protection issues as well as public health and food marketing communication interests."

These standards could either be part of food supplements and nutraceutical regulations or we could look at havinga separate set of regulations for ayurvedic ahaar."

At the time, Agarwal was vague about when the ministry and the regulatory body would make a decision on whether or not ayurvedic foods would be categorised separately.

"The decision of making it a separate category or keeping it in the existing food supplement regulations will be taken up at appropriate time," he said.

However, he also stated that a separate category for ayurvedic foods would aid in further developing the sector not just domestically but also globally, thereby raising overseas acceptance of ayurvedic products.


Image © iStock.com/zoranm

Ministry initiative

According to insider sources, the proposal was reportedly initiated by the Ministry of Ayush, possibly as a compliment to the FSSAI's existing regulatory standards recommended in 2018 for food, nutraceuticals, health supplements, foods for special dietary uses, foods for special medical purposes (FSMPs), functional foods, and novel foods.

Currently, a group is drafting guidelines on standards for botanical ingredients in food supplements and nutraceutical products, to be published under the FSSAI Nutraceuticals Regulation January 2018.

Considering India's historical ayurvedic tradition, the FSSAI has also said that if ayurvedic foods in India were to be categorised separately, it should oversee the category to ensure the manufacturers of such foods do not make therapeutic health claims.

NutraIngredients-Asia contacted the FSSAI for further comment, but did not receive a response.

FSSAI traffic light labelling regulations set for public consultation 'soon'

By Pearly Neo 26-Mar-2019 – Food Navigator Asia

The Food Safety and Standards Authority of India's (FSSAI) draft on food labelling regulations including controversial traffic light labelling rules will be soon be released for public comment, according to an agency official.

The current draft of the Food Safety and Standards (Labelling and Display) Regulations, 2018 is still at the stakeholder-debate phase. An expert panel was set up last August to review these proposed new food labelling rules, including plans for red labels to be added to products high in fat, sugar and salt (HFSS). In a panel discussion at the National Conclave on Food earlier this year in Delhi, FSSAI advisor Kumar Anil said that: "[The food labelling regulations draft] is done from FSSAI's side and we expect the draft to come out soon. There may be problems, but at least it is a beginning. We are addressing the word HFSS," he added.

The review of the regulations took place last year after FSSAI CEO Pawan Agarwal said that 'industry stakeholders had expressed concerns' , even though the first draft had previously already been sent to the Healthy Ministry for finalisation. "We have decided to set up a panel of experts with health and nutrition background to look into the draft regulations [as industry stakeholders are concerned with the draft," he said.

Image © iStock.com/HotHibiscus

Coloured labelling regulations covered under the draft

The main part of the draft that discussed the red labelling of HFSS were in section 5: Principal display panel. It was stated that nutrient block(s) for HFSS foods shall be coloured in red if energy values from sugar were over 10% of the total energy from 100g/100ml of the product, energy from trans fats is over 1% of the total, and total fat or sodium content goes over specified threshold values.

For implementation, permissible HFSS allowances would be limited to 30% above threshold values upon the date of regulation compliance, then reduced to no more than 15% above threshold values after one year, and then strictly enforced at threshold values after two years."The Food Authority may introduce colour coding system in addition to marking of foods as 'Red' within the specified thresholds from time to time," added FSSAI.

The red labelling would be applied in the actual nutritional information blocks of the food product.These would be placed on the front-of-pack and comprise caloric, fat, trans fat, total sugar and salt content, aswell as the per serve percentage (%) contributions to Recommended Dietary Allowances (RDA).

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Marijuana cultivation in India permitted for research and medicine, but nutraceuticals remain left out

By Cheryl Tay 13-Mar-2019 – NutraIngredients Asia

In November last year, the Council of Scientific and IndustrialResearch's Indian Institute of Integrative Medicine (CSIR-IIIM, a government research body) announced it wasdeveloping three 'natural' cannabis-based drugs to treat patients suffering from cancer, epilepsy and sickle cell anaemia.

The first clinical trials will be conducted on 25 terminally ill cancer patients at Mumbai's Tata Memorial Hospital after the authorities granted regulatory approval for human testing of the drugs, according to the hospital's director, Rajendra Badwe.

CSIR-IIIM director Ram Vishwakarma also revealed that researchers had already started testing on small animals using a Himalayan marijuana plant variety low in tetrahydrocannabinol (THC) but high in cannabidiol (CBD). Researchers have also reported positive results from a clinical study on the restorative effects of cannabis on cancer patients. The study, conducted by the Central Council for Research in Ayurvedic Sciences (part of India's AYUSH ministry of traditional medicine), was the first of its kind in India.

Director-general Vaidya KS Dhiman told Indian press that the pilot study had shown that drugs based on cannabis leaves could effectively relieve pain and other symptoms in cancer patients after chemotherapy and radiotherapy.

