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PFNDAI Bulletin

OCT 2020

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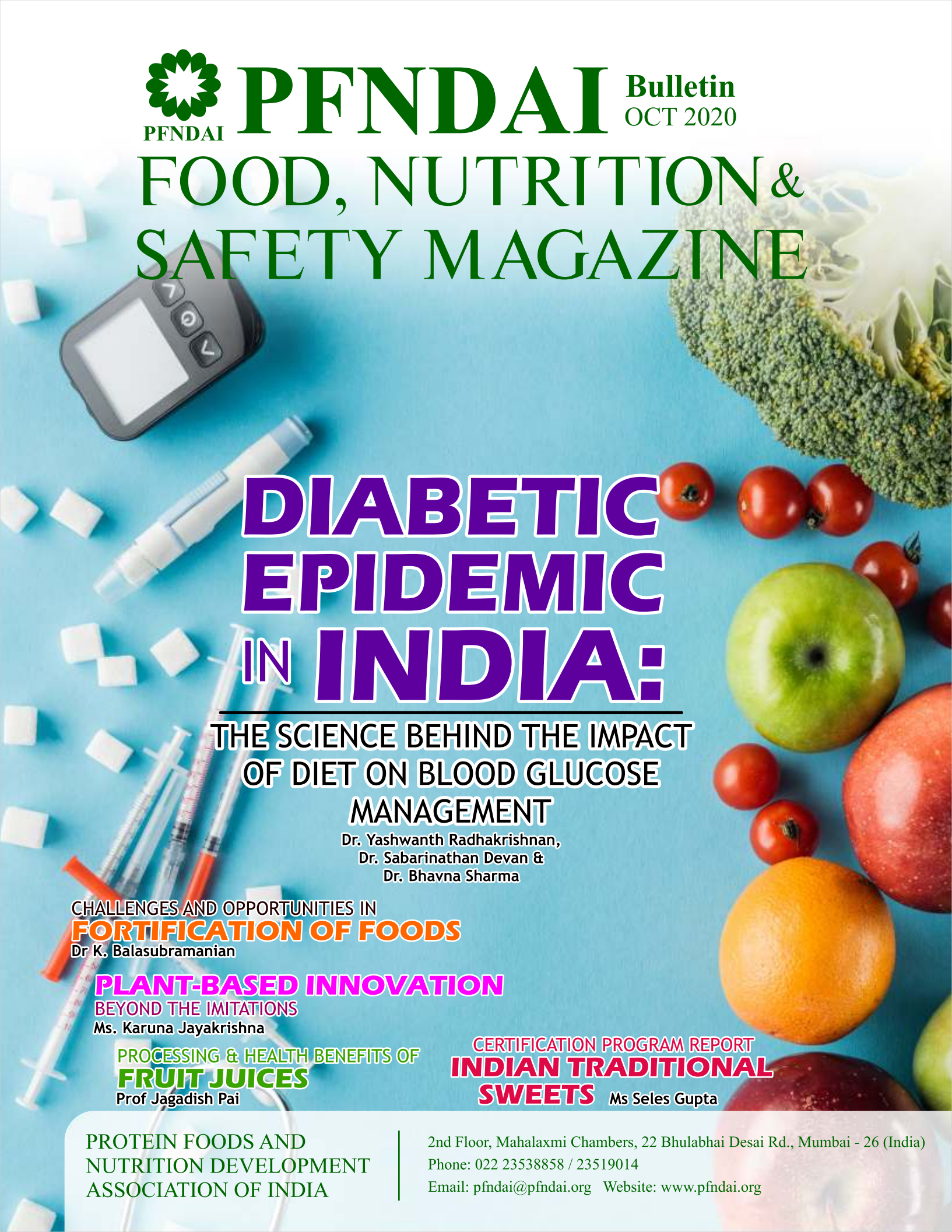

DIABETIC EPIDEMIC IN INDIA:

THE SCIENCE BEHIND THE IMPACT OF DIET ON BLOOD GLUCOSE MANAGEMENT

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Dr. Sabarinathan Devan &
Dr. Bhavna Sharma

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EDITORIAL

This month we have taken up a project to create awareness about diabetes.

I don't have to emphasise the need for that as we are seeing such rapid increase in the number of people diagnosed as diabetic. This number is not going down soon but will keep on increasing so it needs not only awareness among the lay people but some urgent steps need to be taken at various levels.

Diabetes type 1 is an unfortunate problem people are born with or is developed early which is mostly out of causes not in the individual's hands. But the type 2 is mostly avoidable. There are many reasons most people are not aware of. We need to create awareness or else the consequences could be really devastating and also very expensive. Thus we need to spread the word around soon and in an effective manner.

We have changed our lifestyle so drastically over the last few decades with terrible results. We have stopped walking and running and even playing sports and switched to riding cars and taking elevators. In addition, we have also changed our diets to consuming more of tempting refined foods.

Even the quantities of food we consume at a time have increased. We have been addicted to TV, smart phones, computers and tablets to such an extent that even communicating with friends and colleagues is through messages rather than actual meeting and talking.

Thus, with advanced technology and features, machines have taken over us and we can't do anything without them. All this and changes in our diet have made us obese and sedentary which are one of the main causes of this problem.

