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FOOD, NUTRITION & SAFETY MAGAZINE

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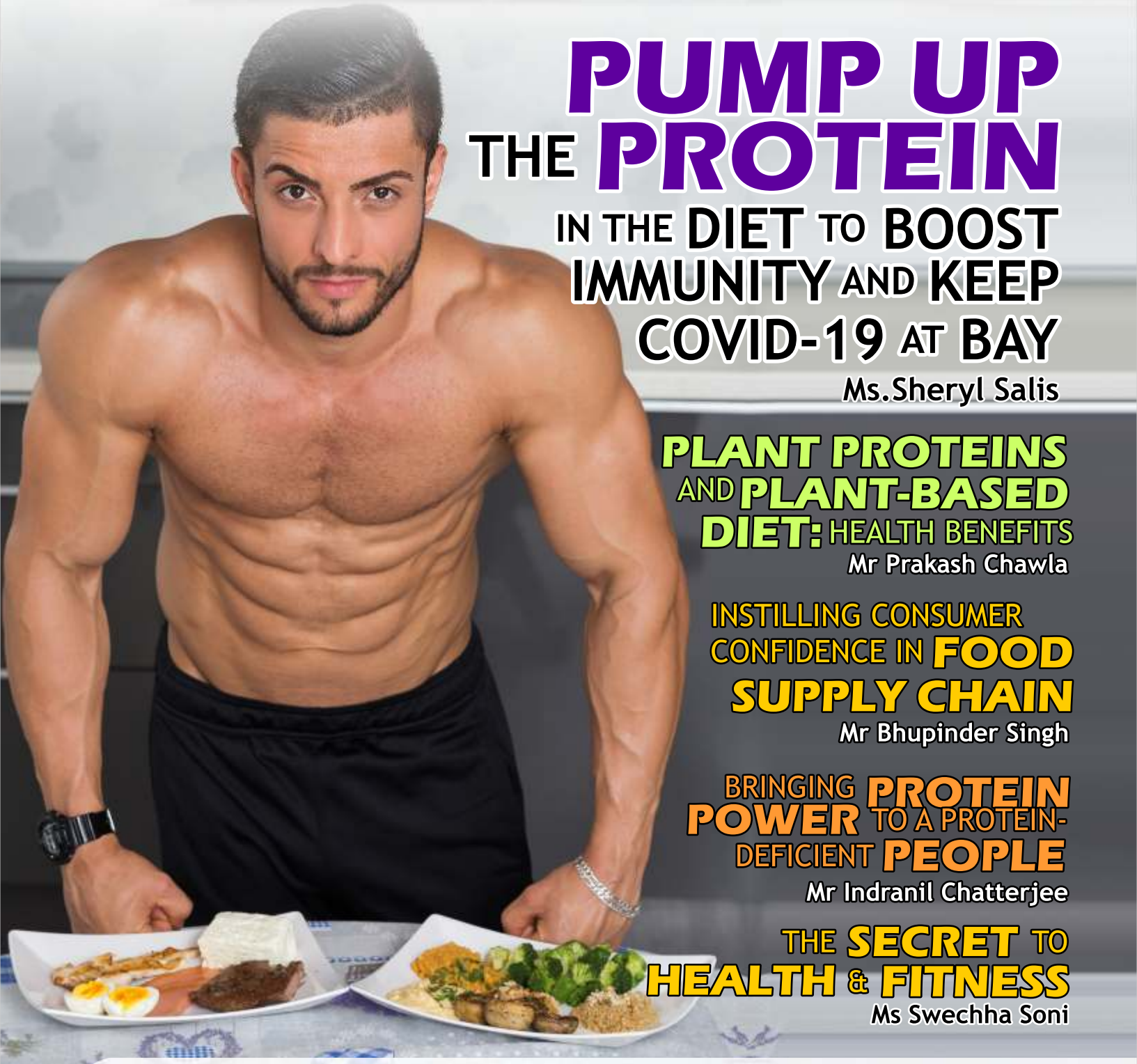

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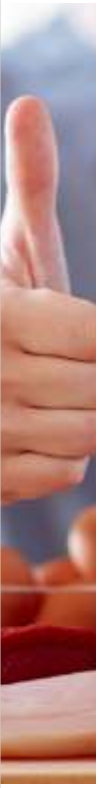

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EDITORIAL

In the US, School Nutrition Association requested the Department of Agriculture recently to permanently extend its decision to offer all public-school students' free breakfast and lunch throughout till the end of the 2020-21 academic year. This was done as an integral part of educational experience.

The reason for this was to support academic achievement, foster healthy eating habits as well as to ensure access to healthy meals at this difficult time. The last reason was a fallout of pandemic economy.
This is a unique thinking in the developed world whereas we have been practicing this for a long time having the biggest such programme called Midday Meal programme. It covers over 120 million students in over 1.265 million schools in the public school domain.

There are some things that each can learn from the other. The US system is learning that such a system would have tremendous benefits for the students and they would not only like to come to school and learn but also get nutritious meal containing all the health providing nutrients.
While it is operated by the US Department of Agriculture with excellent efficiency and the quality of meals is apparently good, they are learning the benefits of such a system and are considering making it permanent which we have already done it.

Our system can learn the efficiency from them. We are trying to make the system economical and so many times the quality of food served may need relook. On one hand we allow lot of food in silos go waste because of lack of demand for such cereals like wheat and rice. But we are still trying to cut cost of the meal programme

This scheme can become a starting point of providing balanced meals to students who will then have both physical and mental development optimally and will also realise the value of the balanced diet. These are the formative years and the nutrition at this stage will have lasting effect so we must take this opportunity to try to make a healthy beginning for them.

FSSAI has banned the unhealthy foods being sold in and around schools withing 50 metres but the government should also ensure that students get through midday meal programme balanced meals so that they do not have to look for such food items which are unhealthy.

Going further this scheme should be extended to all schools irrespective of whether public or not. So, all students would get healthy meals. Currently many school children are eating unhealthy foods so they are having obesity problem. A properly executed midday meal scheme would benefit all these students.

Prof Jagadish Pai,
Executive Director,
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PUMP UP THE PROTEIN IN THE DIET TO BOOST IMMUNITY AND KEEP COVID-19 AT BAY

AUTHOR

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The past year has been a constant reminder of how vital our immunity is, and our immune system has received more attention than ever before. As we are facing this global pandemic of COVID-19, it is imperative we take preventive measures by maintaining physical distancing and focus on building a strong immune system which is a crucial shield against Covid-19.

Our immune system works as the first line of defence against disease-causing microorganisms and protects us from all viruses and microbes that our body is exposed to. A healthy lifestyle along with a well-balanced diet containing all the essential macro and micronutrients is vital for optimal functioning and maintenance of the immune system.

Protein is a versatile macronutrient that sustains life and has a particularly important role to play in boosting immune function. Proteins are the building blocks which are required to repair cells and tissues. The cells of immune system rely on proteins which indicates that supporting the immune system is one of the most important functions of proteins.

The immune system has a high dependence upon protein synthesis, since mounting an immune response requires generation of new cells and synthesis of antigen-presenting machinery, immunoglobulins, cytokines, cytokine receptors, acute phase proteins etc.

It is therefore important to consume good quantity and quality of protein daily for the immune system to function at its best. A quarter of our plate at every meal must be protein.

Though we all know about the importance of protein, it is unfortunate that most Indians are deficient in our protein intake. The recommended dietary allowance of protein for an average Indian adult as per the ICMR –NIN 2020 guidelines is 0.8 -1g per Kg ideal body weight, however, the average intake is only about 0.6 gm per kg body weight.

Recommendations may vary depending on several factors such as physical activity, age, co morbid conditions like kidney disease etc.

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Age group	Reference Body Weight(Kg)	RDA (g) (recommended dietary allowances)
Men (Sedentary/ Moderate/ Heavy)	65	54.0
Women (Sedentary/ Moderate/ Heavy)	55	46
Pregnancy	EAR(g) (estimated energy requirement)	RDA (g)(recommended dietary allowances)
2nd trimester	+ 7.6	+9.5
3rd trimester	+17.6	+22.0
Lactation		
0-6 months	+13.6	+16.9
7-12 months	+10.6	+13.2

The IMRB 2017 survey shows that 73 percent of Indians are deficient in protein intake while above 90 percent are unaware of their daily requirements of protein. Moreover, Indian diets are predominantly cereal based, where 60 percent of protein is derived from cereals that have poor digestibility and quality.

Proteins are broken down to amino acids in the body. A good quality first class protein is one with high digestibility and has all the essential amino acids required by the body.

Essential amino acids- These are the amino acids which the human body cannot synthesize or cannot make in amounts needed by the body and so they must be supplied through food in proper proportions and amounts to meet the requirement for maintenance and growth of tissues.
e.g. Isoleucine, Leucine, Lysine, Methionine, Phenylalanine, Threonine, Tryptophan, Valine andHistidine

Branch Chain Amino Acids (BCAA) are a group of three essential amino acids: leucine, isoleucine and valine which are not produced by your body and must be obtained from food. They are essential for lymphocytes to synthesize protein, RNA, and DNA and to divide in response to stimulation

Non- essential amino acids- These are the amino acids that can be synthesized by the body in sufficient amounts to meet the needs if the total amount of nitrogen supplied by protein is adequate.
e.g. Alanine, Asparagine, Aspartic acid, Glutamic acid and Serine

Conditionally essential amino acids: These are the amino acids which may become essential under some circumstances like illness and stress.
e.g. Cysteine, Tyrosine, Arginine, Glycine, Glutamine and Proline

During episodes of infection, inflammation other type of catabolic stress and malnutrition, the amino acid glutamine is considered as a conditionally essential amino acid. It is demonstrated that glutamine supplemented nutrition is associated with early recovery and reduced morbidity and mortality.

QUALITY OF PROTEIN- COMPLETE V/S INCOMPLETE PROTEIN

Complete Proteins- Proteins that contain all essential amino acids in the correct ratio for humans.
Sources: all animal products like eggs, meat, fish, poultry, milk, milk products like curd, paneer and whey.

Incomplete Proteins- Proteins that are lacking in one or more essential amino acids.
Sources: Legumes, beans, nuts, and cereals

Protein complementation is when you combine two incomplete protein sources (legumes and grains for an example) to get all 9 amino acids that are essential for your body providing you complete protein
For e.g., Cereals lack the amino acid (lysine, tryptophan) which is present in pulses. Pulses lack methionine which is present in cereals. Combinations of foods such as cereal pulse combination like idli, dosa, pongal, khichdi, dal rice etc. in 3:1 proportion helps improve the quality of protein in a vegetarian meal.

Good protein combinations are
Legumes + Nuts/seeds
Grains + Nuts/Seeds
Legumes/Grains + Dairy

The good news is that protein complementation need not be done at the same meal. If you ate legumes for lunch and then had some almonds for a snack later, you would be adding the methionine that you had missed out on during lunch. A vegetarian diet, if planned correctly, can provide you with all the essential vitamins, minerals, and amino acids the body requires.

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- Oil seed, oils and its produts
- Sweets.,confectionary and its products
- Bakery products
- Sugar, Honey & jaggery
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- Feeds
- Water
- Ready to eat
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- Skim Milk Powder

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Protein Digestibility Corrected amino acid Score (PDCAAS) is adopted by US FDA and US FAO / WHO as 'the preferred best' method to determine protein quality.
It compares the amount of the essential amino acids in the food to a scoring pattern based on the essential amino acid requirements of a 2 to a 5year old child to determine its most limiting amino acids (amino acid score).

The highest PDCAAS value that any protein can achieve is 1.0, indicating that the protein will provide 100% of all amino acid required in the diet. Below are the PDCAAS of some of the commonly consumed foods.

Source	PDCAAS
Milk	1.00
Whey	1.00
Egg	1.00
Casein	1.00
Soy	0.91
Pea	0.67
Oats	0.57
Whole Wheat	0.45
Lentil (green, whole)	0.63
Lentil (red, split)	0.54
Chickpeas (Kabuli)	0.52
Kidney Beans	0.55

Ways to improve protein quantity and quality of an Indian vegetarian diet

While non vegetarians can obtain good quantity and quality of protein from egg, lean meat, and fish, the recipes of traditional Indian foods can be modified to improve the protein quality and quantity. This can be done in a cost-effective manner without altering the taste or making major changes to the eating habits of the individual or the family. Cereal pulse combination with addition of dairy products like curd, paneer, buttermilk, cheese, and nuts further enhances the protein content of the meal and helps to meet the recommendations.

- ✓ Dal with Rice/ Chapati
- ✓ Vegetable Dal Khichdi
- ✓ Puran Poli
- ✓ Rajma Chawal
- ✓ Dal baati
- ✓ Idli/ Dosa with sambhar
- ✓ Thalipeeth with curd
- ✓ Dal Dhokli
- ✓ Khichda
- ✓ Soya Pulao
- ✓ Pitla bhakri
- ✓ Rasam Vada
- ✓ Handvo
- ✓ Dal paratha

Considering the current pandemic situation like COVID-19 or for general health and wellbeing, it is necessary to make focussed efforts to ensure consumption of good quality protein in adequate amounts for the immune system to function optimally.

In addition to adding protein to the diet, it is essential to maintain a regular routine which includes daily exercise, eating a balanced diet providing all the macro and micronutrients, staying hydrated, maintaining good gut health, getting adequate sleep, managing stress levels, maintaining hygiene by washing hands regularly, wearing masks and maintaining physical distancing.

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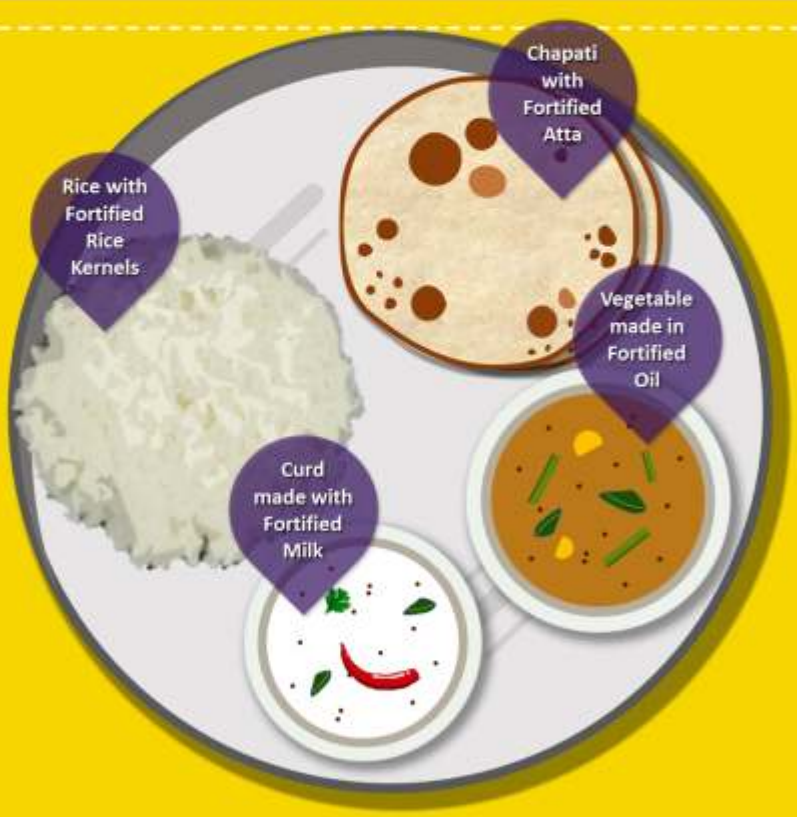

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PLANT PROTEINS AND PLANT-BASED DIET: HEALTH BENEFITS

AUTHOR
Mr Prakash Chawla,,
MD, Samyog Health Foods

There is an increase in protein demand world-over as there is realisation of importance of protein for health and wellness. Simultaneously there is also increasing interest in proteins of plant origin. For this interest many factors are responsible. They include food safety concerns including intolerances and allergies to certain foods, environmental concerns, sustainability and ethical reasons, availability of vegetarian and vegan alternatives, and also for health and wellness reasons.

Consumers want a greater variety of protein beyond animal sources such as meat, eggs and dairy to include plant sources. This has driven the rise in alternative sources of proteins like soya, pea, pulse, nut & seed, quinoa, rice, hemp, potato and oat proteins.

Lately there have been studies showing that plant-based diet is healthier and would reduce the risk of several major diseases including cardiovascular diseases, diabetes, cancer, osteoporosis, age-related macular degeneration (AMD) and others.

There were several infections related to animals and birds such flus also created traffic towards plant-based foods which were considered to be safer. There was renewed interest in vegetarianism and veganism that also pushed the scales in that direction.

Some Pros & Cons

As we need the essential amino acids, we need to take them through diet. For growth and maintenance of health, we need all the essential amino acids in proper proportion. Animal proteins such as meat, fish, poultry, eggs and dairy are considered complete as they contain all the essential amino acids in the proportion as we need them.

Most plant based proteins such cereals, legumes and nuts are lower in certain essential amino acids. Beans, nuts and seeds are low in methionine, while grains are low in lysine or tryptophan. Thus a combination of the two, cereals and pulses would improve the quality of mixed proteins.

Plant proteins are also more difficult to digest due to fibre and other components in them making it difficult for enzymes to hydrolyse proteins. However, fibre is useful in other respect for example they are useful for heart health and manage blood sugar.

Protein quality depends on the amino acid composition of the protein and is measured by either PDCAAS (Protein Digestibility Corrected Amino Acid Score), DIAAS (Digestible Indispensable Amino Acid Score) or the PER (Protein Efficiency Ratio).