Legislation on cultivation

The CSIR-IIIM's research may lead to the drugs being available within the next year or so, but the regulatory restrictions surrounding medical marijuana in India still present a major obstacle to nutraceutical firms keen on tapping into a growing area of research and consumer interest. Though cannabis has a long history in India — with ayurveda recommending small doses for a range of illnesses (including anaemia and meningitis) — strict laws around marijuana have restricted its use purely to medical research in the country.

At the same time, cultivation of the plant itself is technically illegal in India. In April 2017, however, the ministry of health and family welfare granted CSIR-IIIM a licence to grow it on a single acre of land in Jammu and Kashmir, for the sole purpose of medical research. In July 2018, Indian PM Narendra Modi's party, BJP, issued a licence for the commercial cultivation of hemp in the northern state of Uttarakhand. This will be followed by a research licence for cultivation of marijuana in Uttar Pradesh, another northern state under the BJP's jurisdiction.

Supplement stance

However, nutraceutical and supplement brands in the country that want to capitalise on the trend that has been gaining traction in many parts of the world, including Japan, Hong Kong are unlikely to be able use the ingredient. An FSSAI document lists natural cannabinoids such as cannabis, hashish and marijuana as banned. However, it excludes cannabidiol, though it does not directly mention the permitted use of cannabidiol. Speaking to NutraIngredients- Asia, Sandeep Gupta, director of India's Expert Nutraceutical Advocacy Council(ENAC), said he saw little need for the regulatory changes in the supplement space: "I do not see the need for such a substance to be permitted for use in nutraceuticals, because these are direct-to-consumer products.

"If cannabidiol were permitted for use in nutraceuticals, it is likely there would be cases of misuse, and consumers could either be taken for a ride (by unethical manufacturers and brands), or get into the habit of taking such supplements for purposes besides those for which they are intended, such as pain management."

He added that he did not expect Indian authorities to allow CBD to be used in nutraceutical products "anytime in the near future" .Gupta further said, "As an industry spokesperson, I have seen the authorities deal with steroids, hormones, narcotics and other substances that have been found in health supplements, nutraceuticals and even FSMPs (food for special medical purposes), and I think the regulations are very clear on this.

"When you look at the big picture, what is even more important is public interest. Safety should be the prime concern of not just regulators but also food business operators. It is their responsibility not to try to initiate any regulatory change that could permit the use of any substance in their products that could be harmful to the consumer."

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Policy Picks: Liability and gluten-free rules in India, sugar tax in New Zealand and Singapore and more feature in this policy round-up

By Pearly Neo 28-Feb-2019 – Food Navigator Asia

Liability and gluten-free rules in India, sugar tax in New Zealand and Singapore and more feature in this edition of Policy Picks.

Ensuring accountability: New India rules ensure food brand ambassadors are liable for 'misleading advertisements'

The Food Safety and Standards Authority of India's (FSSAI) new advertising regulations means that food brands – and any ambassadors who endorse them – are subject to prosecution if their claims are found to be false. According to FSSAI: "Any person, including a third party, who advertises or is a party to the publication of any misleading advertisement not complying with these regulations would be penalised with a fine extending up to INR1mn (US$14,100)." In a separate statement issued by the Ministry of Health and Family Welfare (MoHFW) India in Sunday Guardian Live , these 'third parties' will include celebrities and other endorsers.

Misleading free-from labels: Indian regulator FSSAI to set standards for gluten-free claims

The Food Safety and Standards Authority of India (FSSAI) will be coming up with directives on the labelling of gluten-free products , amid concerns current practices from some manufacturers risk misleading consumers."FSSAI is also considering removing of low gluten foods category where foods are specially processed to reduce gluten content to a level 20-100mg/kg and its labelling provisions, as low gluten foods also poses a risk to people with celiac disease. These will be notified soon," an FSSAI official said in response to queries from Food Navigator-Asia.

As for the people who will be involved in the drafting of the directives, the official said there are members who are experts in specific domains in FSSAI's Scientific Committee and Scientific Panels.

Is sugar tax on or off the table? New Zealand Health Ministry continues deliberation despite government ruling it out

New documentation has highlighted that the New Zealand Ministry of Health is still actively deliberating a sugar tax, even though the government as a whole has already ruled it out. According to new information brought to the fore by political party ACT, Health Minister David Clark is still looking at a document prepared by the ministry that shows they are ' actively investigating it'. "A sugar tax would punish the majority of responsible New Zealanders for the sins of an irresponsible minority," said ACT Leader David Seymour in a formal statement.

He described this as 'disingenuous', especially because '[Health Minister] David Clark said in September last year that: 'This Government has ruled out any new taxes in this term of office and so we're not working on that', referring to a sugar tax'.