We need to work together to take care of this problem. We not only need to create awareness but help each other and encourage to take care of ourselves and our bodies.

Once we slide into the sedentary zone we get used to comforts and tasty foods, it is very difficult to go back to working out and losing weight. Biggest problem would be going without the favourite food and beverage. It is very easy to give up after a couple of days. We become foodoholic (a person having an excessive, often uncontrollable craving for food). So remaining food-sober is difficult and needs a lot of help and encouragement from friends and family members.

Even government has a major role to play in it. There needs to be constant monitoring and making testing facilities available at affordable cost is necessary. School children need to be made aware and encouraged to play sports rather than watch smart phones or even just stick to indoor games where no physical movement is involved.

Monitoring is very essential to catch a person at prediabetic stage. It is easier to treat prediabetes than diabetes. So let us work together and create awareness and try to defeat this malaise before we go to such levels that we need strict measures that were declared during the current pandemic. So join us and spread the word. Thanks

Prof Jagadish Pai,
Executive Director,
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DIABETIC EPIDEMIC IN INDIA: THE SCIENCE BEHIND THE IMPACT OF DIET ON BLOOD GLUCOSE MANAGEMENT



AUTHORS

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What is Diabetes and its relevance to India?

World Health Organization (WHO) defines Diabetes Mellitus as a chronic, metabolic disease characterized by elevated levels of blood glucose or blood sugar, termed as hyperglycaemia. Type 2 Diabetes Mellitus (T2DM) is one of the major non-communicable, metabolic disorder globally affecting about 463 million adults as per International Diabetes Federation (IDF) Diabetes Atlas (2019 Ninth edition). A recent estimate mentions about 77 million Indian adults to be affected with diabetes suggesting a prevalence rate of 8.9% (Ref: IDF 2020). Coronary Artery Disease among Asian Indians (CADI) Research Foundation reported that over the past 30 years, the prevalence of diabetes has increased to 12-18% in urban India and 3-6% in rural India with significant regional variations.

Recent data from the Indian Council for Medical Research - Youth Diabetes Registry shows, one in every four (25.3%) under 25 of age to have adult-onset type-2 diabetes, meaning that they have a family history of diabetes, obesity, unhealthy diets, and inactivity (Ref: ICMR-YDR Registry Report). In addition to T2DM, an asymptomatic condition called Prediabetes, where the blood glucose level is slightly higher than the normal but not as high as to the Diabetes level is rapidly increasing and is estimated between 10 % (Ref: ICMR-INDIAB study report) and 14% (National Urban Diabetes Survey) in India. The uncontrolled elevated blood glucose levels in pre-diabetic condition over time leads to diabetes, and constant hyperglycaemia in diabetic situation leads to diabetes mediated complications to various parts such as blood vessels and heart (Atherosclerosis, Cardiomyopathy), eyes (retinopathy), kidneys (nephropathy) and nerves (neuropathy).

Today at least 10% of Indian children (5-19yrs) has high fasting plasma glucose (indicative of prediabetes) and 0.6-1.2% have very high fasting plasma glucose (indicative of diabetes) [Ref: CNNs data 2016-18].

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Balance your diet and manage your food intake responsibly as advised by your doctor.

Table 1: Diagnostic criteria for diabetes and prediabetes

Parameter	Normoglycaemia (mg/dL)		Prediabetes (mg/dL)		Diabetes (mg/dL)
	WHO	ADA	WHO	ADA	
FPG	< 110	< 100	110-125 (IFG)	110-125 (IFG)	⩾ 126
2-hr PG	< 140		140-199 (IGT)		⩾ 200
HbA1c	< 5.7%		5.7 - 6.4%		⩾ 6.5%
Random PG					⩾200 (with symptoms of diabetes)

* Individuals with random plasma glucose between 140-199mg/dl is recommended to undergo OGTT
WHO - World Health Organisation; ADA-American Diabetes Association; IFG - Impaired Fasting Glucose; IGT - Impaired Glucose tolerance; FPG - Fasting Plasma Glucose; 2-h PG-2 hour post load Glucose test (oral glucose tolerance test) plasma glucose; HbA1c – Glycosylated Haemoglobin

Who is Diabetic and What Causes Diabetes?

Glucose from the diet is the major source of energy in the body. The dietary carbohydrates are digested to simple sugar and are released in the blood as glucose. Random or casual testing of blood sugar for a normal person would be less than 200 milligrams per decilitre (mg/dL) and for diabetic it would be 200 or more. If blood sugar is tested after fasting (for about eight hours) typically overnight, in a normal person the levels would be less than 100mg/dL, in a pre-diabetic between 100mg/dL and 125mg/dL and above 126mg/dL in diabetic. Diabetes could be also diagnosed by Oral Glucose Tolerance Test (OGTT) when blood sugar is tested before and after drinking a specified sweet drink (typically glucose) in a two-hour period. By OGTT method, normal person would have less than 140mg/dL, in a pre-diabetic between 140mg/dL and 199mg/dL and above 200mg/dL in diabetic. The blood glucose binds to the Haemoglobin type A (HbA1c) and the amount of glycated haemoglobin is proportional to the mean blood glucose during the 10–12 weeks. The HbA1c levels in a normal person would be 5.7%, while in pre-diabetic persons between 5.7 to 6.4% and in diabetic above 6.5%. Table 1 below explains the diagnostic criteria for normal, prediabetes, and diabetes along with the subtle difference between the WHO and ADA (Source: ICMR Guidelines for Type 2 Diabetes)