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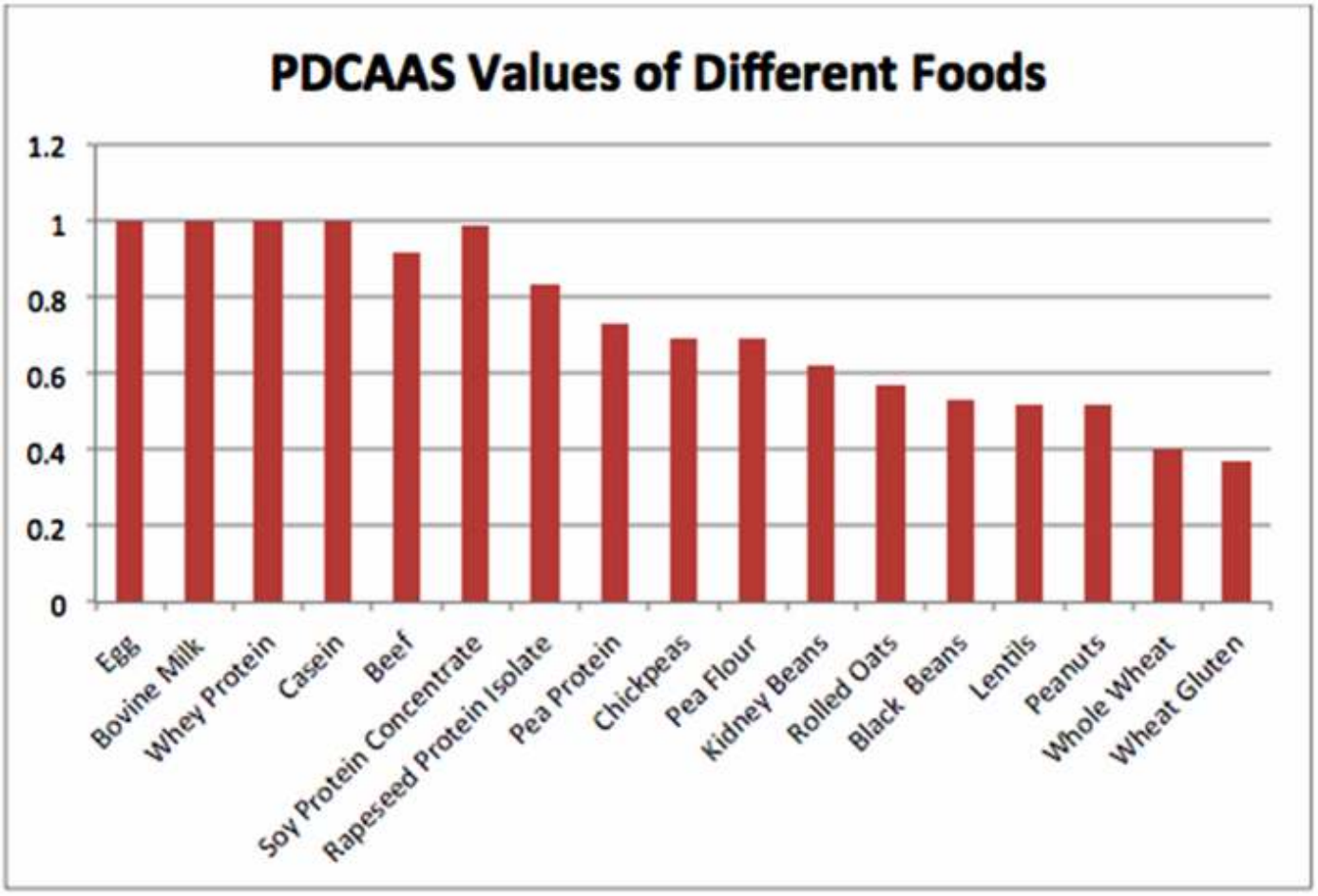

From: http://foodsafety.merieuxnutrisciences.com/2016/07/08/pdcaas-whats-this-all-about/

There are some plant proteins like soya that are considered to be complete proteins since they contain all of the essential amino acids in right amounts. *When we look at the total diet consumed during the day, we get variety of plant foods that can supply all the essential amino acids needed.*

Hence it is important that different sources of plant proteins are consumed to complement deficient amino acids. Thus combining cereals which are low in lysine but contain methionine, with legumes which are low in methionine but have lysine, would compensate for lacks of both deficient amino acids. This elevates the protein quality of the mixed proteins from cereals and legumes.

Protein quality is not always most important. Proteins come with other nutrients like complex carbohydrates, fibres, vitamins and minerals. Plant proteins bring in these advantages which are at times missed when protein concentrates and isolates are used to improve the protein quality or score. Thus although pea protein isolate may have higher protein quality than cooked peas, other nutrients important to health are lost in preparing isolates.

Many health institutions such as American Institute for Cancer Research and Health Canada encourage plant-based diets. Consumers perceive plant-based food and beverage products as more natural and healthy leading to plant-based concept spreading to wider groups of consumers and not just vegetarians.

Is plant protein better than animal protein?

The answer is not very clear cut. It must be considered in relation with other nutrients that come along with protein in plants. These include fibre, vitamins B complex and D, minerals such as iron, zinc, calcium etc. There are also reports that suggest that plant proteins in the diet can be protective for metabolic health, with links found between plant protein intake and healthier markers of heart health and blood sugar management.

Bone and muscle health also are benefited by plant-based diets rich in nutrients like protein, magnesium, potassium and vitamin K and C. Thus overall plant proteins along with other components coming from the plant diet would be definitely better than the animal protein.

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Sustainability

Plant-based diets are more environmentally sustainable compared to animal-based diets. Plant-based diets use fewer natural resources and less environmental damage. Livestock are fed with plants rich in protein. So if we consume plant proteins directly instead of feeding animals and then eating animals, we avoid resources used by animals.

To produce 1 kg protein from kidney beans requires 18 times less land, 10 times less water, 9 times less fuel, 12 times less fertilizer and 10 times less pesticide compared to producing 1 kg protein from beef. By consuming less meat and dairy, environmental impact can be cut by half while reducing agriculture's pressure on environment.

Health Benefits of Reduced Intake of Methionine & Lysine

Cholesterol-free diets containing milk casein or other animal proteins induce an elevation of plasma total and LDL cholesterol that could be prevented by using vegetable protein like soy protein. This effect was shown that hypercholesterolemia was primarily due to essential amino acids of casein. While ketogenic amino acids like glycine, leucine, phenylalanine, threonine etc. produced moderate hypercholesterolemic effect but combination of methionine and lysine produced higher concentration of serum cholesterol. Lower intake of methionine and lysine in vegetarian nutrition means the preventive effects of plant proteins against cardiovascular diseases.

Health Benefits of a Plant based diet on Cancer

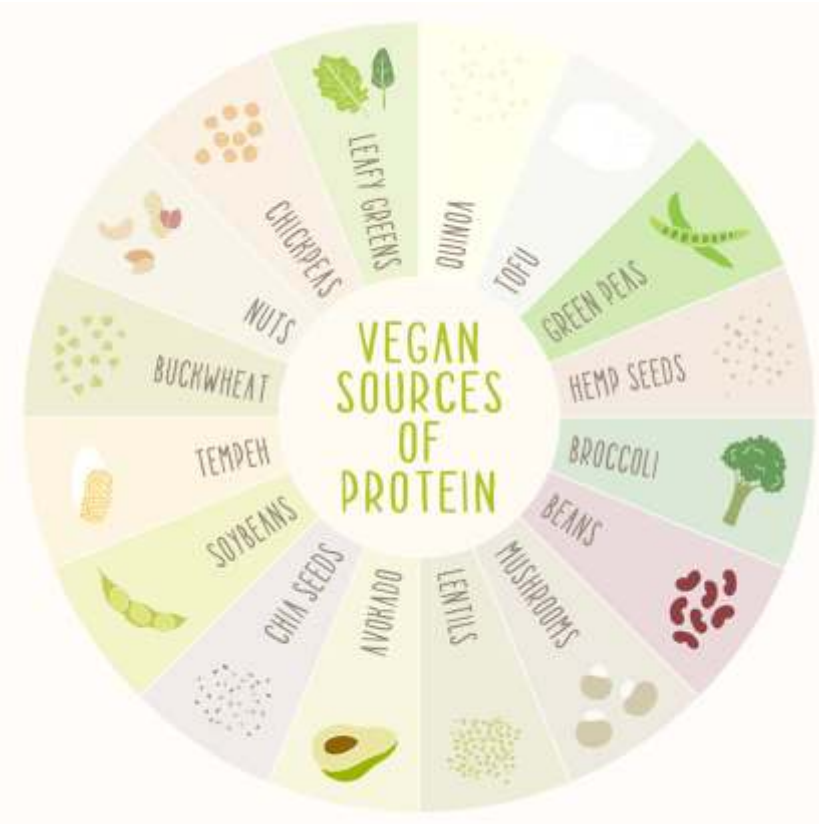
American Institute for Cancer Research (AICR) in 2014 came up with 10 recommendations for cancer prevention. The findings around diets were concluded that consumption of whole plant based foods shows a protective effect on cancer and other diseases condition.

A combination of healthy diet (plant based) and active lifestyle influence growth of tumour cell. There are also studies supporting that within only 2 weeks of healthy living, participants blood samples were able to suppress cancer growth and kill 20%- 30% more malignant cells than blood samples taken prior to the diet/lifestyle change.

The mechanism behind was that the cancer suppression effect could be attributed to decreased levels of insulin-like growth factor 1 (IGF-1) due to reduced intake of animal protein. IGF-1 is a hormone important for cell growth, and the more IGF-1 presents in the blood stream, the higher one's risk for cancer development. A decreased in effective IGF-1 activity can be expected to retard cancer development and, in some instances, to slow cancer growth. Therefore, it is considered that by reducing animal intake, we reduce IGF-1 and boost our body's natural cancer defences.

In terms of how much the intake of animal proteins must be reduced to obtain these protective effects, it is only those following a fully plant-based (vegan) diet that experience cancer protection due to decreased growth hormone and increased binding protein levels.

Vegetarians who consume eggs and dairy do not have the same protective effect, because all animal proteins stimulate the production of IGF-1, regardless of if the source is from the muscle, eggs, or dairy.



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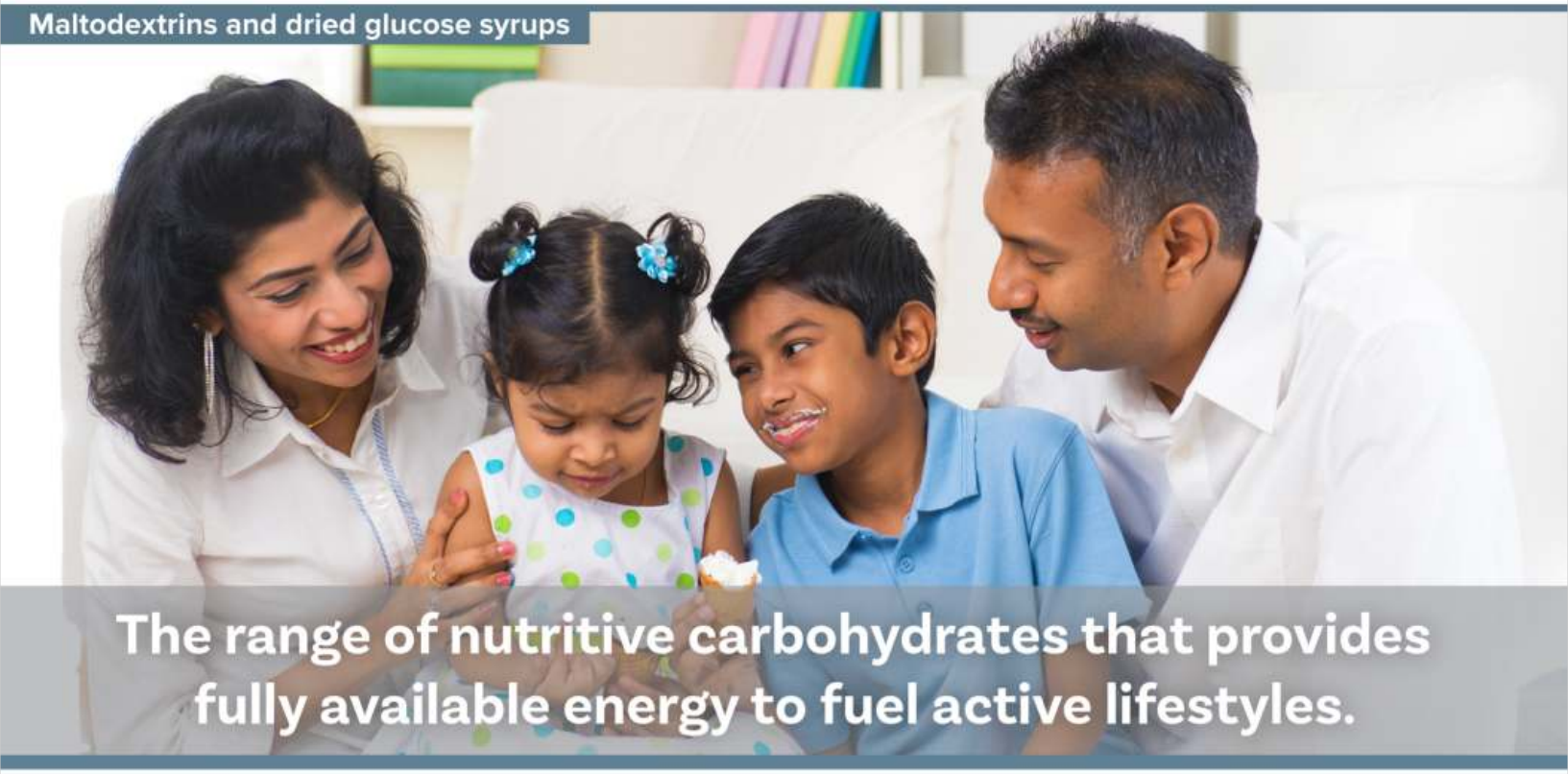

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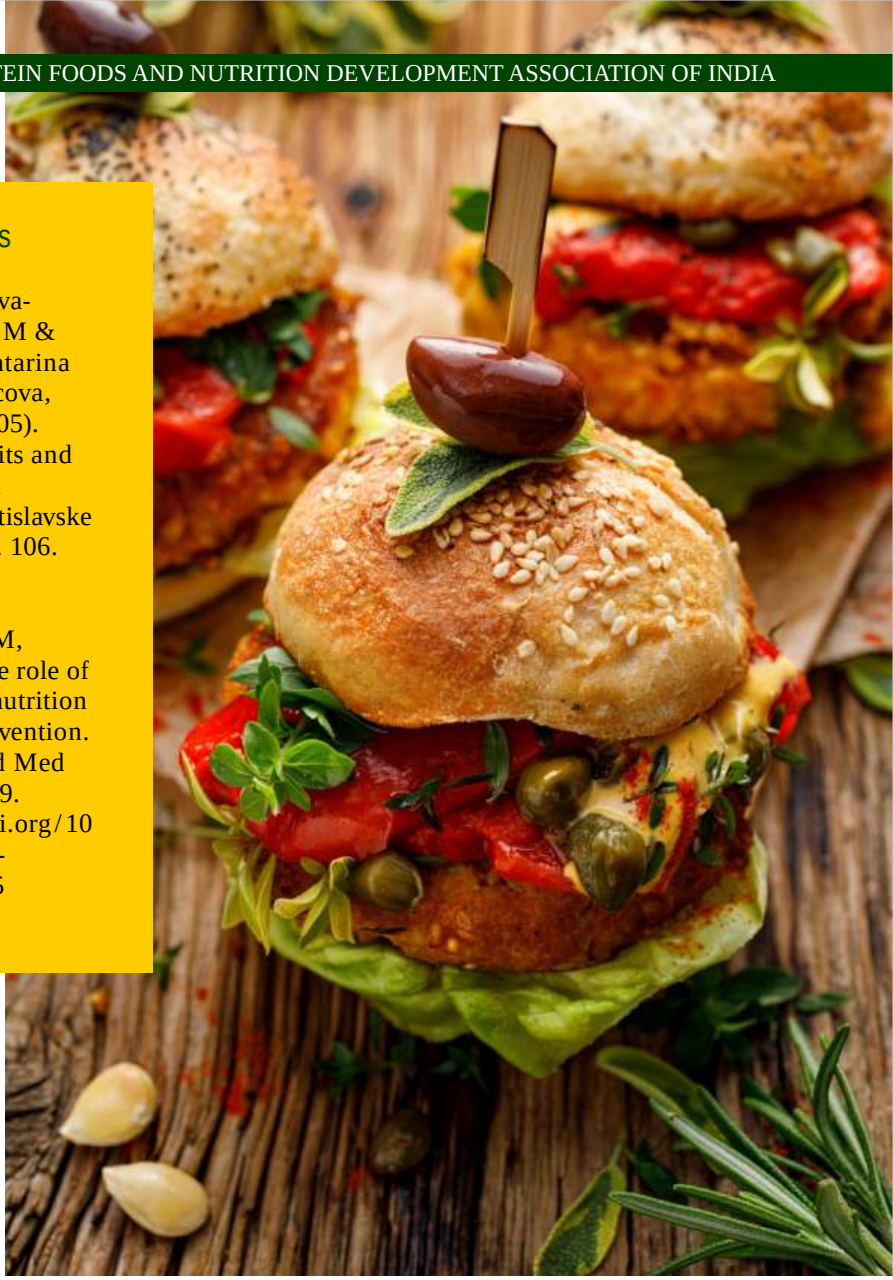

In Conclusion

There are many reasons for people going for plant-based diet and some are personal choices but many are health reasons. There has been a great increase in the demand for foods prepared from plant-based ingredients and proteins have become one of the noticeable in this respect. There has been a great awareness about health benefits of proteins and the preference has been plant proteins. Many scientific studies are supporting this preference.

Adoption of a plant-based diet provides robust benefits against a multitude of cancers while presenting virtually no threat of unwanted side-effects. A well-planned plant-based diet is a simple and cost-effective intervention that can be used alone to prevent disease or in adjunct with conventional treatment when disease is already present.

Besides offering protection against cancers, a plant-based diet has also been shown to be protective against other Western chronic diseases including diabetes, heart disease, and obesity, while caring for the environment.

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INSTILLING CONSUMER CONFIDENCE IN FOOD SUPPLY CHAIN

AUTHOR
Bhupinder Singh
CEO – Vista Processed Foods

Food industry runs smoothly when the supply chain works efficiently. As farms get farther away from the urban centres of consumption, it takes longer and more difficult to reach markets. As demands increase there is increased load on the transport which keeps taking longer times. This takes toll on quality of agricultural produce if the transport is not properly controlled. This is especially the case of fresh commodities which are temperature sensitive and cold chain really helps in maintaining the quality.

When the goods are to be sent from farm to different types of destinations like fresh consumer markets, processing plants, food service units, e-commerce platform as well as storage units, there are different constraints.

It was really gratifying to see that Indian food supply chain did not break down during the pandemic in spite of challenges of the situations where several safety restrictions were put and manpower availability was so uncertain and difficult. It did so well compared to some of the western countries in spite of lack of infrastructure and modern technology and devices to assist.

Priorities of Supply Chain

Supply chain priorities are most important factors for consumer confidence in food supply chain. These consist of Supply Assurance or Sustainability, Quality Assurance and Food Safety Assurance which are extremely important in building confidence among consumers.
In difficult times consumers need assurance and guidance. Industry should not just try to market their products but also try to create awareness and inform consumers about safety and health besides the goodness and quality of the product.

It has been seen during Covid-19 pandemic disruption of supply chain taking place all over the world. It is very important for food industry to ensure that in such difficult periods to maintain the consumer confidence, it is very important to have all these priorities properly secured and working efficiently.

Challenges of 2020

What is done in order to meet these challenges, industry must take steps which are competitive to remain viable in the markets but also it should be regulatory compliant. It is a balancing trick to achieve both these simultaneously and satisfactorily. This certainly builds confidence of customers in the industry. It also helps build the business if it is efficient.

Contamination and fear of infection through food supply would lower the consumer confidence. Earlier it was Covid-19 and more recently especially in the North it was AI (avian influenza) that created scare among the consumers. Such challenges need to be tackled by supply chain team and will also depend on how industry communicates with the customers.

When Covid-19 crisis started in India, chicken consumption dropped and people did not have confidence in chicken. In response the government and poultry industry came forward to communicate with consumers and how it is done is very important.