'No more limit': Philippines import cap removal could see 1.2m MT of rice entering the country

The Philippines' lifting of a 20-year old rice import cap is likely to result in some 1.2 million metric tons of rice being imported into the country in the wake of ongoing shortages and price hikes, the National Food Agency (NFA) has said. According to numbers on the NFA site, so far some 1.186 million MT worth of rice import applications submitted by 180 applicants are being processed. The agency has also approved 18 applications, which have received the relevant import permits. These rice traders will be obtaining imports of either 5% or 25% broken white rice from Thailand, Vietnam and Myanmar. Rice imported from other South East Asian countries will be subject to a 35% tariff, but rice form other countries will have to pay a 50% tariff.

'Too draconian': Singapore companies demand broader options as sugar tax public consultation draws to a close

As Singapore winds up its public consultation on sugar tax, the majority of participants have demanded sugar-reduction methods that extend more broadly across the industry beyond just targeting sugar sweetened beverages (SSBs). At a recent such session held by the Ministry of Health (MOH) on January 19, beverage companies appear particularly concerned

Image © iStock/piotr_malczyk

with the sustainability of sugar tax and its specific targeting of SSBs. Such a focusedmeasure is not expected to have lasting results.

“It will simply shift the consumer to unregulated products like bubble tea, or those that are served fresh in coffee chains,” said Deputy CEO of Pokka International Daniel Teo via a Channel NewsAsia video, citing tobaccotaxes and their failure to significantly reduce smoking as an example. If you look at the research carefully, 50% of the cause of diabetes is attributed to sugars in food and processedfood, so that's a huge other part that needs to be addressed.”

Thailand’s artificial trans fats ban implementation well-received by food industry

By Pearly Neo 22-Jan-2019 –Food Navigator Asia

Thailand has become the first ASEAN country toimplement a ban on artificial trans fats after the bancame into force last week. So far, it has been well received by potato chips manufacturing giant PepsiCo (under brands such as Lay’s and Cheetos) and others inthe food industry.

The ban encompasses not only the manufacturing, importing and distribution of trans fats, but also all food products that contain these. First announced by the Thai Public Health Ministry on July 13 last year, the ban was slotted to come into effect after 180 days, which was on January 10 this year. Minister of Public Health Dr Piyasakol Sakolsatayadorn told Bangkok Post that the ban had received praise from the World Health Organisation (WHO).

"The WHO praised the government's political will, as well as the inclusive process that it applied to prepare for the ban," said Dr Sakolsatayadorn. "Instead of telling stakeholders what to do, the ministry listened to to all stakeholders and gave them the opportunity to prepare for the transition."

In response to the ban implementation, PepsiCo Thailand (manufacturer of Lay’s potato chips, one of thetop potato chip brands in the country) told FoodNavigator-Asia that it is practising no trans fats inproduction, hence the new regulation will not impact it negatively.“ Pepsi-Cola (Thai) Trading Company Limited, the producer and distributor of PepsiCo’s snack products in Thailand, confirms that all of its snack products produced in Thailand […] are not fried or baked using PartiallyHydrogenated Oils (which contain trans fats),” said a PepsiCo spokeswoman.“[This includes our] Lay’s potato chips, and all extruded snacks namely Tawan, Sunbites, Twisties and Cheetos.”

The removal of trans fats is an endeavour that PepsiCo in general has been undertaking since the 2000s.Food service outlets were also quick to respond to the initial announcement of the ban. According to TheBangkok Insight , McDonald’s Thailand that it had not been using trans fat to fry its foods since before theban announcement, and KFC Thailand also guaranteed all its food to be 100% trans fat free.Retail outlets such as Tesco Lotus also announced no trans fats initiatives in response, particularly inregard to their in-house bakery sections.

Assuring acceptance

Dr Sakolsatayadorn added that the Thai ministry had also been credited by the WHO for launching ‘ an effective public campaign’ to convince the private sector about the importance of the trans fats ban.To further facilitate the transition process, the Food and Drug Administration (FDA) also worked with the F&B industry and organisations over the past three months. Dr Tharet Karatnaiyarawiwong, FDA secretary-general told Bangkok Post that F&B manufacturers had already been recalling trans fat-containing products since before the ban came into force. He added a reminder that all food importers are now also required to acquire a certificate to prove their products are trans fat free.

What’s the big deal about trans fats
Many scientific studies have linked artificial trans fats consumption to a number of health issues, especially cardiovascular diseases. This is because trans fats can lead to a rise in low-density lipoproteins (LDL),commonly known as ‘bad’ cholesterol, when consumed in large amounts. The WHO estimates that some 500,000 deaths yearly come as a result of cardiovascular disease caused by trans fats.

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THE ONE THING THAT MAKES ALL OUR PRODUCTS DELIGHTFULLY DELICIOUS IS THE GOODNESS OF OUR MILK

MOTHER DAIRY

happy food
happy people

rich
creamy
happiness

cheesy
wholesome
tasty
happy

happy mix of
real fruits
with delicious
curd

soft creamy
delicious
happiness

happiness
of juicy
mangoes
with mishti
doi

the happiest
mix of healthy
and tasty

thick rich
fruity
happiness