The utilisation of the blood glucose by the cells is controlled by the hormone Insulin, secreted by the beta cells in the pancreas in response to circulating blood sugar levels. In a normal situation, insulin operates like a key that opens up the cellular lock allowing blood glucose to flow into the cell for breakdown and release of energy. However, due to multiple factors such as excess consumption of calories, sedentary lifestyle, overweight, visceral and abdominal fat distribution, family history, age, and genetic predisposition major glucose utilizing cells especially, muscle, liver, and fat cells develop resistance to the endogenous insulin called as insulin resistance. This blunts the effect of insulin action (reduced insulin sensitivity) preventing glucose to flow into the cells causing hyperglycaemia and eventually reduced insulin secretion at later stages of T2DM.

Role of Food/Nutrition and the overall impact on Glycaemic Response (GR), Glycaemic Index (GI), and Glycaemic Load (GL)

One of the most important modifiable risk factors for T2DM is diet. Indian staple cereal diet such as rice, wheat, maize, millet, is carbohydrate-rich and contributes to about 70-80% of the total calories. Dietary carbohydrates include sugars (both simple and complex), starches, and fibres that act as major energy sources. To improve texture and shelf life, refined grains gained attention that leads to the removal of the bran, germ, dietary fibre, and micronutrients such as iron and B vitamins. With the inclusion of such simple carbohydrates and starches, along with affordability clubbed with a sedentary lifestyle, India now stands as the diabetes capital of the world. Since there is a direct correlation between the dietary carbohydrates consumed and blood sugar levels, the quality/quantity and response started to emerge recently. Hence, the role of quality/quantity of carbohydrates and blood sugar responses became a major area of diabetes management through dietary regulation with the development of Glycaemic Response (GR), Glycaemic Index (GI), and Glycaemic Load (GL) principles.

Glycaemic Response (GR) is the increase in the blood glucose concentration following eating over a period of two hours (post-prandial blood glucose response), elicited to the ingestion of carbohydrate-containing food/ meal. GR widely fluctuates based on the type of carbohydrates, causing either sudden increase followed by a sudden fall in blood glucose concentration and such spikes are not good for the diabetic population. Glycaemic response is dependent on multiple factors such as carbohydrate type, fibre content, proportion and type of sugars and starch, size and structures of the starch particle, insulin eliciting nutrients such as specific amino

acids, preparation methods such as fermentation etc. On the other hand, Glycaemic Index (GI) is about the food/diet itself and is a standardized GR (based on an equal amount of available carbohydrate) as well as relative GR (relative to a reference food). GI is conceptually the GR elicited by a portion of food containing available carbohydrate and is expressed as a percentage of the GR elicited by a specific amount of the reference carbohydrate (i.e. either a glucose solution or white wheat bread, defined by respective scales). Foods having carbohydrate that is digested, absorbed and metabolized quickly are considered high GI foods (GI > 70 on the glucose scale) whereas those that are digested, absorbed and metabolized slowly are considered low GI foods (GI < 55 on the glucose scale). Medium GI foods are between low and high GI with values ranging from 56-69 on the glucose scale. The Glycaemic Load (GL) is the product of GI and the total available carbohydrate content in a given amount of food (GL = GI * available carbohydrate/given amount of food). Available carbohydrates can be expressed differently and accordingly the corresponding units (e.g. g per serving, g per 100 g food, etc.) (Ref: International Scientific Consensus Summit from the International Carbohydrate Quality Consortium [ICQC]).

One of the important considerations is that while GR varies in response to the amount of food GI does not change. Hence GI will be effective only if the products compared contain the same amount of available carbohydrate (e.g. pasta has low GI compared to watermelon, however per portion of pasta contains higher amounts of carbohydrate than watermelons) and hence GL is a useful measure. Also to consider is that not all low GI foods are healthier, since a high-fat food may have low GI (e.g. Ice cream). A plethora of scientific literature both independent studies and meta-analysis with confidence suggests that high GI and/or GL diet as casual factors for T2DM. A Low GI diet has been shown to attenuate diseases/conditions such as diabetes, cardiovascular, obesity, epileptic patients, Acne, Non-alcoholic Fatty Liver Disease, blood pressure, cancer, sleep, endurance, etc. thereby improving human health. Conversely, consumption of a high GI diet leads to the accumulation of Advanced Glycation End (AGE) products in the body augmenting T2DM and associated complications.

Dietary Interventions in Diabetes

The role of dietary factors in the incidence of T2DM has been extensively studied as evidenced by multiple individual studies, observational, meta-analysis, systematic reviews that provide quality of evidence between dietary behaviours and incidence both inversion association (e.g. increased intake of whole grains, cereal fibre, etc.) and direct association (e.g. higher incidence with increased consumption of processed meat, sugar-sweetened beverage, etc.). Certain salient dietary fundamentals are listed below:

CALORIES: From the total calories, 55-60 % of energy from carbohydrates is an ideal recommendation, 12-15 % from proteins, and 20-30 % from fat.