Now that avian flu has affected birds in North, customer confidence in poultry as well as protein products went down. Sensational and scary news spreads very rapidly even if is not verified. Such problems along with some problems such as seasonal diseases etc. also need to be tackled.

Regaining the Consumer Confidence

It is very important to know how to reinstate the trust once it has gone down. Communication is the key. Industry needs to stay connected with consumers. At the same time it is important to make product available with assured supply and sustainability.

A fine example is of Licious which stayed connected with their consumers and showed tremendous growth even during this difficult time. Normally chicken was purchased in live market in the street and in unsanitary conditions. Consumers stopped purchasing this because of the Covid-19 scare. Licious supplied good quality, well packed, chilled chicken at consumers' door step. They understood the customers and build their supply chain to build the customer confidence and trust.

Customers were ready to pay more for the product which was safe and of high quality.

Consumers nowadays do not want to go to stores for shopping and they would prefer home delivery. They also want assurance of safety along with taste. Domino's safety ad showed both temperature and health condition records during Covid. Thus they build the confidence of the consumers. Customers preferred packed and cooked foods.

Indian supply chain did better than the US where they had empty store shelves due to panic buying and hoarding whereas Indians still managed to supply food to the people in spite of challenges. Supply chain at all points did remarkably well from the farmers down to retailers including door-step delivery and street vendors and small shops.

Technology Support – Block Chain Technology

India also adopted new technology such as Block Chain for consumers. Block chain technology has advantages with traceability, quality and safety assurance, product test information and product origin. This will help improve the consumer confidence.

IOT (Internet of Things) and smart sensors can be extremely useful in food safety management system. These sensors could be used throughout cold and hot food chain and coupled with supply management. It can be useful in food safety management in HACCP providing traceability and also providing information to customers which will improve the customer confidence in the supply chain.

There was a lot of misinformation during pandemic that needed to be removed through authentic information about food safety. Help was sought during this time from abroad for example from the US for getting the new technology to be used.

Fully Cooked/Ready to Cook and the Consumers

Consumer behaviour was also changing. They went for Ready to Cook and Fully Cooked foods as they considered them safer. Although both are convenience foods and require final heating there is difference between them with respect to safety. Ready to Cook needs to be cooked in which the final safety is also incorporated. If not cooked adequately there will be safety issues because of lack of destruction of microbes.

Ready to Eat is to be heated only because when it is bought in stores or delivered by restaurant or food service it may be cold. This final heating has not safety issue associated. Sometimes problem is created with ready to cook as consumer may undercook or overcook the product leading to some safety issues. This would result in brand damage and sales loss.

It is important to remember in the supply chain of RTE and RTC, there are differences and it is necessary to segregate High Risk and Low Risk areas in both as well as validation of kill step needs to be properly understood and applied.

Good manufacturing practices (GMP) must be stringently applied for both people and product movement and a good monitoring is essential. Consumers are going to depend on the companies to ensure the safety as they believe the product would be safe.

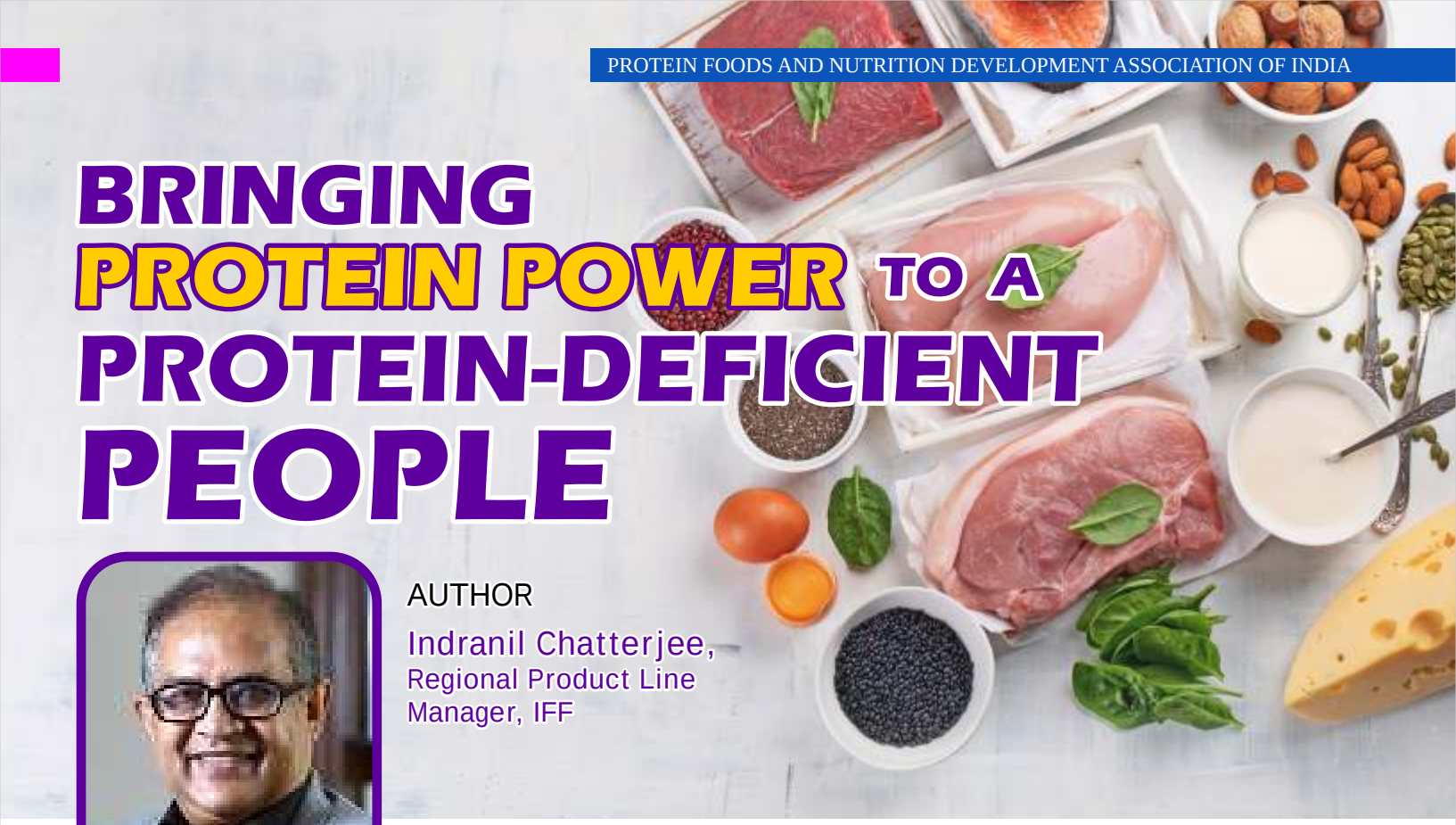
High Precision Testing

For ensuring this, testing is needed to be rapid and of high precision without human or equipment error. Testing may incorporate DNA testing for authentication of meat products, Real Time (RT) PCR based testing of pathogens for rapid results, and AI based testing of contaminants.

DNA testing is normally done using proper modern laboratories to ensuring that chicken meat is not contaminated with any other animal. This also will increase the consumer confidence in industry.

Finally in order to build consumer confidence industry has a big role to play. However, along with industry government also has to create awareness and try to stop misinformation. Currently because of social media, misinformation or scare can travel extremely rapidly and must be discouraged. Media has a role in proper and authentic reporting.

Government can also play a role. During the Avian Influenza news in the North India recently, industry went to government and requested them to stop misinformation which government helped with and punished those who were spreading rumours.



BRINGING PROTEIN POWER TO A PROTEIN-DEFICIENT PEOPLE

AUTHOR

Indranil Chatterjee,
Regional Product Line Manager, IFF

Indian consumers are looking to eat more high-quality, sustainable proteins – and it's up to the food industry to get them on the right track

The high-protein diet is one of the most enduring food trends of all time. After more than two decades in the spotlight, foods with protein claims continue to win the attention of consumers, who recognise benefits for muscle and immune health, weight management and healthy ageing.

Today in India alone, more than 60% of urban consumers state that they make an effort to eat more protein.

But that's not to say the protein trend is unchanged. As the world's growing need for a sustainable protein supply has come into focus, new questions have arisen concerning the source of those proteins and their quality – and how best to harness their nutritional power.

From a sustainability perspective, the merits of animal-based versus plant-based proteins are now widely discussed. With regard to quality, it's about which proteins are most complete in terms of their amino acid content and how to deliver them in a format that the body can easily absorb.

The point is protein is not just protein. Food manufacturers must be sure to select the best protein components for each nutritional goal and package them in the right product.

A protein-deficient nation

In a country like India, the general need for more protein in the diet is clear. According to the Indian Market Research Bureau, more than 80% of the population are protein deficient.

Among adult consumers, that means the vast majority consume less than the recommended intake of 0.8g per kilo body weight per day – a recommendation that rises to 1.2g per kilo body weight as people age.

A primary reason for this deficiency is the traditional carbohydrate-rich diet, which provides a relatively low level of protein. As the Indian Market Research Bureau reports, the main protein sources are likely to add up to one cup of lentils, a glass of milk or a cup of yoghurt a day. At around 8g of protein, that's way below daily protein needs.

The healthy living challenge

Against that backdrop, it's positive that healthy living is now a high priority among many Indian consumers. In the Mintel survey, three in five urban Indians stated their aim to include more protein in their diet. On-the-go snacks are a favoured format.

However, the survey also exposed a critical knowledge gap, with 83% of respondents expressing a lack of understanding about which protein sources to choose.

In other words, the food industry faces a major opportunity and a challenge. The opportunity lies in new product development, where manufacturers take the responsibility for developing targeted products with an optimum protein composition on their shoulders. The challenge is to develop a successful branding strategy that can generate awareness – backed, of course, by solid documentation. That's when we come to the source and quality of the proteins.

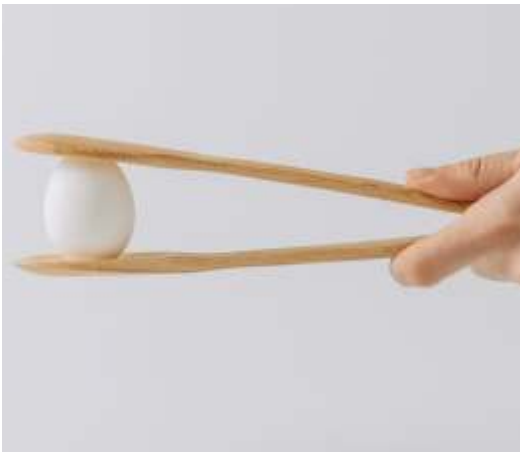
Evaluating protein quality

For many years now, protein quality has been evaluated using the Protein Digestibility-Corrected Amino Acid Score (PDCAAS) – a methodology that considers the digestibility of the protein and the essential amino acids it contains. Today, PDCAAS provides an excellent yardstick for identifying suitable protein sources, both for India's many vegetarians and for those who, for health or sustainability reasons, simply wish to eat more plant-based than animal-based food– the latter flexitarian philosophy having the support of the World Health Organization.

A study published in the Journal of Agricultural and Food Chemistry used PDCAAS to compare the quality of a range of meat, dairy and plant-based protein sources. This gave soy protein the top score of 1.0 for amino acid composition, on a par with milk casein and egg white and higher than meat at 0.92. By comparison, pea protein concentrate – another widely used plant-based protein – scored a still very acceptable 0.73. Plant protein sources at the bottom of the scale included wheat gluten, with a score of 0.25, and almond at 0.23.

The sustainable soy alternative

Based on PDCAAS, there's a good nutritional case for using soy protein as an alternative to dairy and meat protein. Beyond that, hundreds of published studies have demonstrated



a link between soy protein and the healthy growth and development of children, muscle and heart health and weight management. Soy protein can also be incorporated in food products without adding fat, cholesterol or lactose – important advantages for an Indian population that, in addition to widespread protein deficiency, is characterised by a high rate of obesity and lactose intolerance.

Soy protein has strong sustainability credentials, too. Compared to skim milk powder, the carbon footprint of soy protein isolate, for example, is close to ten times lighter. Compare soy protein isolate with meat, and you're looking at a carbon footprint ratio of one to 74.

Potential in combinations

All the same, there can be good reasons for combining plant and animal-derived proteins in one food product. One in particular relates to muscle health, following clinical studies of soy and dairy protein blends in sports nutrition supplements. These have shown that the differing digestion rates of soy, whey and casein proteins can actually prolong the anabolic window for muscle recovery and growth after exercise. Such a finding is not only important to sports enthusiasts. Further potential benefits exist for older consumers who need to counter muscle decline.

For manufacturers of well-established brands, the combination of dairy and plant-based proteins represents a smooth opportunity to boost the nutritional profile of new brand variants. Alternatively, manufacturers may take advantage of the latest soy processing technology to create something new. Soy-based snack products are among the options – with delicious textures from creamy to crisp. Both of these approaches package high-quality proteins in an appealing format.

Among consumers who want to eat more protein but are unsure how to do it, brands that stand out for their deliciousness and convenience could be the ones that get them on track. The task of manufacturers is to make sure their brands meet today's credentials for protein quality and sustainability. Then, once consumers love the products, the power of protein can be fully unleashed.

THE SECRET TO HEALTH & FITNESS

AUTHOR
Ms. Swechha Soni,
Manager – Food & Nutrition,
PFNDAI

Imagine you see an individual with a really nice physique, a healthy glowing skin and shiny hair. What is the first thing that comes in your mind? Of course, the very first thing above any would be that you will envy him/ her and the next thought would be "How is he/ she so well maintained, what's the secret?" Isn't it strange enough that the answer to this question is known to all of us but we still pretend to be so unaware as if there is really a SECRET.

So to be honest, there isn't any secret and the mantra to have a healthy and fit body is no rocket science. All that is actually required is good nutrition and a healthy dose of exercise. And this is one such discipline that should be followed daily in order to have a healthy lifestyle which ultimately will give you a Healthy and a Fit body.

As every goal comes with a road map and everyday each step must be taken to move ahead towards your goal, a healthy body too demands some day-to-day planning and giving your body all that it needs in proper portions. Our body is a complex machine that will perform efficiently only if it is fuelled with the proper nutrients in proper proportions. If you take care of the needs of your body it will take care of your productivity, sleep and health in return. Let's dive into some of the important factors that play critical roles in our healthy body goals.

Start your day with the most important meal of the day- BREAKFAST

Breakfast is the most important meal of the day. It gives the energy to start the day and helps in starting the day quite actively. Breakfast truly means breaking the overnight fast as the last meal one has is the dinner and some may even have it as early as 7pm. So, the gap between the last meal of the day and first meal of the day becomes huge as compared to the other meals we have in a day.

When you do not eat breakfast, you do not get the required energy the body needs for starting the day and hence you will feel tired and will not able to concentrate. Eating a healthy & nutritious breakfast also helps in remembering things easily. Moreover, a positive association between skipping breakfast and being overweight or obese is globally observed, regardless of cultural differences among countries.

Breakfast skipping is associated with a poorer diet quality; lower intake of total energy, vitamins, and minerals; and increased risk of central adiposity, insulin resistance and type 2 diabetes and body weight gain. So you definitely would not want to be away from these important nutrients and have the risk of getting so many health conditions. So be wise and always start your day with a Healthy & Nutritious breakfast.

Be Wise in choosing Carbohydrates

Sometime back there was a trend of having diets with very low carbohydrates. This was one of the many fad diets that actually influenced people and made them believe that this kind of diet is so right for them. All this started with giving a bad tag to carbohydrates saying that carbohydrate consumption has a negative impact on our body and health.

If this was true then why is it said that 50-60% of the total daily calories must come from carbohydrates? So, the fact is carbohydrates are not bad, because most of our energy come from carbohydrates itself.

What's important is the form of carbohydrates that we are consuming. Basically, simple carbohydrates give you only empty calories and no other essential nutrients. One has to be smart enough to choose carbohydrates that are complex that will also provide some dietary fibre which help you feel more satiated and fuller for longer time and eventually will help in portion and eating control.

Proteins for gains

Talking about the strength and fitness of the body, it depends all upon your gains. Gains must be from muscles and not from fat. Well, muscles aren't created just by reading stuffs and checking constantly in your mirror selfies if you have gained some. If you don't take in the proper building blocks, your gains will be quite limited, no matter how hard you work.

As we all know building blocks of our body are the proteins and you must try to pack good quality protein in the meals you have as Indians are recommended to have at least 0.8g of protein/kg of body weight which is also not met by most of the Indian population. And when we talk about people involved in sports the protein consumption increases drastically. So, it is necessary for all the individuals to shift a little more focus towards protein.

Look for Healthy Fats

Don't we always blame the fats for our unwanted weight gain? And the reason simply being that 1 gram of fat gives you 9 kilocalories. But does that really make them too bad? We definitely cannot deny the fact that fats are needed in our body for several important roles. They are needed for body energy and to support cell growth. They also help protect your organs and help keep your body warm. Fats help your body absorb some nutrients and produce important hormones, too. Your body definitely needs it. Only thing that you need to be particular about is choosing the healthy fats. Fats are available in saturated, unsaturated and trans forms.

When we talk about healthy fats, the unsaturated ones namely the mono and the poly unsaturated fats come into picture. These are the ones that must be included in the meals getting it from healthy cooking oils like olive oil, canola oil, plant seed oils and foods like nuts, avocado, fish, etc.

Then there are also saturated fats which have had its up and down over the years with a tag that it affects heart health. Well recent studies restrict us to saying that anymore as all the foods having saturated fats may not be affecting heart health negatively. Saturated fats are furthermore categorized as short, medium and long chain fatty acids. Foods containing short and medium chain fatty acids for example coconut oil has been shown to protect against heart diseases.

Now talking about the trans fats, we really need to be far away from this type as it is one of the major causes for heart diseases as it raises your LDL and lowers your HDL. And the concerning thing is that it is easily found in so many foods like fried and baked ones, margarines and some other spreads. So, it is really important that we make place for the right kinds of fats in our diet.

Moderation and Balance

The most important key to stay fit is to maintain the discipline of moderation and balancing. Most often we lose the track of the amount of food we eat. If some food is healthy it ultimately builds a perception in our minds that it can be consumed in higher amounts. But that is where we need to be alert.

Anything tagged as healthy does not mean that it should be consumed in large quantity without keeping the track of the calories. Moderation is to be maintained in any kind of food you consume. Too much of anything, even if it is good for you, will become harmful.

Balancing is another critical part of the fit body regime. One definitely needs to have a good balance of his energy consumption and expenditure. This may not really require exact calorie counting for people who are not too much into some form of diet. But trying to have a balanced diet everyday accompanied with some form of workout is the best regime to follow.

Exercise

As mentioned earlier, for a healthy and fit body what is needed is good nutrition and a healthy dose of exercise. It is recommended that to maintain or improve your health, aim for at least 30 minutes of moderate physical activity every day.

The simplest way to meet this need is walking. Walking proves to be one of the best exercises for your body in so many ways. As it does not require too much of efforts, the wear and tear on your joints is much lower than indulging in other forms of exercises.

It is better to start walking slowly with gradually increasing the speed. On at least 2 days per week, it is good to try activities that strengthen your muscles like hand weights or rubber strength bands, etc.

Well for a lot of people exercise is associated with some hurdles and maybe excuses for some for not doing exercise. But thankfully these hurdles are manageable. People often complain of not having time for doing exercise but this is something that is totally adjustable based on how dedicated and committed are you in achieving your fit body goal.

It is better to take out sometime from your screen time (which is the time you are sitting & physically inactive) and using that time in doing exercise. Ultimately your sitting time is reduced and that time is used in doing something more productive and this in itself is a small achievement to be happy about.

Another hurdle that people may highlight is that workouts costs too much. But who said it can be only done in gyms? Gyms do offer many equipments for different forms of workouts along with a trainer to guide which is an advantage. But if you are a starter and do not really want to get into heavy weight lifting, home becomes the best place to workout in your own comfort. Some aerobic and stretching exercises can be easily done at home level without investing any money.

Many people give a lot of importance to diet and totally ignore exercise. Many studies have shown several health benefits of regular exercise and these are:

- Reduces risk of a heart attack
- Manages your weight better
- Lowers blood cholesterol level
- Lowers the risk of type 2 diabetes
- Lower blood pressure
- Stronger bones, muscles and joints and lower risk of developing osteoporosis
- Feels better – with more energy, a better mood, feel more relaxed and sleep better.

Apart from nutrition and exercise, it is also necessary to have a lifestyle modification which demands no smoking and drinking, taking your meals in small portions and on time, paying attention to hunger and thirst signals, making wise eating choices, etc.

So, let's take small steps each day that will bring gradual change in your body helping you to be on the other side and making people wonder what the secret to your fitness is.

WEBINAR REPORT

CONNECTING RESPONSIBLY WITH CONSUMERS - PACKAGING LAWS AND REGULATIONS

AUTHOR
Ms. Girija Damle,
Dietitian, PFNDAI

Protein Foods & Nutrition Development Association of India (PFNDAI) had organized a webinar on "Connecting Responsibly with Consumers: Packaging Laws and Regulations", where the main objective was to help our audience understand the existing laws, problems and solutions of packaging in India and how manufacturers can effectively incorporate these laws and solutions during product manufacturing. The webinar was held on Friday 5thFebruary, 2021 from 3-5:30 pm.

The webinar was chaired and co-chaired by Dr A. Sivakumar (Regulatory Affairs Dir. Global Home care & S. Asia Hindustan Unilever Ltd) and Dr Jyoti Baliga (Retd. Prof. Indian Institute of Packaging) respectively. The speakers for the webinar were- Dr KSMS Raghavarao (Professor of Chemical Eng. IIT Tirupati, Ex Dir. CSIR-CFTRI), Mr. Jikul Purohit (Sr. Manager Packaging Sustainability Asia & ANZ, Hindustan Unilever Ltd) and Mr Ramaiah Muthusubramanian (CEO Packfora LLP). The webinar was attended by a large audience. The attendees included professionals working in food industries and regulatory bodies, professors, research scholars, students, dietitians and scientists.

Dr Jagadish Pai (Executive Director at PFNDAI) welcomed everyone and gave a brief introduction of PFNDAI& the session topic and welcomed the eminent speakers. Ms SwechhaSoni (Manager Food & Nutrition at PFNDAI) introduced speakers, chair, co-chair and the moderator. Dr Sivakumarin his remarks, talked about the importance of the seminar topic, plastic waste from packaging along with the opportunities provided by plastic. He spoke of some solutions like effective collection of waste, alternatives for plastic and innovative opportunities for the industries.

Dr. Jyoti was also invited to give her opening remarks for the session. She also emphasised on the positives and negatives of plastic and the role of consumers in managing the plastic pollution and striking a balance between convenience and sustainability.

Dr Raghavarao in his presentation on 'Plastic in Food Packaging- A Boon or Bane' explained in detail, the history of plastic, environmental issues and concerns with using plastic, along with the advantages and opportunities that come with plastic. He spoke of alternatives like thermoplastics and thermoset plastics. He enlisted the qualities of 'Ideal Packaging', categories of packaging, and plastic-food interaction. He emphasised on alternatives for plastic and application of nanocomposites. Along with some other examples of packaging technologies, he concluded with an overview of positives and negatives of using plastic in food packaging. He also answered some questions from the audiences.

The second speaker, Mr. Jikul Purohit gave a talk on-'Indian Food Packaging Industry- The Diversity'. As a part of his presentation, he talked about the history and evolution of packaging of various categories of food like milk, oil, ready to eat foods etc.

He explained how sustainability is the next digital and how sustainable packaging can be achieved by effective disposal of plastic and along with making the packaging recyclable and reusable.

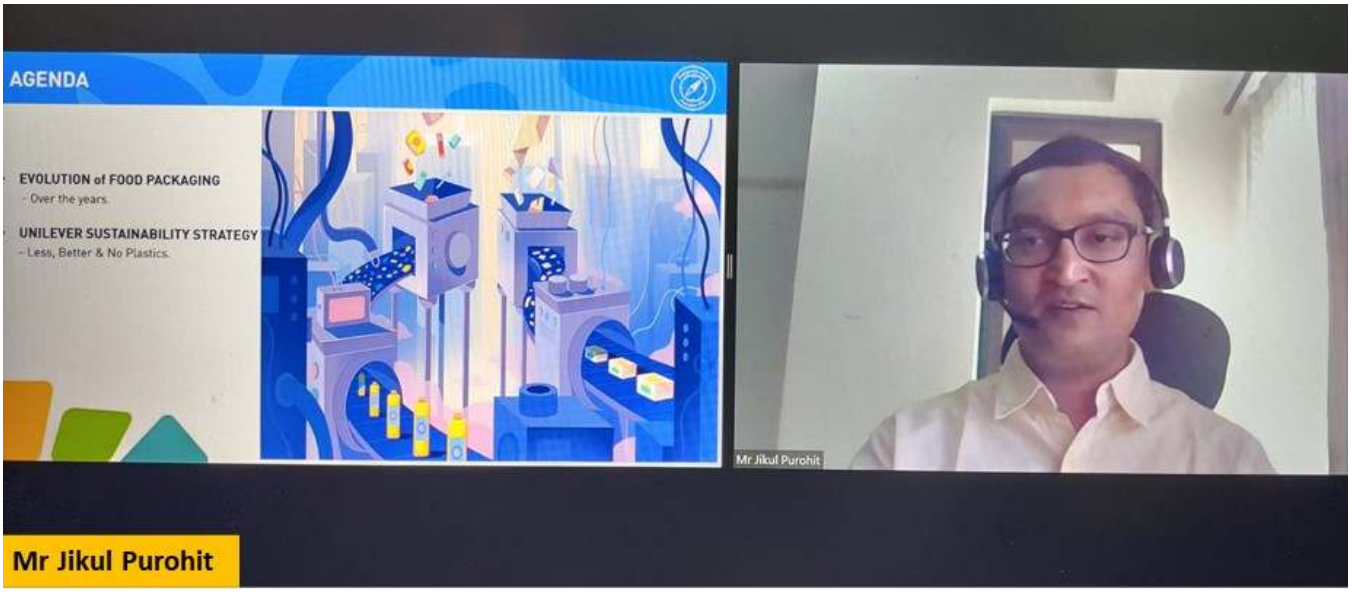
The next talk was by Dr Ramaiah Muthusubramanian on 'Emerging Packaging Solutions- Eat your Food & Package Too.' He gave detailed insights how nature inspires us to package food in an eco-friendly fashion, where the packaging can be made with edible material to reduce waste and burden. He explained this with examples of pea pods- organised & used for multipack, coconut-protective, etc.

Dr. Muthusubramanian spoke about some companies that have started using edible packaging for their products.

The audience had some questions that were addressed in brief details by all the speakers after their respective talks.

The presentations by the speakers were followed by a panel discussion conducted by Dr Jyoti Baliga, on some of the packaging concerns. The panellists were Mr Sameer Mehandale (Head of Packaging Development, Britannia), Ms Himanshi Mahajan (Packaging Development Lead- R&D) and Mr Virendra Langde (Manager Scientific & Regulatory Affairs, Coca-Cola India). The enlightening panel answered questions like -use of glass bottles to replace plastic bottles for packaging, industry prospects of use of edible packaging, opportunities and challenges of use of PET digesting enzyme to beat plastic pollution, etc.

A short Q & A followed after the panel discussion addressing some of the queries raised by the audience. The webinar ended with a vote of thanks by Ms Abir Ansari.


AGENDA
EVOLUTION of FOOD PACKAGING
- Over the years.
UNILEVER SUSTAINABILITY STRATEGY
- Less, Better & No Plastics.
Mr Jikul Purohit
Mr Jikul Purohit


Dr Jagadish Pai
Dr Raghavarao
Mr Jikul
Mr Virendra
Dr Sivakumar
Dr Jyoti


Mr Virendra
Dr Pai
Dr Jyoti
Mr Sameer
Ms Himanshi
Ms Swechha

REPORT OF PFNDAI Webinar ON CONNECTING RESPONSIBLY WITH CONSUMERS - LABELLING & DISPLAY LAWS

AUTHOR
Ms. Abir Ansari,
Jr. Nutritionist, PFNDAI

Protein Foods & Nutrition Development Association of India (PFNDAI) had organized a series of webinars under topic "Connecting Responsibly with Consumers" wherein the last session namely Labelling & Display laws was held on 13th of February 2021. This session was supported by International Flavors & Fragrances, PepsiCo & Marico Ltd.

Exclusive advertisement on social media platforms & personal invitations through E- mail resulted in online gathering of large no. of participants who wanted to hear eminent personalities expressing their thoughts on each displayed topics.

Dr Jagadish Pai, the Executive Director of PFNDAI gave a warm welcome to the audience, Speakers, Chair, Co-Chair & all Panel members. He expressed his gratitude towards sponsors for their willingness & support. He also expressed his happiness by sharing about the success of all previous webinars which were successfully held under the domain.

Ms Swechha Soni, Manager in Food & Nutrition at PFNDAI briefly introduced the Chair & Co-Chair Mr Indranil Chatterjee & Mr Prabodh Halde respectively to the audience. She requested to the chair & co chair to give opening remarks on the session.

Mr Indranil Chatterjee, Regional Product-line Manager for Protein Solutions, Nutrition & Biosciences Division at International Flavours & Fragrances (IFF) gave an enormous opening remark about responsible consumer acceptance, he had given a gist of all the topics that were going to be covered in the entire session. He informed the audience about the new norms which are going to be implemented on the food labels like nutritional information, volume of package, date of manufacture, expiry date, best before date, manufacturer name & address, etc. He also discussed norms regarding writing veg & non-veg symbol logo.

Dr. Prabodh Halde, Head Regulatory in R & D, Marico has emphasized on importance of consumer start from the age of independence till current times. He focused more on the consumer safety as well as key role of consumer in market saying whatever work an industry performs is only for the consumers. He gave a strong opinion on implementation of regulations by food industries & organization. At the end, he said that connecting responsibly with consumers is not a topic, it is a mandate for our existence.

Ms Swechha introduced each speakers to the audience before their presentation & requested them to deliver a talk on respective topics.

Ms Shreya Pandey, Associate Director in Food Safety, Scientific & Regulatory Affairs (R &D) at PepsiCo gave remarks on topic "Opportunities for Labelling Regulations for India". She gave special emphasis on Opportunities in comprehensive labelling regulation in terms of its implementation, greater alignment &certain concerns. She had enlightened various aspects

involving provisions, sections, emerging changes in labelling system like Allergen labelling, NL tolerances, NRC labelling, food additives labelling & many others. Furthermore, she briefly explained the new format of nutritional labelling introduced this year. Later, the areas which need a slight more improvement were also discussed.

Ms Richa Mattu, Nutrition Lead at Hindustan Unilever gave presentation on "Newer formats of Nutritional Labelling: Tabular, Graphic, Traffic light signal, etc". She focused on front of pack nutritional labelling. In that, she spoke about Informative & Interpretative labels, Multiple traffic lights, Nutri Score, single logo, warning label & health star ratings. She briefed the audience about the characteristic points that should be considered in FOP labelling system. She further explained about the Guideline Daily Amount (GDA) & calculation of Nutri Score with the help of multiple examples.

In addition, she mentioned about the ways of implementation of these system in other developed countries. At closure of her talk, she summarized the FOP labelling with respect to visual expressions, categories & the nutrients in scope.

Mr Krishna Kumar Joshi, Head in Regulatory Affairs, ITC Limited talked on "Effective Food Labelling: Regulatory compliance & consumer understanding". Initially, Mr Joshi talked about Impact of Food Labelling System on Food Choices. He spoke about the difference between original label & new label, and the modification made on the new label such as font size, visibility, complete listing of added sugar, Daily values (%) for vitamins & minerals. Most importantly, he had put light on Indian Labelling & Display Regulations 2020 & the Key Amendment Parameters which is coming under action.

He advised the webinar attendees on ensuring key compliances while reviewing Label or Artwork by sharing couple of examples on it. He also gave a short summary on important key points which are included in FSS Bill 2020 & Consumer Protection Act 2019.

Audience queries/questions was answered by the respective speakers after each presentation. It helped to build strong connection between the audience & speakers.

Dr Anirudha Chhonkar, Head of regulatory advocacy, Nestle India Ltd, Ms Ranjeet Kaur, Scientific & regulatory affairs lead, Mars Wrigley India, Ms Nadiya Merchant, Senior manager in Nutrition, Kellogg India Private Ltd, Ms Meenu Yadav, Manager in scientific & regulatory affairs, Mondelez India were the dignified panellists for the session.

The panel discussion was conducted by Dr Joseph Lewis, Food regulatory consultant. In discussion, several questions were asked to each panellists regarding Food labelling & their perspective on the emerging changes in Labelling & Display laws. It was a very fruitful &problem solving panel session which benefited the audience.

Giving the vote of thanks, Ms Anuja Padte, Food Scientist, PFNDAI thanked all the speakers and panellists for taking time off and joining PFNDAI and giving valuable inputs. She also thanked the participants as well as the organisers of the event.

REPORT OF PFNDAI Webinar ON 'FORTIFICATION OF FOOD PRODUCTS - PRINCIPLES, OPPORTUNITIES, CHALLENGES'

Held Virtually On Thursday 18th February 2021
At 3:00 Pm On Zoom Meeting Platform

AUTHOR
Ms Anuja Padte,
Food Scientist PFNDAI

Protein Foods & Nutrition Development Association of India with the support of Hexagon Nutrition Pvt Ltd had organized a webinar on 'Fortification of Food Products- Principles, Opportunities, and Challenges on Thursday 18th February
The webinar started with an introductory video of Hexagon Nutrition highlighting their products and services.

Dr J S Pai, Executive Director, PFNDAI gave a welcome address where he welcomed all the speakers, chairs, and panelists and also thanked the delegates for attending the session in a large number. He also thanked Hexagon Nutrition for coming forward and providing the needed support for the Webinar.

Mr Arun Lal, Sr. Vice President, Hexagon Nutrition added a few words and thanked PFNDAI for organising an Intellectual and knowledgeable seminar and for providing knowledge to the food industry members and students through these mediums.

Ms Swechha Soni, Manager Food & Nutrition, PFNDAI gave a warm welcome and introduced the speaker's Ms Madhavi Trivedi, Senior Associate Director –

Nutrition and Scientific Affairs, AMEA, Mr Kannan B, Assistant Manager - Regulatory Affairs, ITC-Foods Division, Mr Arun Lal, Senior Vice President, Hexagon Nutrition and Dr Jagdish Pai, Executive Director, PFNDAI & Panel Members Mr Yogesh Vaidya, Head, Contract Manufacturing, Britannia Industries Ltd, Mr Prashant Bhat, Chief R&D Officer, Mother Dairy Fruits & Vegetables, Dr R Govindarajan, Head R&D, Zydus Wellness Ltd & Ms Geeta Parab, Senior Manager R&D, General Mills.

The session started with the first presentation by Dr J S Pai, Executive Director, PFNDAI on *Introduction to Food Fortification*. He briefed on Micronutrient Deficiency and about the survey conducted by the CNNS on the nutritional status of Indian children and adolescents. He also gave insight into the surveys conducted by various educational institutions on micronutrient deficiency in children. He further explained about food fortification and how it is carried out globally through the common foods eaten and accepted by everyone in the daily diet. He also spoke on the steps taken by FSSAI towards food fortification and how it is allowing the industries to make their products more nutritious by food fortification and also gave examples of some Food Ingredients like Oil, Wheat flour, Milk, Salt, and polished rice and what are the benefits of these products if fortified. He took a few questions by the audience.

The 2nd talk of the session was by Mrs Madhavi Trivedi, Senior Associate Director – Nutrition and Scientific Affairs, AMEA on *Role of fortified foods in India: Opportunities and way forward* where she gave statistics on child mortality due to micronutrient deficiencies and what is the prevalence of hidden hunger globally. She also briefed about the Impact of micronutrient inadequacies across the life span and shared data on Micronutrient Malnutrition in India that reports more than 6,000 children below the age of 5 die per day and half of these deaths are caused because of micronutrient deficiency diseases. She further spoke on the factors of determinants of the Micronutrient deficiencies and strategies to combat micronutrient malnutrition and highlighted the 4 primary ways a

person can get micronutrients in their systems such as Dietary Diversity, Food Fortification, Supplementation, and Bio fortification. She also spoke on the types of fortification & what are the widely used fortified foods. At the end of her talk, she shared data on the fortified foods & their impact measured through a national consumption survey and what are the effective ways of tackling Hidden hunger. She took a few questions by the audience.

The next talk of the session was by Mr Arun Om Lal, Senior Vice President, Hexagon Nutrition on *Challenges and Opportunities in the Nutraceutical industry, during and post-pandemic* where he first introduced the audience on Nutraceutical industry & briefed about the 2 divisions that come under Nutraceutical industry i.e. Functional food & beverages (80%) and Dietary supplement (20%). He also gave an overview of the Global Nutraceutical Industry and also about the Indian industry separately. He further spoke on what are the Factors Driving the Growth of the Nutraceutical Markets in India. He also highlighted a few Gazette Notifications issued by FSSAI. He further spoke about the Industry trends where he mentioned various fortified foods such as Bread, Juices, Flavoured Milk, Cereals, and Oils and also the Health and dietary supplements products which are fortified. He took a few questions by the audience.

The last speaker but not the least for the session was Mr Kannan B, Assistant Manager - Regulatory Affairs; ITC- Foods Division spoke on *FSSAI Regulations on Fortification of Foods with special emphasis on Oil & Milk* starting his talk with the Global Micronutrient Deficiency. He also shared data on the Global Status of Milk and Oil Fortification and also gave a Brief Overview of the India Fortification Regulation. He also spoke on the standards of fortification where he mentioned the General principles and also highlighted the FSSAI regulations for fortification. He also briefed on the Packaging & Labelling Requirements and mentioned the draft which came out in Nov 2020 regarding the Fortification Logo. He shared informative data on Fortification which included Fortification of foods Regulations & Micronutrient levels for Vegetable Oil, Milk, and Milk Powder.