CARBOHYDRATES: Typically, most cereals are consumed in accompaniment with other food, and hence studies with individual diet might not reflect real life situations. A minimum of 130g carbohydrates should be included to prevent ketosis. One of the most well studied dietary interventions is the role of fibres where both soluble and insoluble fibres may operate via multiple mechanisms imparting short term / long term variable effects in managing glucose metabolism. The soluble fibres ameliorate blood glucose as they tend to bind with water to form gels that are resistant to rapid digestion by digestive enzymes thereby delaying glucose absorption and immediate release in the blood. This helps to explain the postprandial blood glucose reduction and low GI effect of certain foods. In addition, delayed effects termed 'second meal effect' have been shown to extend beneficial effect in a 24 h period across subsequent meals. Recent evidence also suggests the role of the grain structure in modulating satiety and therefore better management of blood glucose levels. While longer consumption of insoluble fibre has been implicated in mitigating insulin resistance in overweight and obese people, in normal subjects it is suggested to improve postprandial glucose response after 75 minutes to a meal. It is pertinent to note consistent associations in large prospective cohort studies with about 20-30% reducing diabetes risk for high dietary fibre intake (>25 g/d in women and >38 g/d in men). For individuals with diabetes, the use of the glycaemic index and glycaemic load may provide a modest additional benefit for glycaemic control over that observed when total carbohydrate is considered alone. Carbohydrates from fruits, vegetables, whole grains, legumes, and low-fat milk are preferable. New carbohydrate RDA 2020 for adult sedentary man is given as 130g. Choosing low-GI foods in place of conventional or high-GI foods has a small but clinically useful effect on medium-term glycaemic control inpatients with diabetes. The incremental benefit is similar to that offered by pharmacological agents that also target postprandial hyperglycaemia.

PROTEIN: The amino acids supplied from high protein helps repair tissues and are good for the health of diabetics. Protein also promotes satiety and helps both types of diabetic patients to adhere to the carbohydrate allowance. 1 g/kg body weight is adequately recommended. In the case of microalbuminuria, a reduction of protein to 0.8–1 g/kg/d of body weight may slow the progression of nephropathy. In children with Type 1 diabetes 1-1.5 g/kg body weight is recommended. The new Protein RDA 2020 for adult sedentary man is 54g.

FAT: Regarding the intake of fat in diabetic patients, both the quality and quantity of fat are in line with the general recommendations regardless of the type of diabetes. Because both main types of diabetes increase the risk of atherosclerotic vascular diseases, the dietary guidelines for nutritional therapy for diabetes emphasize the use of unsaturated fatty acids instead of saturated.

SODIUM: Sodium intake recommendations for people with diabetes are the same as that for the general population. Added (iodized) salt should be less than 5 g/day. For persons with hypertension and diabetes, the intake should be reduced to less than 3 g/ day. The new RDA 2020 for sodium is 2000 mg/d.

VITAMIN D AND CALCIUM: There is growing evidence that vitamin D deficiency could be a contributing factor in the development of both type 1 and type 2 diabetes as vitamin D deficiency contributes to impaired glucose tolerance. The β-cell in the pancreas that secretes insulin has been shown to contain vitamin D receptors as well as the 1 alpha-hydroxylase enzyme. Researchers have also found an indirect effect on insulin secretion, potentially by a calcium effect on insulin secretion. Vitamin D contributes to the normalization of extracellular calcium, ensuring normal calcium flux through cell membranes; therefore, low vitamin D may diminish calcium's ability to affect insulin secretion. Evidence indicates that vitamin D treatment improves glucose tolerance and insulin resistance. After conducting a meta-analysis and review of the impact of vitamin D and calcium on glycaemic control in patients with type 2 diabetes, the outcome suggests that insufficient vitamin D and calcium appears to hinder glycaemic control and that supplementing both nutrients may be necessary to optimize glucose metabolism.

ANTIOXIDANTS: Hyperglycaemia promotes the auto-oxidation of glucose to form free radicals. Recent evidence suggests that glucose overload may damage the cells through oxidative stress. Thus antioxidants should be an important part of a diabetic diet. Well-established antioxidants derived from the diet are vitamins C, E, A, and carotenoids, which have been studied intensively. Vegetables and fruits have in their natural composition other substances besides these antioxidant vitamins, which guarantees health benefits associated with its consumption.

Blood glucose management: Holistic approach

Since diabetes is a multifactorial disorder and in general with various risk factors, such as obesity, blood pressure, dyslipidemia, etc., a holistic approach is required for the management along with conventional therapy. Lifestyle management is a fundamental aspect of diabetes care and includes multiple aspects such as medical nutrition therapy, physical activity etc. The most challenging part for a diabetic is to determine what to eat. Since there is no 'one-size-fits-all' eating pattern for diabetics, meal planning needs to be individualized, hence Medical Nutrition Therapy (MNT) is an integral role in overall diabetes management.