At the end of his talk, he briefed about the Factors Contributing to the Success and Sustenance of Fortification Programs in India. He took a few questions by the audience.

The presentations by the speakers were followed by a panel discussion which was moderated by Dr J S Pai. The panelists for the session were Mr Yogesh Vaidya, Mr Prashant Bhat, Dr R Govindarajan, and Ms Geeta Parab. There were a few questions taken by the panel which included Claims on the addition of Vitamins to Milk and Oils, Nutrients for fortification, Rice fortification, and standards given by FSSAI for using the Fortification logo, Measuring of Bioavailability of Nutrients added as fortificants and Iron fortification in any product.

A short Q & A followed after the panel discussion addressing some of the queries raised by the audience. There were also some very interesting and informative videos played after each talk by the speakers on food fortification, flour fortification, rice fortification, milk fortification created by Hexagon Nutrition. The videos made the session much valuable.

The webinar ended with a vote of thanks to all the Honourable Speakers, Sponsor, and the delegates by Ms Swechha Soni.

Speaker's : Mr Arun Om Lal , Hexagon Nutrition & Mr Kannan B , ITC Food Division

Members of the Panel Discussion : Dr J S Pai , Mr Prashant Bhat , Dr R Govindarajan , Ms Geeta Parab , Mr Yogesh Vaidya

REGULATORY ROUND UP

By
Dr. N. Ramasubramanian,
Director, VR FoodTech,
n.ram@vrfoodtech.com

Dear Readers

Please find below FSSAI notifications, advisories, orders, etc since the last round up. Please take all the care and stay safe.

Final Gazette Notifications

A corrigenda for FSS (Foods for Infant Nutrition) Regulation, 2020 has been issued.

Final notification on the standards of Shea butter and Borneo Tallow has been published.

Draft Notifications

FSSAI is seeking comments on the draft guidance document for setting MRLs for pesticides in food commodities. The select committee set up by FSSAI has drafted a general guidelines for setting MRLs in food commodities by taking into account the toxicological information, ADI, Acute reference dose, Dietary and risk assessment, etc.

Advisories and Orders, Guidance Notes and Others

FSSAI has published a standard operating procedure for applying for certificate for fortified products under FoSCoS.

A method for determining iron filings in Tea.

Certain draft amendments concerning Licensing and Registration have been operationalized.

Appellate authority for import and export units and for Science and Standards divisions has been announced.

License of manufacturers of Packaged Drinking Water would be renewed by FSSAI only after due process has been completed with Bureau of Indian Standards.

A summary of list of documents required for the application/modification of license for different kinds of business activities. Hope this will minimize the "back and forth" between the licensing authority and the Food Business Operator

In 2018, major amendments were proposed in FSS (Licensing and Registration) Regulation, 2011. Subsequently, as it was taking time to come out with the final regulation, the said draft was operationalized. FSSAI vide its letter dated 19 March 2021, the draft has been further re-operationalized.

RESEARCH IN HEALTH & NUTRITION

Could Drinking Coffee Reduce Men's Chance Of Hearing Loss? Study Says So

Coffee is already known to have some health benefits to drinkers but could men also protect their hearing?

Emily Cope
Independent 04 February 2021

For years, coffee has been shown to combat liver disease, type II diabetes and even increase life expectancy. Now a new study has revealed that men who drink a cup per day may also be reducing their risk of age-related hearing loss.

Researchers from the Autonomous University of Madrid found that men who drink at least one cup of coffee per day, and as many as four and a half cups, were 15 per cent less likely to lose their hearing over time than those who don't drink coffee.

The study - which saw the team use data from 37,000 people at the UK Biobank - suggested that the reason for the link between coffee drinking and better hearing is because of the natural antioxidant and anti-inflammatory properties in the beverage.

The study monitored the coffee intake of 36,923 middle-aged and older men and women over the course of 11 years. And the research suggests the coffee in question does not need to be served in a particular way, with caffeinated, decaffeinated, filtered and unfiltered, all reaping the same auditory rewards.

But the study did only find the benefits applied to male participants, with women in the study not seeing the same results. The researchers suggested that this could be down to differences in physiology between the sexes.

Women have a natural hearing advantage, as the hormone oestrogen is known to protect against age-related hearing loss. With high volumes of the hormone already circulating in the female blood stream, the researchers say that the impact of diet is perhaps "less relevant". For men – who have lower oestrogen levels – the impact of supplementary dietary items like coffee might be useful as a way of mitigating higher risk of hearing loss in the future.

"Coffee consumption might have a beneficial effect on hearing function because of the antioxidant and anti-inflammatory properties of some of its compounds," said the researchers. Their hearing of participants was checked at the start of the study, and again in two follow-up examinations.

The results took into account the potential effects of other health and lifestyle factors, such as whether participants smoked or if they worked in a particularly loud environment.

Despite the benefits, Dr Marcos Machado-Fragua warned that this is not a reason to consume coffee "to excess in a bid to prevent hearing loss, especially in people who have health problems related to caffeine consumption".

UK study reveals quercetin's anti-inflammatory effects in blood vessel cells

05 Feb 2021 Nutrition Insight

A UK study from the Quadram Institute has identified how quercetin may reduce heart disease risk by reducing vascular inflammation. Quercetin is a common polyphenol compound found in onions, apples, tea, broccoli and other leafy vegetables, which may be able to alter metabolic processes in endothelial cells – the cells lining blood vessels.

"This research provides evidence of a mechanism that may explain why people who consume the highest quantities of quercetin in their diets have a lower risk of developing cardiovascular diseases," says Dr. Paul Kroon, who led the study.

Altering purine

The study published in Molecular Nutrition & Food suggests that quercetin's anti-inflammatory effects in blood vessel lining centres on its role in purine metabolism.

Purines are key compounds across all forms of life, involved in signalling and metabolic processes, and are part of the way cells use and store energy. Further experiments showed that quercetin and its modified forms inhibit certain enzymes involved in purine processing.

The problem of inflammation

Inflammation is a natural process used by the body to protect itself against immediate harm, but it can have chronic effects if it is prolonged over time. Ongoing endothelial inflammation may develop into atherosclerosis, a major contributor to heart disease. High blood glucose levels due to diabetes or eating a carbohydrate-rich meal can exacerbate these cells' inflammation.

Creating a model

The findings come from a study using cultured endothelial cells collected from blood vessels in donated umbilical tissue. Human umbilical vein endothelial cells (HUVECs) can be grown in the lab to provide a useful model of the way endothelial cells in blood vessels behave. This model system has been used extensively in the study of diabetes and cardiovascular disease.

Previous studies with HUVECs showed how endothelial cells react to inflammation triggers, as well as elevated glucose concentrations. The aim of the new study was to understand the effects of quercetin on HUVECs, and also to see if it could mitigate the pro-inflammatory triggers.

Identifying the mechanism

The research team used metabolomics to look at a wide range of HUVEC metabolites under pro-inflammatory and high glucose conditions. They then compared these results with the metabolite profile in the presence of quercetin.

The researchers show that high glucose concentrations and pro-inflammatory treatments affect how the cells generate and use energy. However, the changes were ameliorated by quercetin and its modified forms, leading to more anti-inflammatory and fewer pro-inflammatory metabolites.

An open approach

The strength of this metabolomics approach is that it is untargeted, rather than concentrating on one gene, metabolite or process. This gives a wider picture of the systemic response. It can also take into account how quercetin itself, once taken up, is modified by the cells into different forms. The research was funded by the Biotechnology and Biological Sciences Research Council (BBSRC), part of UK Research and Innovation (UKRI).

Quercetin across industry

This week quercetin was spotlighted as a key ingredient in Anagenix's new Viro-Defence Lung Formulation. It is designed to support those with "increased risks of inappropriate inflammation and cytokine storms associated with viral infections." Quercetin also features in SternLife's Immune Protect concept, along with green tea, licorice root, the Ayurvedic medicinal plant Andrographis paniculata and other vitamins and minerals.

It is positioned for a positive effect on respiratory function and to exert anti-inflammatory action. The compound has also been known to increase the effects of zinc, an important micronutrient associated with the immune system.

Edited by Missy Green

Childhood diet has lifelong impact

February 3, 2021 Science Daily

Eating too much fat and sugar as a child can alter your microbiome for life, even if you later learn to eat healthier, a new study in mice suggests. The study by UC Riverside researchers is one of the first to show a significant decrease in the total number and diversity of gut bacteria in mature mice fed an unhealthy diet as juveniles.

"We studied mice, but the effect we observed is equivalent to kids having a Western diet, high in fat and sugar and their gut microbiome still being affected up to six years after puberty," explained UCR evolutionary physiologist Theodore Garland. A paper describing the study has recently been published in the Journal of Experimental Biology.

The microbiome refers to all the bacteria as well as fungi, parasites, and viruses that live on and inside a human or animal. Most of these microorganisms are found in the intestines, and most of them are helpful, stimulating the immune system, breaking down food and helping synthesize key vitamins. In a healthy body, there is a balance of pathogenic and beneficial organisms. However, if the balance is disturbed, either through the use of antibiotics, illness, or unhealthy diet, the body could become susceptible to disease.

In this study, Garland's team looked for impacts on the microbiome after dividing their mice into four groups: half fed the standard, 'healthy' diet, half fed the less healthy 'Western' diet, half with access to a running wheel for exercise, and half without. After three weeks spent on these diets, all mice were returned to a standard diet and no exercise, which is normally how mice are kept in a laboratory. At the 14-week mark, the

team examined the diversity and abundance of bacteria in the animals.

They found that the quantity of bacteria such as Muribaculum intestinale was significantly reduced in the Western diet group. This type of bacteria is involved in carbohydrate metabolism. Analysis also showed that the gut bacteria are sensitive to the amount of exercise the mice got. Muribaculum bacteria increased in mice fed a standard diet who had access to a running wheel and decreased in mice on a high-fat diet whether they had exercise or not.

Researchers believe this species of bacteria, and the family of bacteria that it belongs to, might influence the amount of energy available to its host. Research continues into other functions that this type of bacteria may have. One other effect of note was the increase in a highly similar bacteria species that were enriched after five weeks of treadmill training in a study by other researchers, suggesting that exercise alone may increase its presence.

Overall, the UCR researchers found that early-life Western diet had more long-lasting effects on the microbiome than did early-life exercise. Garland's team would like to repeat this experiment and take samples at additional points in time, to better understand when the changes in mouse microbiomes first appear, and whether they extend into even later phases of life. Regardless of when the effects first appear, however, the researchers say it's significant that they were observed so long after changing the diet, and then changing it back. The takeaway, Garland said, is essentially, "You are not only what you eat, but what you ate as a child!"

Coconut and COVID-19: Philippines DOST-led study reveals virgin coconut oil reduce symptoms in suspected patients

By Guan Yu Lim
27-Jan-2021 – NutraIngredients Asia

A recent study led by the Philippines Department of Science and Technology (DOST) revealed that suspectedCOVID-19 patients administered with virgin coconut oil(VCO) had reduced symptoms and a faster recovery phase compared to the control group.

Conducted by the Food and Nutrition Institute (FNRI) at DOST, the findings were presented in a virtual briefing by DOST Secretary Fortunato dela Peña. The study recruited 57 suspected COVID-19 patients in two quarantine facilities in Laguna, Santa Rosa Community Hospital Isolation Unit and Santa Rosa Community Isolation Unit.

According to the country's Department of Health, suspected COVID-19 patients are defined as the presence of symptoms including cough, cold, body ache, headache, loss of taste, fever as well as recent travel history. In the treatment group, 29 subjects were administered liquid VCO mixed with their meals for 28 days. Subjects were given 0.6mL of VCO/kg body weight for day 1 to 3, and increased to 1.2mL of VCO/kg bodyweight for day 4 to 28. The other 28 subjects were the control.

According to project leader, Dr Imelda Angeles-Agdeppa, director of DOST-FNRI, the primary outcomes of the study were diminishing signs and symptoms such as better breathing, and lesser frequency of coughing, as well as lower levels of C-Reactive Protein (CRP).

Dr Angeles-Agdeppa told NutraIngredients-Asia that, symptoms in the VCO group significantly reduced by day two, while the control group only saw symptoms reduced at day three. In addition, the VCO group observed no symptoms by day 18, compared to day 23 in the control group. "This result signals faster recovery in the VCO than in the control group, which is likely supported by the early improvement in the C-Reactive Protein (CRP) levels." CRP is a marker to identify inflammation in the body.

Dr Angeles-Agdeppa said VCO's anti-viral properties were its likely mechanism in reducing symptoms. Coconut oil contains lauric acid and monolaurin which can disintegrate the virus envelope, inhibit virusreplication, and prevent the binding of viral proteins to the host cell membrane. "Through this study, it was hoped that VCO can be used as a supplement to improve the health condition of the individuals considered as suspect or probable cases and to also reduce the number of days of stay in the hospital or quarantine facility ," Dr Angeles-Agdeppa added.

Earlier in January 2021, Marco Reyes, president of the United Coconut Associations of the Philippines, urged the country to explore VCO as therapeutic for COVID-19 as well as a wide range of viruses that afflict humans. It must be noted that VCO is not a cure, but an adjunct therapy that could prevent COVID-19 from becoming severe. This study was

done on suspected COVID-19 patients, and not COVID-19 patients with a higher viral load and more severe symptoms.

DOST-PCHRD is currently monitoring a hospital study in Manila which will recruit 74 patients. The study is expected to complete by June 2021. "The objective of the study is to determine the safety and efficacy of VCO as adjunctive therapy for COVID-19cases specifically, the safety of VCO through clinical parameters such as lipid profile, fasting blood sugar and creatinine and the efficacy of VCO though recovery from symptoms and virus clearance."

Besides VCO, DOST has also funded a melatonin study in COVID-19 patients. According to Dr Jaime Montoya, executive director of the Philippine Council on Health Research and Development (PCHRD) at DOST, this is the first study on the use of high dose melatonin in COVID-19patients with pneumonia. "Melatonin is not a direct viricidal agent, but it may help neutralise the deleterious effects of the SARS-CoV-2 that causes COVID-19."

"Melatonin may exert a beneficial role as adjuvant therapy in the regulation of the immune system, inflammation and oxidation stress, to mitigate the complications of acute lung injury/acute respiratory distress syndrome and related multi-organ complications."

Elsewhere, Indonesia is also studying VCO as a potential adjuvant therapy in COVID-19 patients. Headed by Dr Ika Trisnawati of Gadjah Mada University, the randomised clinical trial will recruit 60 participants. The intervention group will be given 15mL of VCO twice a day for two weeks.

Cognition and ageing: B-vitamins, omega-3 intake reduces decline in East Asian elderly – meta-analysis

By Tingmin Koe
08-Feb-2021 – NutraIngredients Asia

The supplementation of B-vitamins and omega-3, specically EPA and DHA, could reduce cognitive decline in elderly, a meta-analysis of RCTs conducted in East Asia has shown.

The effects of the supplementation were more significant in elderly who already suffer from mild cognitive impairment. Researchers added that large, high-quality, long-term trials are needed to confirm the findings. Nonetheless, they believe that B-vitamins and essential fatty acids supplementation could be "promising strategies" in minimising age-related cognitive decline in Asia. Findings of the meta-analysis were recently published in Critical Reviews in Food Science and Nutrition.

This is said to be the first complete overview of nutrition intervention trials for the prevention of cognitive impairment in East Asia, including Brunei, Cambodia, China, Fiji, Indonesia, Lao's, Malaysia, Myanmar, Singapore, Vietnam. Eighteen RCTs were included in the meta-analysis. They assessed five types of intervention, including micronutrient supplementation, essential fatty acids supplementation, chicken essence supplementation, nutraceuticals, and nutritional and lifestyle counselling.

Of which, only B-vitamins and essential fatty acids supplementation showed significant evidence in reducing cognitive decline. In the case of B-vitamins, it was found that elderly with elevated homocysteine levels are more likely to benefit than those with normal homocysteine levels. Homocysteine is an amino acid which is linked to heart disease and Alzheimer's disease when present in the blood in high level. The researchers said that for the next step, large trials are needed to identify at which homocysteine level should supplementation of B-vitamins start to reduce dementia incidence.

On the other hand, EPA/DHA supplementation was found to be beneficial for improving attention and orientation in elderly with mild cognitive impairment. "In conclusion, several promising strategies, such as B-vitamin and EPA/DHA supplementation, seem to be able to decrease age-related cognitive decline in East-Asia. These nutritional strategies appear to be more effective in older subjects with impaired cognitive function," the researchers said.

The supplementation of chicken essence, certain nutraceuticals, and adapting a nutritional and lifestyle counselling did not lead to significant reduction in cognitive decline amongst elderly. Chicken essence was found to improve single neuropsychological test scores, but researchers said the overall quality of the trials was low, thus, there was a lack of evidence.

"We did not find any additional evidence in favour of chicken essence and conclude that based on the current data chicken essence does not seem a promising strategy for prevention of cognitive

impairment," they said. Some nutraceuticals assessed in the meta-analysis, such as L-carnitine and soy-isoflavone also did not lead to significant improvement.

Only one RCT covered in the meta-analysis studied the effects of L-carnitine supplementation. The researchers believe that as the study had a small sample size of 50 subjects and a short intervention duration of 10 weeks, this could have led to the inability to detect beneficial effect of L-carnitine. On the other hand, since soy is already a staple food in Asia, the researchers said that supplementation is unlikely to lead to improvements. "It seems more effective to focus on nutrients that are lacking in the general diet of East-Asian population, than nutrients that are already consumed in a relatively high amount," they said.

Microbiome and COVID-19: Lower levels of key gut bacteria linked to severity of disease and immune response – China data

By Gary Scattergood
12-Jan-2021 – NutraIngredients Asia

The composition of patients' microbiome may influence the severity of COVID-19, as well as how the immune system responds to the infection, according to new research from China, which found lower numbers of F. prausnitzii and Bifidobacterium bifidum to be particularly detrimental. Imbalances in the make-up of the microbiome may also be implicated in persisting inflammatory symptoms, so-called 'long COVID', the findings suggest.

Researchers from The Chinese University of Hong Kong obtained blood and stool samples and medical records from 100 hospital in-patients with laboratory-confirmed COVID-19 infection between February and May 2020, and from 78 people without COVID-19 who were taking part in a microbiome study before the pandemic.The severity of COVID-19 was classified as mild in the absence of x-ray evidence of pneumonia; moderate if pneumonia with fever and respiratory tract symptoms were detected; severe if patients found it very difficult to breathe normally; and critical if they needed mechanical ventilation or experienced organ failure requiring intensive care.