American Diabetes Association (2019) on the topic of 'Eating patterns and macronutrient distribution' states that "there is no single ideal dietary distribution of calories among carbohydrates, fats, and proteins for people with diabetes; therefore, meal plans should be individualized while keeping total calorie and metabolic goals in mind" with evidence grading E denoting Expert consensus or clinical experience. Additionally, ADA states that "A variety of eating patterns are acceptable for the management of type 2 diabetes and prediabetes" with the grading of B denoting supportive evidence from well-conducted cohort studies. Furthermore, ADA recommendations on Carbohydrates, proteins, fats, macronutrients, etc. are listed in Table 2. Similarly, ICMR has recently (2018) released Guidelines for management of T2DM covering four broad areas such as Lifestyle goals, Medical Nutrition Therapy, Physical activity/ exercise, and Yoga, under non-pharmacological management of diabetes. The recommendations on MNT include the application of nutritional and behavioural sciences along with the physical activity.

Future of Functional Food

With increasing prevalence and affordability, many consumers look for tasty and healthy offerings that provide the FMCG industry an opportunity to play a pivotal role by designing and offering clinically proven food products for better blood sugar management. In the Indian market, a few companies have launched certain food products for better management of blood sugar. With the emergence of clear regulatory guidelines, increasing industry competition, enhanced consumer awareness the times ahead will offer growth opportunities for functional foods and beverages with robust scientific validation and clinical evidence.

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Table 2: Medical nutrition therapy recommendations (Source: ADA 2019)

Topic	Recommendations	Evidence rating*
Effectiveness of nutrition therapy	An individualized medical nutrition therapy program as needed to achieve treatment goals, preferably provided by a registered dietitian, is recommended for all people with type 1 or type 2 diabetes, prediabetes, and gestational diabetes mellitus.	A
	A simple and effective approach to glycaemia and weight management emphasizing portion control and healthy food choices may be considered for those with type 2 diabetes who are not taking insulin, who have limited health literacy or numeracy, or who are older and prone to hypoglycaemia.	B
	Because diabetes nutrition therapy can result in cost savings B, and improved outcomes (e.g., A1C reduction), A, medical nutrition therapy should be adequately reimbursed by insurance and other payers. E	B, A, E
Energy balance	Weight loss (>5%) achievable by the combination of reduction of calorie intake and life-style modification benefits overweight or obese adults with type 2 diabetes and also those with prediabetes. Intervention programs to facilitate weight loss are recommended.	A
Eating patterns and macronutrient distribution	There is no single ideal dietary distribution of calories among carbohydrates, fats, and proteins for people with diabetes; therefore, meal plans should be individualized while keeping total calorie and metabolic goals in mind.	E
	A variety of eating patterns are acceptable for the management of type 2 diabetes and prediabetes.	B
Carbohydrates	Carbohydrate intake should emphasize nutrient-dense carbohydrate sources that are high in fibre, including vegetables, fruits, legumes, whole grains, as well as dairy products.	B
	For people with type 1 diabetes and those with type 2 diabetes who are prescribed a flexible insulin therapy program, education on how to use carbohydrate counting A and in some cases how to consider fat and protein content B to determine mealtime insulin dosing is recommended to improve glycaemic control.	A, B
	For individuals whose daily insulin dosing is fixed, a consistent pattern of carbohydrate intake with respect to time and amount may be recommended to improve glycaemic control and reduce the risk of hypoglycaemia.	B
	People with diabetes and those at risk are advised to avoid sugar-sweetened beverages (including fruit juices) in order to control glycaemia and weight and reduce their risk for cardiovascular disease and fatty liver B and should minimize the consumption of foods with added sugar that have the capacity to displace healthier, more nutrient-dense food choices. A	B, A

Topic	Recommendations	Evidence rating*
Protein	In individuals with type 2 diabetes, ingested protein appears to increase insulin response without increasing plasma glucose concentrations. Therefore, carbohydrate sources high in protein should be avoided when trying to treat or prevent hypoglycaemia.	B
Dietary fat	Data on the ideal total dietary fat content for people with diabetes are inconclusive, so an eating plan emphasizing elements of a Mediterranean-style diet rich in monounsaturated and polyunsaturated fats may be considered to improve glucose metabolism and lower cardiovas-cular disease risk and can be an effective alternative to a diet low in total fat but relatively high in carbohydrates.	B
	Eating foods rich in long-chain n-3 fatty acids, such as fatty fish (EPA and DHA) and nuts and seeds (ALA), is recommended to prevent or treat cardiovascular disease B; however, evidence does not support a beneficial role for the routine use of n-3 dietary supplements. A	B, A
Micronutrients and herbal supplements	There is no clear evidence that dietary supplementation with vitamins, minerals (such as chromium and vitamin D), herbs, or spices (such as cinnamon or aloe vera) can improve outcomes in people with diabetes who do not have underlying deficiencies and they are not generally recommended for glycaemic control.	C
Alcohol	Adults with diabetes who drink alcohol should do so in moderation (no more than one drink per day for adult women and no more than two drinks per day for adult men).	C
	Alcohol consumption may place people with diabetes at increased risk for hypoglycaemia, especially if taking insulin or insulin secretagogues. Education and awareness regarding the recognition and management of delayed hypoglycaemia are warranted.	B
Sodium	As for the general population, people with diabetes should limit sodium consumption to <2,300 mg/day.	B
Non-nutritive sweeteners	The use of non-nutritive sweeteners may have the potential to reduce overall calorie and carbohydrate intake if substituted for caloric (sugar) sweeteners and without compensation by intake of additional calories from other food sources. For those who consume sugar-sweetened beverages regularly, a low-calorie or non-nutritive-sweetened beverage may serve as a short-term replacement strategy, but overall, people are encouraged to decrease both sweetened and non-nutritive-sweetened beverages and use other alternatives, with an emphasis on water intake.	B

*ADA recommendations are assigned ratings of A, B, or C, depending on the quality of evidence. A: Clear evidence from well-conducted, generalizable randomized controlled trials that are adequately powered; B: Supportive evidence from well-conducted cohort studies; C: Supportive evidence from poorly controlled or uncontrolled studies; and E:Expert consensus or clinical experience

CHALLENGES AND OPPORTUNITIES IN FORTIFICATION OF FOODS

AUTHOR

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INTRODUCTION:

Food fortification is a process of adding essential nutrients(Vitamins, minerals, trace elements) or non-nutrient bioactive compounds deliberately into Food products, which are not present in the particular food product or are not at sufficient levels.

Fortification is a tool successfully used to correct nutrient inadequacies and associated deficiencies and to improve health. Addition of one or more essential nutrients to a food, whether or not it is normally contained in the food, for purpose of preventing or correcting a demonstrated efficiency of one or more nutrients in the population/ specific population groups (FAO/WHO 1994)

Some of the Examples of the deficiency of micronutrients

Iodine (I_2) – Preventable cause of mental retardation & brain damage

Vitamin A – Blindness, impairs immune function

Iron – impairs cognitive development in children

Folic acid- prevents birth defects of brain & spine

Food fortification is necessary

- To prevent widespread nutrient intake shortfalls and associated deficiencies
- To balance nutrient profile of a diet
- To restore nutrients lost in processing
- To appeal to customers looking to supplement their diet
- To increase the nutritional value of the Food supply and provide health benefits with minimal risk to health.
- To maintain nutritional quality of foods, keeping nutrient levels adequate to correct or prevent specific nutritional deficiencies in population.

FSSAI's new regulations will allow for higher levels of fortification to be achieved by permitting the ingredients to fortify be added up till amounts that will translate to provide from 30% to 50% of the Recommended Dietary Allowance (RDA).

Once a fortification program is underway, you need to quantify the contributions of micronutrients from the different fortified foods to the diets of the population. The Global Alliance for Improved Nutrition (GAIN) developed the Fortification Assessment Coverage Tool to evaluate the potential dietary intake from fortified foods because of large-scale food fortification programs (GAIN 2016).

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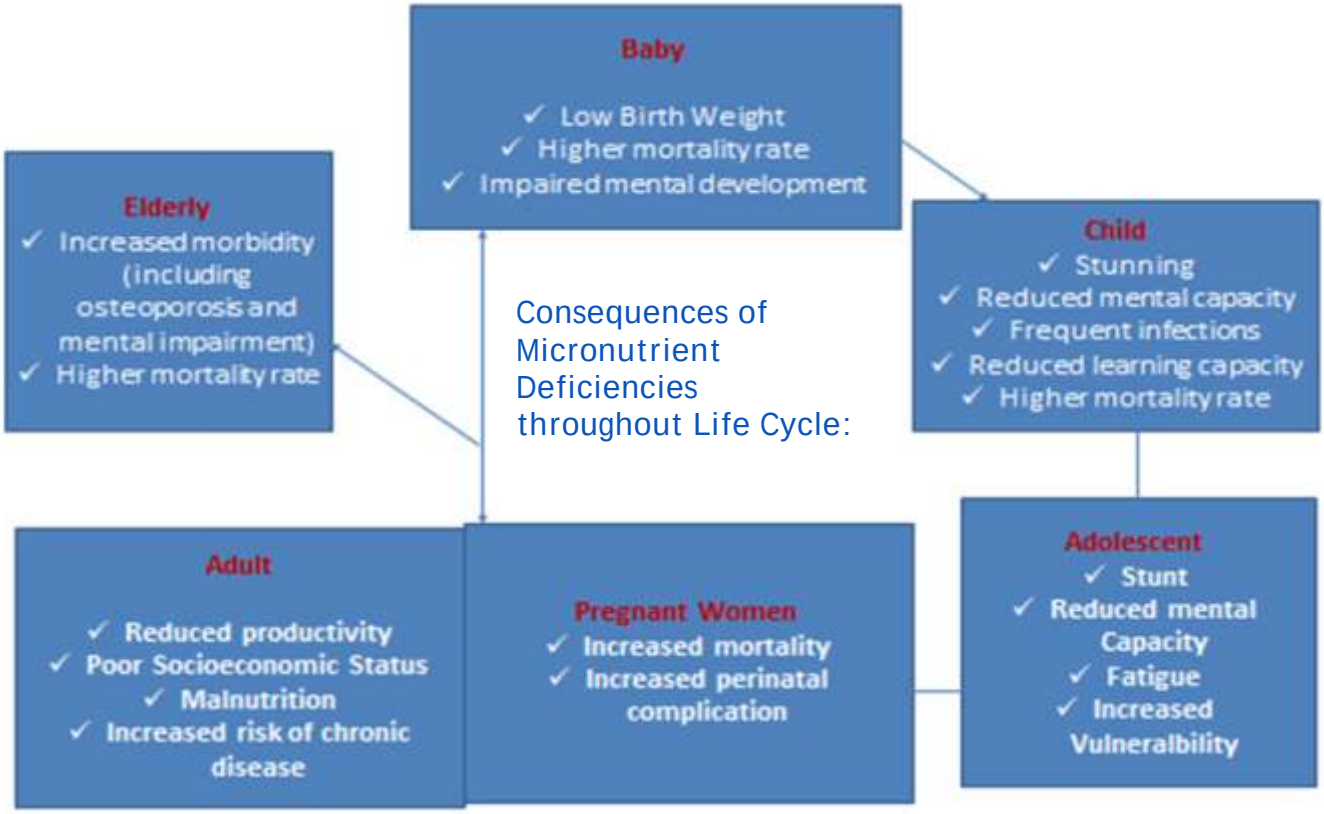