To characterise the gut microbiome, 41 of the COVID patients provided multiple stool samples while in hospital, 27 of whom provided serial stool samples up to30 days after clearance of SARS-CoV-2, the

virus responsible for COVID-19. Analysis of all 274 stool samples showed that the make-up of the gut microbiome differed significantly between patients with and without COVID-19, irrespective of whether they had been treated with drugs, including antibiotics.

COVID patients had higher numbers of Ruminococcus gnavus , Ruminococcus torques and Bacteroides dorei species than people without the infection. And they had far fewer of the species that can influence immune system response, such as Bifidobacterium adolescentis , Faecalibacterium prausnitzii and Eubacterium rectale. Lower numbers of F. prausnitzii and Bifidobacterium bifidum were particularly associated with infection severity after taking account of antibiotic use and patient age. The numbers of these bacteria remained low in the samples collected up to 30 days after infected patients had cleared the virus from their bodies.

Writing in the journal, Gut , the researchers noted: " In identifying microbial species associated with disease severity, we found that F. prausnitzii and Bifidobacterium bifidum were negatively correlated with severity after adjusting for antibiotic use and patients' age. Relative abundances of several other microbial species typically abundant in the human gut including B. adolescentis and E. rectale also showed reductions with increasing disease severity although these were not statistically significant."

Analysis of the blood samples showed that the microbial imbalance found in the COVID patients was also associated with raised levels of inflammatory cytokines and blood markers of tissue damage, such as C-reactive protein and certain enzymes. This suggests that the gut microbiome might influence the immune system response to COVID-19 infection and potentially affect disease severity and outcome, say the researchers.

The researchers added: "Associations between gut microbiota composition, levels of cytokines and inflammatory markers in patients with COVID-19 suggest that the gut microbiome is involved in the magnitude of COVID-19 severity possibly via modulating host immune responses. Furthermore, the gut microbiota dysbiosis after disease resolution could contribute to persistent symptoms, highlighting a need to understand how gut microorganisms are involved in inflammation and COVID-19."

They went on to state: "In light of reports that a subset of recovered patients with COVID-19 experience persistent symptoms, such as fatigue, dyspnoea [breathlessness] and joint pains, some over 80 days after initial onset of symptoms, we posit that the dysbiotic gut microbiome could contribute to immune-related health problems post-COVID-19."

The researchers cautioned that as this is an observational study, they can't establish cause. They added that the gut microbiome varies widely among different populations, so the changes observed in this study may not be applicable to other COVID patients elsewhere.

However, they concluded: "Bolstering of beneficial gut species depleted in COVID-19 could serve as a novel avenue to mitigate severe disease, underscoring the importance of managing patients' gut microbiota during and after COVID-19."

More than iron and folate: Multi-micronutrient supplementation recommended in Asia for preconception and during pregnancy

By Guan Yu Lim
10-Feb-2021 – NutraIngredients Asia

Researchers are recommending a multi-micronutrient supplementation beyond iron and folate for women of reproductive age, pregnant and lactating, according to an Asian study funded by Bayer South East Asia.

Iron and folate are the most common micronutrient supplements recommended to women planning a pregnancy, during pregnancy and postpartum, to reduce outcomes such as maternal anaemia, low birth weight, pre-term birth and neural tube defects. Analysing seven countries, namely Singapore, Indonesia, Thailand, Vietnam, Philippines, Hong Kong, and Taiwan, researchers said other micronutrients such as vitamin B12, or those which help enhance nutrient absorption can be taken together to reduce risks of deficiencies as well as infections. "Current supplementation strategies often focus on just one or two micronutrients such as iron–folate supplements, which could limit their effectiveness in view of multiple nutrient deficiencies and associated adverse outcomes ," they wrote.

First author, Mary Chong Foong Fong from the National University of Singapore told NutraIngredients-Asia: "Other important micronutrients that are often found lacking in current diets include calcium, vitamin D andomega-3 fatty acids." The data was extracted from national surveys, sub-national cohort studies, systematic reviews and the World Health Organization (WHO) databases.

Findings were published in the Women's Health journal.
The International Federation of Gynecology and Obstetrics (FIGO) recommends additional daily iron, folate and vitamin B12 supplementation in women planning for a pregnancy, during pregnancy, and the first three months postpartum.

Analysing the pre-pregnancy group, researchers highlighted a lack of data in micronutrient intake and status. Iron intake was lowest in the Philippines, Taiwan, Thailand and highest in Singapore, Indonesia and Vietnam. Data on iron status (plasma levels) was only found for Vietnam which reported more 10% iron deficiency in this group.

Data on folate intake in this group was only available from Thailand, which found mean intake less than half the minimum recommended by FIGO. Folate status for Taiwan, Vietnam and Indonesia revealed most were not deficient but about 20% were folate-insufficient.

Data on vitamin B12 intake was also limited, with only Vietnam reporting less than half the recommended intake by FIGO, although mean plasma levels showed no deficiency.

These findings suggest that iron, folate and vitamin B12 intake was low or borderline sufficient among women in these regions, despite local intake recommendations in all seven regions being largely consistent with those of FIGO. The scarcity of micronutrient data is more prominent in pregnant women than in women of reproductive age.

Data on iron intake for pregnant women were only available for Vietnam, Thailand, and Indonesia. Intake was reported to be below the recommended levels by FIGO for pregnant women. Only Singapore and the Philippines presented data for iron status which found median levels slightly above the WHO cut-off level for deficiency.

Data on folate intake and status was also scare and only available from Vietnam and Singapore. Intake was within the range recommended by FIGO, and median plasma folate levels were above the WHO cut-off level for deficiency.

For vitamin B12, intake and status data were also limited. Vietnam's data on intake was above the FIGO recommendation and Singapore's data for median plasma levels was above the cut-off for deficiency.

Researchers said the lack of data on folate and vitamin B12 makes it challenging to come to any conclusive findings, although it can be inferred with existing trends found in women of reproductive age. They highlighted that gaps in national data on micronutrient intake and status could hinder the effective management of other micronutrient deficiencies.

Researchers recommend that studies with standardised methodology can help identify deficiency in women throughout the reproductive years, and can guide policy makers and governments in developing programs and interventions.

The study revealed the existence of micronutrient intake recommendation, food fortifications, and supplementation programmes, however only few countries implemented such programmes, and there is limited data. For example, in Indonesia, the Philippines, and Thailand, fortification of staple foods, such as flour or rice with specific micronutrients (iron, folate, or B vitamins), is mandatory, and iodisation of salt is mandatory in most South East Asian regions.

Differentiation across children's nutrition category amid growing understanding of gut health needs

18 Feb 2021 Nutrition Insight

While infant nutrition has long been an industry mainstay, children have historically been grouped with adults. However, a shift is starting to occur as new research pinpoints the unique needs of children.

NutritionInsight speaks with experts from Beneo and Lallemand Health Solutions about key demands in this space, including immunity and mood.

"Currently, everyone above three years of age is seen as 'general population,' and as such, adult requirements apply," says Anke Sentko, vice president of regulatory affairs and nutrition communication at Beneo. "I believe that this will become more differentiated in the future, as the benefits of specific nutritional support at key life stages become more widely understood," she adds.

This has been reflected in the latest Dietary Guidelines for Americans, which are the first set that provides guidance for healthy dietary patterns by life stage – including children and adolescents. Beneo also sees growth in particular areas of new product concept development for children.

"This is because parents are looking to help their children with specific issues. For example, more parents are looking to increase their children's focus in these challenging times of home-schooling and disruption, and are wanting healthier energy delivery alternatives as a result," explains Sentko.

Overcoming a "one-size-fits-all" approach to immunity

Sentko emphasizes that every adult and child, no matter their age or location, has different needs, so a "one-size-fits-all" approach toward nutrition is not possible. "There are, however, age-related needs that can be improved using specific nutritional support. For example, we know that kindergarten-age children are particularly susceptible to infectious diseases during the winter months."

Studies have shown that the risk of such infections can be reduced by incorporating prebiotic chicory root fibre into the daily diet of children. This supports their microbiota in a natural way, strengthens their inner defences and improves digestive health.

Morgane Maillard, marketing manager at Lallemand Health Solutions, adds that the gut microbiota represents the first line of defence in the gut, forming a protective barrier along the intestinal lumen and also through several biological mechanisms.

"As immunity improves with age, the needs to support immunity are different depending on age category. In children, the immune system is still building up," she explains. This is a particular concern for parents of children in the first years of socialization via school. This is when repeated health events occur, impacting the whole family's quality of life. Teenagers' lifestyles and occasional stress can also be linked to sub-optimal immunity, Maillard adds.

Avoiding tummy troubles

Digestive health itself is also important, with Maillard noting that constipation is the most common disorder in children. Many forms of gut discomfort can be linked to poorly balanced diets, impacting gut microbiota composition.

This is especially true in teenagers, who are prone to insufficient fruit and vegetables intakes and high consumption of sugary sodas, sweets, snacks and fast food.
"Additionally, Irritable Bowel Syndrome (IBS) is increasingly

diagnosed in young populations, and it increases with age. Incidence in children is 8-17 percent, but 13-38 percent in adolescents," she continues. IBS is associated with daily discomfort, with impacts on sleeping behaviour and stress. Lallemand Health Solutions is addressing this with its B. lactis LAFTI B94, which has been granted health claims in Canada for IBS in children and teenagers. In a study performed on 71 children and teenagers, the strain significantly improved bloating, belching–abdominal fullness and occasional constipation. It also has good synergy with fibre, for example, during the breakdown of fructooligosaccharides and inulin.

Starting the day in a good mood

Increasing demands from the adult market for brain and mood support have also trickled into the children's nutrition sphere. Maillard explains that when children and teenagers are exposed to stressful situations, they are not always equipped to deal with them and sleeping issues can arise. Specific probiotics have shown the ability to alleviate both physiological and psychological signs of stress in healthy individuals without side-effects, representing a natural and safe alternative for stressed teenagers. Meanwhile, Beneo's Palatinose sugar alternative can also provide a boost to mental health. A study found that a Palatinose-based breakfast beneficially influences children's memory and mood throughout the morning compared to a glucose-based one. "Although all the children initially did well after breakfast, those eating the Palatinose breakfast maintained a significantly better memory performance later in the morning, both in immediate and delayed memory tests," explains Sentko. Moreover, these children were also in a better mood later in the morning – rating their mood as significantly better than those who had eaten the glucose breakfast.

Palatinose-based breakfasts were found to have a positive impact on children's mood.

Maintaining oral health

Another major concern for the child nutrition market is dental caries, which impact school-age children globally. Maillard explains that dietary factors and eating patterns can have an impact on oral health. Therefore, control over the dietary intake of sugars and other ingredients associated with oral health conditions is an important factor in the maintenance of oral health. "Just as the gut, the oral cavity harbours a rich and complex microflora. A balanced oral microflora seems to be a key to maintaining good oral health," she says. Therefore, probiotics can help maintain oral health, she continues. "They represent a more natural and gentle approach to maintain undesired bacteria at bay, which is in-line with consumers' rising demands for natural solutions."

Appealing delivery formats

Packaging and children-friendly flavours are a key element of making nutraceuticals like probiotics appealing to children, affirms Maillard.
"Personalized delivery formats play a big role, as kids prefer chewable tablets or oro-dispersible powder in sachets or sticks. For kids with gut discomfort, such as occasional diarrhea, a dual-chamber sachet can combine probiotics with a rehydration salt, just to name one tailored combination," she illustrates. Sentko also emphasizes the importance of the outward appearance of F&B packaging when appealing to children.
"However, as long as the purchase decision is made by parents, having a creative and fun exterior isn't enough. According to recent Beneo research, parents have high concerns relating to sugar and are looking for products that are lower in sugar, less sweet and kind to teeth."
Therefore, products that can deliver on taste while helping deliver some "hidden" fruit and vegetables can find favor with health-conscious parents seeking permissible snacks for their children.

Casting predictions for the future

Maillard identifies an emerging trend for addressing skin issues via probiotics. This is especially relevant to teenagers going through hormonal changes, which – along with stress and poor diets – can trigger problems like acne. The COVID-19 pandemic has exacerbated this, as wearing a mask during school hours can cause further skin difficulties.
Meanwhile, Sentko predicts that a decade from now, the children's nutrition market will be even more segmented in order to address children's diverse requirements. According to Innova Market Insights, the top health positionings of food, beverages and supplements targeting children are No Additives/Preservatives, Gluten-Free, Organic and High/Source of Protein (Global, 2020). These illustrate the type of specific demands emerging in this market.

By Katherine Durrell

Game on: Potential for non-caffeine nootropic ingredient in e-gaming, memory, fluid intelligence, says Enovate Biolife

By Tingmin Koe
03-Feb-2021 – NutraIngredients Asia

Indian firm Enovate Bio says the current COVID-19 pandemic has presented growth opportunities for its plant-based nootropic ingredient – EnXtra – in the area of e-gaming.

The company is also planning to explore the use of the non-caffeine ingredient in enhancing memory and fluid intelligence.
Recently, the ingredient based on Alpinia Galanga – a plant from the ginger family – was granted a US patent for its properties in promoting mental alertness and sustained attention.

The efficacy of the ingredient has been supported by four human studies, demonstrating its effects in increasing mental alertness without causing heart or sleep disturbances.
Currently, the ingredient is incorporated in formulas for pre-workout, weight-loss, and nootropics. Delivery formats range from tablets, capsules, shots, and beverages.

The ingredient is also used in supplements targeted for enhancing e-gaming performance, which the company believes is an area for further growth, especially amid COVID-19. “The recent growth of e-gaming space since the COVID-19 pandemic is a trend which can expand Enxtra growth opportunities,” Amol Pathak, director of business and strategy told NutraIngredients-Asia.

E-gaming or eSports is loosely defined as competitive organised video gaming that are often played in front of live audiences. "In the digital age we live in, many physical aspects are shifting to digital. Sports are no stranger to this, the fact that the 2024 Olympics will have a new category for e-games is proof enough. Professional e-gaming tournaments are also picking up and the category is becoming a rage in general," he said.

Last year, the eSports market recorded a revenue of US$950 million. Asia and North America are the two largest eSports markets, with China alone accounting for almost one-fifth of the market, according to Statista.
In the case of EnXtra, the supplement is already used in UK brand Ctrl Energy’s Esports Gaming Energy’s ready-to-drink powder. The product is said to enhance mental energy, focus, and reaction time. Each 5.5g serving contains 250mg of EnXtra. It also contains ingredients associated with eye health, such as DHA powder, lutein, zeaxanthin, and L-tyrosine.

EnXtra has been incorporated in approximately 100 finished formulas “with staggering growth” since 2019, especially in the US.
The ingredient was first launched in 2017. In its first year of commercialisation, the company sold about 3.5 million servings, which grew to about 9 million in 2018 and 14.5 million in year 2019. Last year, this figure doubled to about 30 million servings.
“Since it was launched in the US in 2017, formulators and marketers have tapped into Enxtra’s benefits in diverse ways across product formats targeted towards sports nutrition, active living and cognitive enhancers.

“In principle, the growth potential is limitless also because Enxtra is developed from a natural food Alpinia Galanga, which makes it well suited for daily consumption,” Amol said.

The ingredient is also sold across Asia, Australia, Europe, and Canada with multiple marketing partners. For instance, in North America, OmniActive is the official marketing partner for the ingredient.
The company has been planning for research on the ingredients’ impact on human memory and fluid intelligence.

Fluid intelligence is defined as the ability to generate, transform, and manipulate different types of novel information in real time.
“There seems a need for more science to support the use of natural actives for improving brain cell function, blood flow and age-related cognitive decline. Enxtra has the potential to live up to this challenge in further studies,” Amol said.

CEO and founder Jayesh Chaudhary added that the company was open to conducting clinical studies on different ethnic groups. The company is also planning for a pre-clinical study to find out the ingredient’s mechanism of action, which has been delayed due to COVID-19 restrictions.

Sulforaphane supplementation improves processing speed and working memory – Kagome study

By Tingmin Koe
04-Feb-2021 – NutraIngredients Asia

Supplementation of sulforaphane (SFN) – a compound found in cruciferous vegetables such as cauliflower and broccoli – has found to improve processing and working memory in a 12-week study conducted by Japanese firm Kagome Co Ltd.

However, when combined with brain training activities, the improvement in cognitive performance was not enhanced. Findings of the study were recently published in Nutrients. The study was conducted during July 2018 to July2019 by the fruit and vegetable juice manufacturer and Tohoku University. A total of 144 adults with an average age of 67.71 completed the study.
They were randomised to four groups: 1) brain training with sulforaphane supplementation 2) brain training with placebo 3) active control game and sulforaphane supplementation and 4) active control game with placebo.

The SFN supplement contains 30mg of its precursor glucoraphanin.
The brain training activity used was Brain Age – games that include mathematical calculations to train the cognitive function, while the active control game used was Tetris.

The participants were asked to play either Brain Age or Tetris at home for 15 minutes every day for 12weeks. This is accompanied by the intake of three capsules of the supplement or placebo each day. After playing the games, the participants also needed to note down their game scores. Their scores for processing speed, attention, working memory, short-term memory were assessed.

Compared with the placebo, the groups which took the supplement recorded significant improvements in the processing speed and working memory performance, where the p-values were below 0.05. "We found a significant main effect of nutrition on processing speed and working memory performances," the researchers said. They added that the result was in line with previous evidence. For example, a 2010 study by Nurk showed that there was a positive correlation between the amount of cruciferous vegetable intake and processing speed.

The improvement could be due to the antioxidant and anti-inflammatory properties of sulforaphane. Nonetheless, they said that further studies should be conducted to measure its antioxidant and anti-inflammatory properties. Combining brain training and SFN supplementation, however, did not lead to additional improvements in cognitive performance, as compared to taking the two interventions separately.

"However, we did not find any significant main effects or interaction effects of cognitive training or nutrition on cognitive performance or emotional state," they said. They explained that this could be due to the short intervention period of only 12 weeks, and thus, was not sufficient to detect the beneficial impacts.

The paper concluded: "Although we did not find any evidence to support the intervention's beneficial effects on cognitive functions, we found that the brain training and SFN intake separately led to improvements in cognitive functions.

"The brain training group showed a significant improvement in processing speed compared to the active intervention group.
Further, the SFN intake groups revealed significant improvements in processing and working memory performance."

FOOD SCIENCE & INDUSTRY NEWS

Whole-hearted innovation: Food as medicine and "spiceuticals" gain ground in CVD prevention

10 Feb 2021 Nutrition Insight

As the COVID-19 pandemic continues to cause high-profile damage, cardiovascular disease (CVD) silently remains the number one cause of death globally, according to the World Health Organization (WHO). However, the ongoing global pandemic has highlighted the urgency to improve heart health, as CVD has been linked to more severe disease outcomes.

"Heart disease is the leading cause of death in adults in the US, and North America is anticipated to hold a major share in the heart health arena, Andrea Zangara, head of scientific communication and marketing at Euromed tells NutritionInsight. "However, Asia Pacific is expected to have the highest CAGR over the coming years," he adds. For chronic diseases, prevention is often the best medicine. But staying active, eating the right balance and fruits and vegetables can be challenges for consumers, offering opportunity for nutraceuticals to help facilitate a healthy lifestyle.

NutritionInsight speaks with Akay Natural Ingredient, Kappa Bioscience, Euromed and AstaReal on important ingredients for heart health products and how to stand out in a crowded market.

Targeting specific functions of the heart

The heart health market is very competitive, according to Andie Long, marketing and sales manager at AstaReal. "That's why there is a lot of development to be more specific about heart health benefits, such as an ingredient's effect on blood pressure, blood flow, cholesterol levels and plaque formation. These claims are likely to stand out." Dr. Krishnakumar I M, chief research officer at Akay, agrees that specific benefits are a leading area of innovation, with supplement suppliers taking inspiration from cardiovascular disease treatments. New areas to explore include using safe and natural agents as diuretics, anticoagulants or antiplatelets, antianginal agents, inotropic agents, vasodilators, sclerosing agents, anti-hypertensive agents, beta-blockers and calcium channel blockers, he details. And while these may be important in the future as nutrition moves increasingly toward personalization, heart health innovation is still in "an infant stage." Today, ingredients are mainly centred around hypercholesterolemia, bodyweight management and antioxidants, he says.

A holistic approach

Long notes that the trend toward holistic health should not be underestimated when considering heart health innovation. "Most people now look at their health and body as a whole. They don't want to take many different supplements and prefer combination products."

For example, AstaReal natural astaxanthin ticks several healthy aging boxes – from eye and muscle health to cognitive function – and can be combined with a broad range of other ingredients, she explains. The market for more cross-functional claims can also be seen in the rising demand for vitamin K2, which targets immune, bone and heart health, according to Trygve Bergeland, vice president of science at Kappa Bioscience. "Vitamin K2 plays a key role in keeping calcium in balance," he adds. With this mechanism to transport calcium into bones, K2 is also considered important for bone health. He further notes that a disturbance in the calcium balance could promote excessive inflammatory and thrombus formation, flagging the importance of keeping these minerals in balance for general well-being.

Food as medicine

Moreover, eating healthy foods has been shown to play an important role. Andrea Zangara, head of scientific communication and marketing at Euromed, asserts that the "food as medicine" concept is gaining more support. "It is largely demonstrated the Mediterranean diet promotes longevity, protects from chronic diseases and reduces deaths from heart disease 30 percent more compared with a low-fat diet," he says.

However, specific compounds of the Mediterranean diet may be more relevant than others to heart health. "Hydroxytyrosol and related polyphenol compounds from olive fruit and olive oil offer protection to the blood lipids from oxidative damage, which is known to adversely affect cardiovascular health." "Pomegranate does not have any health claims approved. However, there are hundreds of studies supporting cardiovascular vascular and endothelial benefits," he says.

The spiceuticals category

Dr. I M at Akay agrees that diet plays a critical role in promoting heart health. For those who do not manage their five to eight servings of fruits and vegetables per day and 25 g of fiber, nutraceuticals are an attractive option. "Nutraceuticals, especially those derived from food components such as fruits, vegetables and spices, can fight against the risk factors and inflammation." The R&D at Akay is engaged in developing clinically validated nutritional ingredients from spices (spiceuticals) capable of modulating the CVD risk factors safely. "There is a tremendous opportunity for natural and food-grade formulations for molecules like curcumin, gingerols and boswellic acids" he says.
However, the bioavailability of these types of phytonutrients is a big concern. To address this, Akay has developed FENUMAT technology, a natural self-emulsifying, hydrogel-mediated delivery system. The technology generates highly bioavailable and water-soluble powders for its ResQfen, CurQfen, CoQfen, Gingifen and BosQfen ingredients for pharma and food delivery forms.

Get moving

Lastly, as exercise has shown to have a significant impact in reducing the risks of CVD, Long suggests fitness positionings for heart health may be successful. For example, these could be for products that help consumers prepare for exercise, give them energy during the workout and support their recovery. Ingredients like glucosamine also show important health promise. An epidemiological study last December found that the supplement decreased the risk of mortality by an even greater degree than regular exercise, spurring further research into its potential to ward off CVD.
By Missy Green

3D-printed vegetable purees preserve nutrients and "offer dignity" to patients with dysphagia

05 Feb 2021 Nutrition Insight

Researchers have developed a novel way to create "food inks" from fresh and frozen vegetables that preserves their nutrition and flavour better than existing methods.

These purees can then be 3D-printed into appealing shapes to help ensure that people with dysphagia, a condition making swallowing difficult, consume all the nutrients they need.
NutritionInsight speaks to members of the team behind this technology, which was developed at Nanyang Technological University, Singapore (NTU Singapore), Singapore University of Technology and Design (SUTD) and Khoo Teck Puat Hospital (KTPH). "Food printing could be used as a way to realize personalized nutrition and food texture modification," says Gladys Wong, co-principal investigator and senior principal dietitian from KTPH.

Currently, healthcare professionals use silicone moulds to serve pureed foods in a more visually appetizing way. In addition to being labour- and time-intensive, this method also requires storage. "This [new technology] could improve productivity by automated printing of meals, which otherwise is labour-intensive if prepared via the conventional institutional kitchen methods."

A playground for "recipe designers"
Wong explains that 3D food printing could eventually be used as a playground for "recipe designers" like dietitians, food technologists and chefs, where they can create texture-modified recipes using any edible ingredients, including insect protein or food waste. "This can then be masked into familiar dishes of high nutritive value. Additionally, food printing technology can help standardize meal production. Regardless of who prepares the meal, it allows the production of nearly identical food with the same texture."

Avoiding hydrocolloids

Normally, food inks are made from pureed foods in liquid or semi-solid form, then 3D-printed by extrusion from a nozzle, and assembled layer by layer. However, the dehydrated food and freeze-dried powders used as food inks usually contain a high percentage of food additives such as hydrocolloids (HCs) to stabilize the ink and enable a smoother printing process. High concentration of HCs


Visually appealing meals could positively impact patients' physical health and mental state of mind.

usually changes the taste, texture and aroma of the printed food, making it unappetizing. When the technology is used to prepare food for patients with dysphagia, this may lead to reduced food consumption and malnutrition.

Exploring vegetables

To avoid high concentrations of HCs, the research team explored various combinations of fresh and frozen vegetables to make the food inks stable. Vegetables can be broadly classified into three categories, with each requiring a different hydrocolloid treatment to become printable.

For instance, garden pea, carrot and bok choy were chosen as representatives in each category, requiring no HCs, one type of HC and two types of HCs, respectively. All the vegetables are steamed and pureed before hydrocolloids are added if necessary. The final texture of the shaped products still feels like a puree.

Providing dignity

The researchers say their technique better preserves the nutrition of printed food, while also making it more palatable.

This new method of making food inks should lead to increased meal consumption by patients, contributing positively to their physical health and mental state of mind. "Our technology helps to provide dysphagic patients with adequate nutrient-rich and safe diets. Their feeding is more dignified, enabling them to socialize and consume meals that look, feel and taste like regular food," says Yi Zhang, the principal investigator from the NTU team. Zhang continues that the method can be used easily in hospitals, nursing homes and daycare centres for the aging population with dysphagia and other swallowing disorders.

As the population in many parts of the world skews increasingly elderly, industry has been addressing many health issues associated with aging.

Last year, Hormel Foods' Health Labs division unveiled Thick & Easy IDDSI Level 5 Ready Meats to provide safe, enjoyable nutrition for those on dysphagia diets. Meanwhile, SternLife developed six supplementary and seven nutritionally complete medical foods to tackle malnourishment and dysphagia.

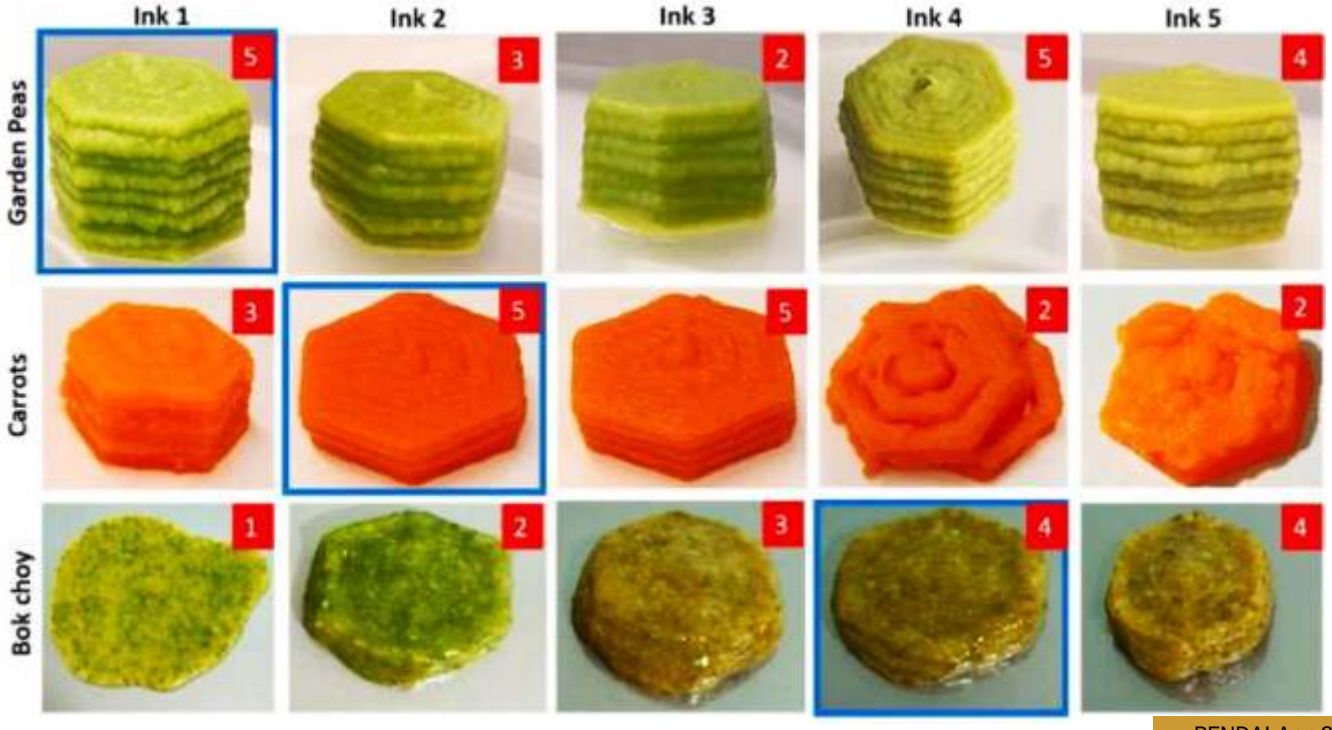
More than a novelty

The team behind the 3D-printed purees is now developing a multi-nozzle printer. Chua Chee Kai, corresponding author and the head of pillar, engineering product development at SUTD, says that this will enable easy nutrition customization. In turn, this will greatly extend the applicable scenarios of 3D food printing. "3D food printing is more than a novelty. I believe it will be a viable approach in the near future in providing sustenance and nourishment to our increasingly aging population," emphasizes Wong.

Members of the team were also behind a project last year that developed a way to 3D print milk-based products at room temperature without additives.

By Katherine Durrell

Images with blue boxes show optimized ink formulations.
Print scores in top right corner show shape fidelity and shape stability.



Mobile game that uses implicit learning improved children's short-term food choices

February 10, 2021 Science Daily

Rates of overweight and obesity in children are rising around the world, with serious long-term consequences for health and health care costs. In prior research, video and mobile games have helped children eat healthier and exercise more.

A new study examined how Indian 10- and 11-year-olds' food choices were affected by playing a pediatric dietary mobile game that uses implicit learning -- educating players without making them aware of the lessons through innovations in neurocognitive training and immersive technology. The study found that the game significantly improved children's food choices immediately after play. The study was conducted by researchers at Carnegie Mellon University (CMU), Hofstra University, Johns Hopkins University Center for Communication Programs (CCP), FriendsLearn, The Mithra Trust, Mind in Motion, the Center for Communication and Change -- India (CCC-I), and Seethapathy Clinic and Hospital. The randomized controlled trial was designed and conducted by researchers from CCC-I and CCP and the data modeling and analytics were led by CMU. The study appears in JMIR mHealth and uHealth.

“While many factors contribute to overweight and obesity, dietary decisions are a leading cause," explains Rema Padman, trustees professor of management science and healthcare informatics at CMU's Heinz College, who led the study. "Video games that are perceived by children as a fun activity rather than a learning tool present a great opportunity to change children's health behaviours by delivering relevant knowledge implicitly. We are studying such gamified interventions as 'digital vaccine' candidates that have the potential to influence lifestyle behaviour changes and lead to better health outcomes." (Digital vaccines are a subcategory of digital therapeutics, which are evidence-based, prevention approaches that use digital technologies, such as gamified applications delivered via mobile devices, to encourage positive behaviour.)

Most video games for children use explicit education strategies, such as providing answers, feedback, instructions, or suggestions to players. This study examined how an action video game called fooya!, which uses implicit learning to promote healthy eating and physical activity in children, affected actual food choices. In the game, an avatar fights robots that represent unhealthy foods, and the avatar's speed and body shape vary in response to the type of food it eats. Evidence of the effects of games that use implicit education strategies on pediatric healthy eating is limited. Using data about the clicks made by players as they played fooya!, researchers analyzed the relationship between patterns of game play and behavioural outcomes related to dietary health.

The study involved 104 children ages 10 and 11 years from three schools in Chennai, India. The children were randomly assigned to a treatment group that played fooya! or a control group that played a board game that did not feature dietary education. Children played the games for 20 minutes each in two sessions. After playing, they were shown three pairs of healthy and unhealthy food items from three categories -- drinks (water and a carbonated soft drink), savoury snacks (cashews and potato chips), and sweet snacks (raisins and a chocolate bar) -- and asked to choose two items to eat.

Children who played fooya! were more likely to choose healthy foods immediately after playing the game, the study found. Children's food choices were not influenced by how many levels of the game they played, as previous research on this topic has found, but by food facts children read while playing the game: Reading more facts about healthy foods was associated with healthier food choices, while reading more facts about unhealthy foods was associated with more unhealthy food choices, a finding the authors called counterintuitive. Nonetheless, children searched for more food facts about healthy food than about unhealthy food, which drove the overall positive effect of playing the game.

"This finding will also influence how we communicate to children about healthy food choices for behaviour change," says Uttara Bharath Kumar, technical advisor for social and behaviour change at CCP. "It is consistent with what we know from behavioural science that fear and negative communication do not work as well as positive messaging and promoting self-efficacy -- the notion that 'you can do it!'" "Nutrition and lifestyle are at the root of lifelong risk of noncommunicable and infectious diseases," explains Bhargav Sri Prakash, founder & CEO of FriendsLearn, the life science and health technology company that serves as the research translation and innovation partner of the Digital Vaccine Project at CMU. "These findings indicate the potential for societal impact by developing rigorous evidence-based science for 'digital vaccines' based on neurocognitive computing and analytics. As we build a platform of scalable, rich, game-like, engaging experiences, we aim to protect the health of children and families through science."

Among the limitations of the study, the authors note, are its small size, homogeneous groups of children, and short-term food choices, limiting the generalizability of the findings. Longitudinal studies on this subject can help determine longer-term effects, the authors suggest. "By examining the complex interactions between game-playing patterns and health behaviours, our findings can inform the design and use of more effective mobile games for improving children's dietary health," notes Yi-Chin Kato-Lin, assistant professor of information systems and business analytics at Hofstra University, who collaborated on the study. "For example, video game designers may want to limit the display of unhealthy foods in their games." The research was funded in part by the Remala Foundation. The study was undertaken by the Center for Communication & Change -- India, an organization affiliated with the Bloomberg School of Public Health Center for Communication Programs at Johns Hopkins University.

India budget 2021: Industry voices disappointment over no GST cut for nutra goods

By Tingmin Koe
10-Feb-2021 – NutraIngredients Asia

India's nutraceutical industry's hopes of a reduced GST rate on supplements were squashed again when there was no mentioned of special grant for the sector during the recent budget announcement.

The Expert Nutraceutical Advocacy Council (ENAC) said it would be writing to the government for reconsideration on the reduction of GST for supplements from the current18 percent to six percent. The Indian government announced its budget for this year on Feb 1. Budget for health and wellbeing, including those for the Department of Health and Family Welfare, Department of Health Research, Ministry of AYUSH, COVID-19 related special provisions, and nutrition, isup 137 percent to INR$2.23tr (US$30bn). However, the budget for nutrition alone, under the Poshan Abhiyan (National Nutrition Mission), has been drastically cut by 27 percent - from INR$37bn (US$507m) last year to INR$27bn (US$370m) this year. An industry expert added that he was expecting the government to reduce the GST rate on supplements. "There is no special grant of budget for the nutraceutical sector. We were expecting the Government to rethink the GST rate of supplements to go down from 18 to six percent.

"Amidst pandemic, the consumption of nutraceuticals has almost gone up by two to three folds, and also if given the focus on the nutraceutical sector, the Government could have the opportunity to bring India into global spotlight for the manufacturing of nutraceuticals by newer investments and innovation," Sandeep Gupta, director of ENAC said.
On the other hand, another expert highlighted the positive steps the government was taking to improve nutrition more broadly. "You will be happy to note that this year's budget is outcome focused and many indicators are aligned with target driven Poshan Abhiyan indicators," Basanta Kumar Kar, the recipient of the Global Nutrition Leadership Award 2019.

Poshan Abhiyan, one of the flagship nutrition programs by the Indian government, was launched in 2018. It aims to reduce the level of stunting, under nutrition, anaemia, and low birth weight in children, while also focusing on the nutrition of adolescent girls, pregnant women, and lactating mothers.

For instance, its target is to bring down stunting of children in the age group of zero to six from 38.4percent to 25 percent by year 2022. "To strengthen nutritional content, delivery, outreach, and outcome, we will merge the Supplementary Nutrition Programme and the Poshan Abhiyaan and launch the Mission Poshan 2.0," finance minister Nirmala Sitharaman also said during the budget announcement.

Mission Poshan 2.0 is an umbrella scheme covering the Integrated Child Development Services (ICDS), Anganwadi Services, Scheme for Adolescent Girls, National Creche Scheme, and Poshan Abhiyan. The government would also adopt an intensified strategy to improve nutritional outcomes across 112aspirational districts, where malnutrition is of high prevalence.

"The nutrition budget can be viewed holistically along with opportunities and investments in both nutrition focused and nutrition sensitive interventions. "This year, the Government has also focused on nutrition sensitive interventions which would benefit nutrition sector and I am sure it will contribute to nutrition outcomes," Basanta said.

Examples include the Jal Jeevan Mission, where the government will be pouring INR$2870bn (US$39bn) in addressing heavy metal contamination and ground water iron policy. Basanta believes this would boost nutrition outcomes.

The government's investment in the food Micro Small Medium Enterprise (MSME) will benefit the nutrition sector, said Basanta. "The government has clearly articulated to promote micro and small processing sheds created in mega food parks, the setting up of food preservation units, and operating food processing units in agro-food clusters during the year. "It is the time for the food entrepreneurs to be transformed to nutrition entrepreneurs," he said.