The tool is used in population-based surveys to assess the coverage of fortifiable and fortified foods purchased or consumed at the household and individual level, and to test household food samples for their nutrient content.

GAIN along with FFRC have been working together with oil industry to build their capacities for producing quality assured edible oil fortified with vitamin A and D. At present, 69% (7.94 MMT/annum edible oil) of packaged edible oil sold across pan-India is fortified. Now is the time to scale up the edible oil fortification, across the country, to improve nutrition and health status of Indian population.

According to the National Family Health Survey (NFHS-4)
• 58.4 percent of children (6-59 months) are anaemic.
• 53.1 percent of women in the reproductive age group are anaemic.
• 35.7 percent of children under 5 are underweight.

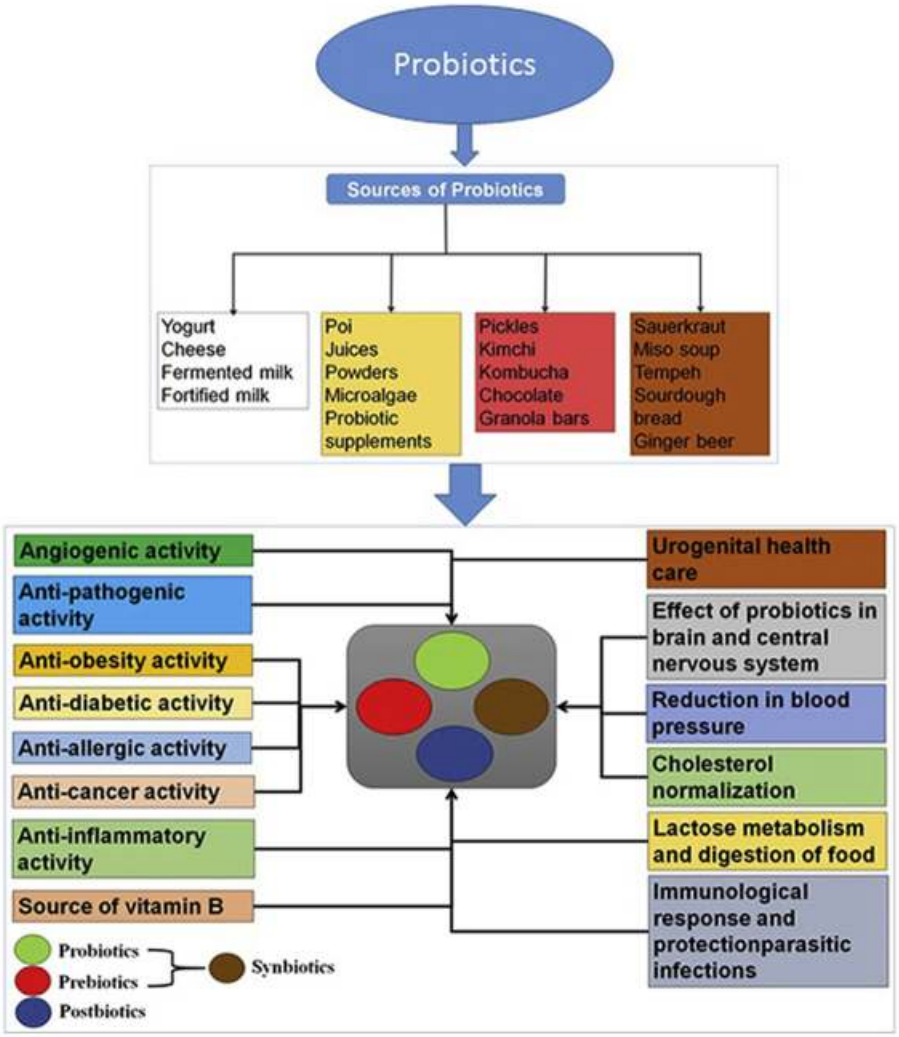
In August, 2018, FSSAI introduced the Food Safety and Standards (Fortification of Foods) Regulations, 2018, to regulate the provisions regarding fortified food.