He explained that MSMEs were crucial in nutrition initiatives as they were the most common and direct food retailer in the rural and poor regions where malnutrition is most serious. "The local food businesses are critical for profitable nutrition because they are a primary food source for many malnourished low-income households.

"The existing food business entrepreneurs can transform themselves into nutrition entrepreneurs to increase access to safe and nutritious diets." For instance, he said that these firms could work on addressing micronutrient deficiencies common in the Indian population and do away with trans-fats. They could also invest in quality assurance, quality checks equipment to improve food quality.

In this case, he said the government could provide credit scheme support to stimulate innovation. They could also explore the possibility of a 'nutrition fund' to support MSMEs that manufacture nutritious foods. According to India's National Family Health Survey conducted in 2015 and 2016, 35.7 percent of the children under the age of five were underweight, while 38.4 percent were stunted.

The Food Safety and Standards Authority India (FSSAI), involved in food fortification policies, last year said it planned to make fortification mandatory for edible oil and milk, on top of its focus on local staples.

Engaging MSMEs, however, is not without challenges, as firms might be reluctant to up-skill and invest. Moreover, there could also be a lack of knowledge and skills on how to process, manufacture, and store foods and minimising the loss of nutrients throughout the process. The situation is not helped by companies that refuse to upgrade their skill sets and a lack of industry network that facilitates knowledge sharing.

"Most food MSMEs only think of themselves as a food business, or worse still, only a moneymaking business. "They need to change their thinking and realise how important nutrition is, as it can contribute to nation building, public good, increase human capital potential, growth, and productivity," Basanta said.

REGULATORY NEWS

Testing prebiotic and probiotic efficacy with bioluminescent capsule in GI tract

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An international team of scientists has developed a noninvasive diagnostic bioluminescent imaging tool to test the efficacy of prebiotics and probiotics. The bioluminescent probe arrives in the form of a capsule. When digested, the capsule can help measure bile salt hydrolase (BSH) levels inside the body's entire gastrointestinal (GI) tract.

BSH is a naturally occurring enzyme responsible for major health-promoting functions of probiotics. Testing BSH can determine the efficacy of many commercially available probiotic supplements. The tool also evaluates whether certain types of prebiotics can increase BSH levels in a similar way that probiotic supplements do. "The GI tract has very hard conditions and no assay currently exists to test probiotics for its functional activity," corresponding study author Elena Goun, associate professor in the Department of Chemistry at the University of Missouri, US, tells NutritionInsight. "Many people assume that all probiotics on the market work as they are advertised. However, this is not the case. A lot of commercial probiotics we tested didn't even go into culture in the 'ideal' conditions in the test tube," she flags. The BSH-activatable luciferin method is suitable for imaging BSH activity in both mouse and human fecal samples. Goun states this study marks the first example of bioluminescent imaging probes in humans.

Lighting up the GI tract

The noninvasive method uses bioluminescence, a chemical reaction that produces light inside a living organism, in the form of a capsule. The researchers synthesized and validated a special set of imaging reagents that produce light proportional to the activity of BSH throughout the GI tract. "When someone swallows it, it's exposed to the intact gut microbiota while traveling throughout the harsh environment of a person's entire gastrointestinal tract," Goun explains. "After it passes out of the body, we can analyze a person's stool sample. We can take the results from that analysis and correlate it with the amount of BSH activity within the human gastrointestinal tract." Bioluminescent imaging is non-radioactive and the imaging probes are stable for years. It is the most sensitive imaging modality in living animals, Goun notes, which has been used for imaging of many biological processes. "However, we are the first ones to adapt this imaging modality for imaging of 'health promoting' functional activity of probiotics and prebiotics," she details.

The lone prebiotic ranger

Prebiotics are often used in combination with probiotics to enhance their functions in the body, but Goun's research shows certain types of prebiotics alone can increase BSH activity of the gut microbiota. "In my opinion, this discovery is huge because the production and storage of prebiotics are less expensive than with probiotics." Increased BSH activity in the gut via treatment with BSH-positive probiotics or fecal transplants has been shown to confer multiple health benefits to the host. These include:

- Reduced inflammation and blood cholesterol levels.
- Protection against colon cancer and urinary tract infections.
- Significant amelioration of the symptoms of Crohn's disease, atopic dermatitis and many others.

"We plan to apply this tool to screen the panel of commercially available probiotics and prebiotics. Also, we plan to investigate the role of BSH in various diseases where gut microbiota plays an important role," Goun envisions. Noninvasive GI tract technology is creating momentum in the gut health sector. Last week, Lallemand Health Solutions teamed up with medical device company Nimble Science to trial an ingestible capsule that can capture samples of the human gut microbiome.

By Anni Schleicher

Baby food packaging labels leave parents confused, finds fruit and veg investigation

08 Feb 2021 Nutrition Insight

There is a "disconnect" between front-of-pack labels (FoPL) and ingredient lists of foods containing fruits and vegetables, according to a new US study.

These package labels can make it difficult for parents to understand what they are feeding their young children. The researchers are emphasizing how nutrition educators and healthcare professionals can help parents navigate the marketplace. "Our hope is that nutrition educators will note differences between the ingredients list and the front label of the package. Many parents use the front of the package to decide on their purchases," says Dr. Mackenzie Ferrante of Colorado State University's department of food science and human nutrition. "We want the front of the packages - where vegetables might be listed - to accurately represent the primary ingredients, and even the flavour, of the product," adds Dr. Susan Johnson, department of pediatrics, section of nutrition, University of Colorado Anschutz Medical Campus. She also wants more transparency so parents and caregivers can buy the food they want their children to learn to eat at the family table. "Let's make it easier for them to do that," says Johnson.

Reflecting fruit and vegetable contents

In the investigation, now published in the Journal of Nutrition Education and Behavior, the researchers examined aspects of vegetables and fruits contributing to the ingredient lists of infant and toddler products. For example, they reviewed whether the vegetable or the fruit in the product was a puree or a powder. They also examined where it was listed among the ingredients and product name. They found that vegetables in the US Department of Agriculture's dark green category were more likely to appear in product names. Other vegetables and fruit forms were also associated with inclusion in the product name. However, juice and juice concentrates were less likely to be included in names.

Inconsistent information

The researchers say the findings demonstrate that inconsistent information exists on some commercial infant and toddler food packages. Food preferences develop early for children by exposure to flavours. Therefore, parents can improve their children's lifelong health via better nutrition as infants and toddlers. FoPL have been a hot topic within the children's nutrition sector. The US House of Representatives' investigative committee is calling for baby food companies to include levels of heavy metals on food labels. Another US study recently found that moving nutritional labelling from the back to the front of food packaging may incentivize food producers to competitively improve the quality of their ingredients throughout market categories.
Edited by Katherine Durrell

Clearer calorie calculations: Japan updates nutrition labelling rules to reflect carbohydrate quality in processed foods

By Pearly Neo 26-Jan-2021 – Food Navigator Asia

Japan has updated its nutrition labelling rules to both reflect the quality as well as the quantity of carbohydrates present in processed foods, and also better reflect the calculation of calories being consumed per serving.

The updates were made by Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT) via amendments to the Standard Tables of Food Composition in Japan (Standard Tables), now in its eighth revision, which is used by local processed food firms for product nutrition labelling. Since April 2020, it has been compulsory under Japan's new labelling system to label processed food products. One of the main changes made by MEXT was to further breakdown or subdivide carbohydrate types in a food product's ingredients – so instead of saying a product has just a certain composition of 'carbohydrates', food labels now have to specify these further into subcategories such as 'monosaccharides' (simple sugars), 'dietary fibre' and 'sugar alcohols'.

"The demand of processed foods such as frozen, chilled, retort pouches, ready-to-eat and so on is increasing in Japan due to changes in factors such as individual eating habits," said the ministry via official documentation. "The Standard Tables are the only official data on food ingredients and reference material for nutritional management and guidance in Japan including the labelling of processed foods, so it is necessary to update accordingly. "To support dietary management based on sugar and energy (calories), we have divided 'carbohydrates' into 'available carbohydrates' such as starch and mono-/disaccharides (which contribute more to calories), and other categories like dietary fibre and sugar alcohols which contribute less to calories."

Starch, monosaccharides and disaccharides are simpler sugars which are highly digestible in the gut, thus tend to contribute more to calories, whereas carbs like dietary fibre and sugar alcohols are poorly digestible and hence will not produce as many calories. "It is important to show the breakdown of carbohydrate types in each food in order to correctly grasp the actual amount of sugar intake and energy (calorie) intake that consumers are consuming," said MEXT.

"Along these lines, we have also made changes to the energy (calorie) calculations in the 2020 edition of the Standard Tables which will reflect the actual conditions of energy (calorie)-producing ingredients more accurately."

So for example, where previous editions calculated 'carbohydrates' by just removing other components such as proteins and fats to get a final value for calorie conversion, the new method will go further to separate the energy conversion bases on either 'available carbohydrates' or 'dietary fibres/sugar alcohols' as above. This is significant as it means consumers who read nutrition labels will now have a much clearer idea of just how much of the carbohydrate content in the food products being purchased are contributing to sugar and caloric content – items they tend to want to avoid if in pursuit of healthier diets.

All food products making nutritional claims such as low-calorie, low-salt or functional claims also need to follow the Standard Tables' values and calculation methods, so it may also become a tad harder for firms to achieve values required for making these claims. As an example, according to the Ministry of Health, Labour and Welfare Japan, a food product must not contain more than 40kcal per 100g (food) or 20kcal per 100ml (liquid) to make a low-calorie claim - All F&B products will need to meet these conditions under the new calculation criteria as well in order to maintain the low-calorie claim.

MEXT has also significantly increased the number of food ingredients (or 'energy-producing components') included in the Standard Tables to be used for energy calculation across its amino acid, fatty acid and carbohydrate composition tables. "The amino acid composition table has been increased by 396 foods to 1,954 foods (from 1,558 in the seventh edition) to calculate protein content, the fatty acid composition table by 137 foods to 1,919 foods (from 1,782) to calculate fat content and the carbohydrates composition table by 223 foods to 1,075 foods (from 852) to calculate carbohydrate content [more accurately]," said MEXT. "The update has also enhanced the information and explanations for these foods and will make for better estimation of each food's nutritional content post-processing or cooking. "[At the end of the day], this upgrade initiative is meant to enhance the scientific accuracy of the Standard Tables, but we are not denying the conventional simple energy calculation methods if consumers choose to use those for their dietary management."

Consumer confusion about precautionary allergen labelling underscores need for governmental guidance

By Elizabeth Crawford 05-Feb-2021
Food Navigator USA

New research revealing the depth of consumer confusion about allergen labelling underscores a need for clearer, more consistent labelling about the presence of allergens or the risk of cross-contamination in food and beverages, and bolsters support for stricter labelling regulations and legislation, according to the Food Allergy Research and Education NGO.

According to a new study published in the Journal of Allergy and Clinical Immunology: In Practice, less than a quarter of 3,008 participants could correctly answer four questions about precautionary allergen labelling (PAL), such as "may contain" or "manufactured on shared equipment." "These results suggest that [food allergy] consumers are not aware of PAL policies," which are voluntary in the US, write researchers led by Ruchi Gupta, a pediatrician and director of the Center for Food Allergy &Asthma Research at Northwestern University Feinberg School of Medicine and Ann & Robert H Lurie Children's Hospital of Chicago.

Currently, in the US, manufacturers only need to label when ingredients include "top allergens," such as peanut, tree nuts, milk, egg, wheat, soy, fin fish, and crustacean shellfish. However, some voluntarily add PAL – although the wording and how it is displayed varies as it is not mandatory. "The lack of specific governmental policy results in inconsistent labelling practices and confusion," the study concludes. While there is not currently a legislative push to mandate PAL or an industry movement to standardize it, the research suggests some wording may be more effective than others. "When asked about their shopping habits, the majority of respondents never purchase products with a "May contain traces of allergen" label (85.5%) in comparison with never purchasing products with "Good manufacturing practices used to segregate ingredients in a facility that also processes allergen" label (35%)," the study reports.

It adds respondents' top preferences for precautionary allergen labelling include "Not suitable for people with 'blank' allergy" (29.3%) and "May contain" X allergen or traces of X allergen (22.1%). More than a third of respondents also prefer for PAL to appear on the front of the package and below the ingredient list.

Based on these findings, the researchers note consumers "prefer having clearer, more specific and consistent labelling on products, indicating that explicit PAL policies are needed to allow customers to easily identify safe foods." The findings bolster the need for stricter legislative and regulatory requirements around allergen labelling, argues FARE. "The issue is critical for those with food allergy. It needs to be an absolute top priority for policy discussions and is necessary to improve the safety of consumers with food allergy," Anita Roach, VP of Health Innovation Strategies and Corporate Ventures at FARE, said in a statement.

Recent legislation designed to expand allergen labelling failed to be signed into law during the last legislative cycle, despite 11 hour unanimous approval by the US House of Representatives in November and the US Senate in December. The Food Allergy Safety, Treatment, Education and Research Act would have required that sesame be labelled on food products as a ninth top allergen. FARE notes that it will pursue the reintroduction of the legislation in both chambers during the first 100 days of the legislative cycle.

Fish fraud findings: Almost 20% of fish in Taiwan found to be mislabelled - study

By Guan Yu Lim 09-Feb-2021 – Food Navigator Asia

About 20% of fish products in Taiwan are mislabelled, with snapper, cod and surimi products found to be the most vulnerable to fraudulent substitution.

Analysing 127 fish samples collected from supermarkets, markets and restaurants in Taiwan, researchers found that 24 samples were mislabelled, ranging between 12.5% and 26.8% depending on the fish. The gross seafood mislabel rate in Taiwan is 18.9%. Correct product labels are essential for ensuring fair trades and preventing consumers from receiving pathogenic, allergenic, or toxic seafood. However, labels are often subjected to fraud, one example is through substitution where the fish is sold by the name of a different, and often more expensive fish. In this study, researchers used DNA bar-coding technology to identify fish species, and microbiome profiling to study the presence of pathogens. The findings were published in the Scientific Reports journal.

Between February 2018 and October 2020, 83 samples (sashimi/sushi) were collected from restaurants, and 44 samples (cooked and raw fish) collected from hypermarkets, supermarkets, traditional markets, seafood wholesaler/retailers and fishing harbours. Each sample was examined using DNA bar-coding technology, while extracted DNA was then used for fish species identification and the microbiome metagenomics profiling.

Among the samples tested, snapper was found to be the largest mislabelled fish in both raw and cooked food. All 11 samples of snappers were molecularly confirmed to be tilapia (Oreochromis niloticus). The high proportion of mislabelling of snapper with tilapia may be due to the practice of labelling tilapia as Taiwan-Snapper in Taiwan. Snapper is a conventionally served as sashimi, while tilapia is not. "As sashimi are consumed raw, snapper sashimi substituted by tilapia raises potential health concerns apart from fair-trade concerns," researchers wrote. So, they conducted a microbiome profiling of the sashimi samples and found that the gram-negative aerobic bacteria, Pseudomonas was abundant in tilapia sashimi, compared to conventional Japanese sashimi. Pseudomonas is responsible for causing blood infections and pneumonia, mostly in hospitalised patients.

When analysing the other fish samples, one swordfish sample was found to be substituted with Atlantic salmon (Salmo salar), and another with amberjack (Seriola dumerili). Three cod products were found substituted by Greenland halibuts (Reinhardtius hippoglossoides). Substitution of cod with halibut is a common labelling fraud worldwide, since they are similar in appearance, taste and texture. Surimi products are also inconsistent with the molecularly identified ingredients. The surimi products are often labelled with a major seafood ingredient such "lobster sticks" and "cod balls". However, researchers explained these were named arbitrarily and creatively by their resemblance in shapes and colours with other more appealing seafood ingredients like lobster and cod.

The products were actually made with a combination of some fish (e.g. groupers) and non-fish ingredients. "Unfortunately, most consumers are not aware of the inconsistency. This showed a currently under-regulated seafood category in Taiwan which may be mitigated by more stringent government regulation with the availability of DNA bar-coding technology." This is especially important as the average Taiwan person consumes 6 to 10g of fish protein daily, contributing more than 20% of animal protein. With common fishes like snapper, cod and surimi products most vulnerable to fraudulent substitutions, larger studies should be conducted to confirm these findings and help curb health concerns and fair-trade issues, add the researchers.

Food labelling simulation tool: South Korea develops bot to help firms navigate local requirements

By Pearly Neo
08-Feb-2021 Food Navigator Asia

IThe South Korean government has designed a specific food labelling bot tool to help manufacturers comply with local regulations and requirements.

The South Korean Ministry of Food and Drug Safety (MFDS) has put a great deal of effort into promoting tools and guidelines meant to help local food firms navigate labelling requirements over the past few years, including a 10-step guidance document released early last year on nutrition labelling. Now the ministry's latest endeavour has gone high tech with the development of a specialised bot programme to guide food labelling.

Dubbed the 'Food Labelling Bot', this digital programme was launched earlier this month and can be found on the Food Safety Korea website. According to MFDS Director Kim Gang-lip, the main purpose of launching this bot is to help food firms efficiently and conveniently check the accuracy of their food labelling methods.

"The Food Labelling Bot has been introduced in order to solve the difficulties of food firms that find it challenging to apply current food labelling regulations practically on actual product labels – in 2020, we saw some 12,000inquiries on the food labelling process, and hope that this will help make things easier," said Kim via an official statement. "The bot can currently cater for about 130 food categories from confectionery to beverages to various processed foods, and once users input all the relevant product information into the platform, a simulation of what the labels should look like will be generated."

The bot requires mandatory information such as Product Name and Calorie Content for the Main Display Side label, and Manufacturer Name, Expiry Date, Ingredients and so on for the Information Display Side label. "The Main Display side is the side of the food package that is normally shown to consumers when making purchases and tends to have the trademark brand and logo so usually the front of the package," said MFDS.

"Using the Food Labelling Bot will enable users to check their labelling input in line with food labelling regulations as users will be informed of the information required for each input field, so this will be more convenient and efficient. "An added advantage is that users will also be able to check how the label information is displayed alongside their label design at the same time."

That said, MFDS also warned that efforts will continue to be made in the first half of this year to improve the bot and the current version is not yet final, so despite the convenience brought, users are still advised to match the simulated labels and displayed information with the local Food Labelling Standards to be safe. In addition to the Food Labelling Bot, MFDS also established a Food Labelling FAQ platform on the Food Safety Korea website last year in response to a large influx on consumer concerns regarding food labelling issues.

"We saw that 22.5% of all civil complaints and/or inquiries, some 11,000 cases, were related to food labelling in2019/2020, so we have set up this FAQ service to increase public accessibility and convenience to such information," said MFDS Director Lee Eui-kyung. "Some of the main topics focused on include ingredients, shelf life, product sales offices, precautions related to products, health functional foods and so on. This will be updated regularly to reflect topics of public interest."