METHODS OF FORTIFICATION:

1. Commercial/Industrial fortification:

Dry vitamin / Mineral premixes are being used for the staples like flours. Fortification of these flours is typically achieved by using the Industrial blenders. Mixing the vitamin/mineral premixes with the products is simple traditional method are being followed. Validation of blending and optimizing the time and speed of the blender is critical to achieve the homogeneity of fortification. Similarly, milk, oils, fruit juices are being mixed with suitable vitamins for fortification.

Milk is added with Vitamin D, Oil is fortified with Vitamin A, D and E. During the course of blending / mixing, the exposure of vitamins to the environment, process temperature and other ingredients in the foods to be consider, while evaluating the risk of deterioration of vitamins. For example, 11.2 mg of Vitamin C is destroyed by 1 mg of atmospheric oxygen. Now the coated vitamins are available to overcome the challenges.



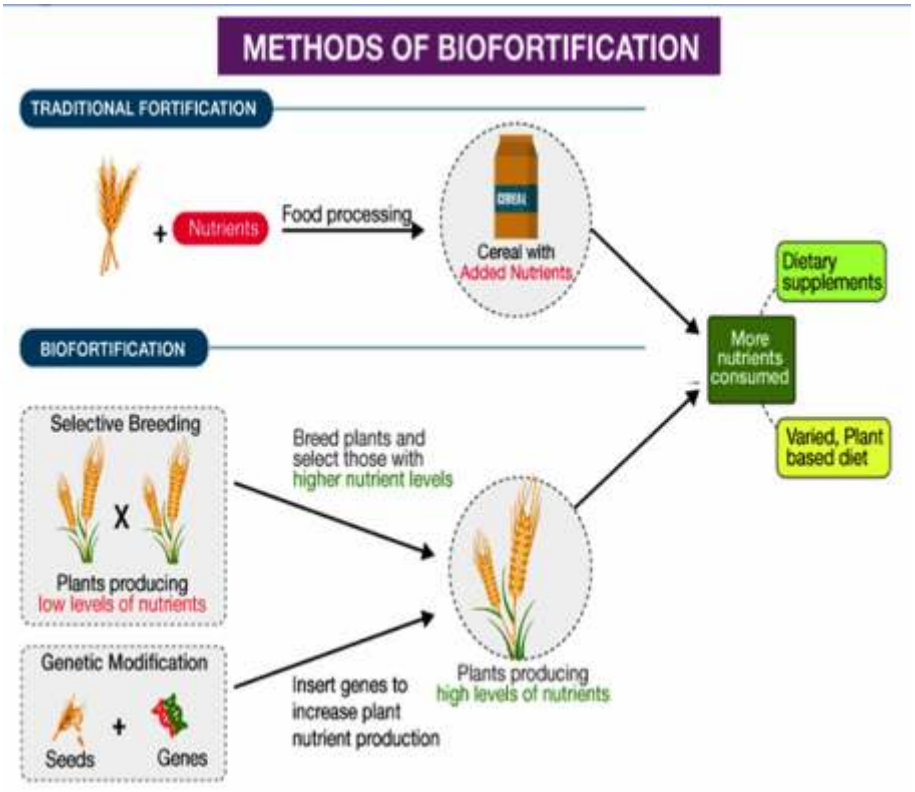
garlic…

Probiotics are live bacteria and yeasts that are good for you, especially your digestive system. We usually think of these as germs that cause diseases. But your body is full of bacteria, both good and bad. Probiotics are often called "good “or "helpful “bacteria because they help keep your gut healthy. You can find probiotics in supplements and some foods, like yogurt.

3. Bio fortification (Ex: Breeding crops to increase their nutritive value)

Biofortification is the process by which the nutritional quality of food crops is improved through agronomic practices, conventional plant breeding or modern biotechnology. Biofortification differs from conventional fortification in that biofortification aims to increase nutrient levels in crops during plant growth rather than through manual means during processing of the crops

Plants are bred using any of the below methods:



Example:
Atta, When fortified shall contain added iron (28- 42.5 mg/Kg), folic acid (75- 125 µg/Kg), and Vitamin B12 (0.75- 1.25 µg/Kg) as per FFRC norms.
Vegetable Oil is fortified with Vitamin A (6- 9.9 µg RE/gm of oil) Vitamin D (0.11- 0.16 µg/gm of oil)

2. Microbial Fortification & Synthetic Biology

Prebiotics are considered functional foods in that they provide numerous health benefits and aid in the prevention and treatment of diseases and health conditions. Currently, there are three major types of prebiotics that are well documented: inulin, oligosaccharides and arabinogalactans. Examples of food sources that contain prebiotics are onions, leeks, radishes, carrots,

Selective breeding: Using this method, plant breeders search existing varieties of crops which are naturally high in nutrients and then crossbreed these high-nutrient varieties with high-yielding varieties of crops, to provide a seed with high yields and increased nutritional value. This method is prevalent at present, as it is less controversial than genetically engineering crops.

Genetic modification: Golden Rice is an example of a GM crop developed using genetic modification. It contains genes from a common soil bacterium Erwinia and contains increased levels of beta-carotene which can be converted by the body into vitamin A.

Seed Priming: Seed priming before sowing maximizes the natural potential of seed to set the plant for maximum yield potential with respect to both quality and quantity. Positive effects on the shoot and root growth of seedlings of wheat can be observed when treated with iron-oxide nanoparticles.

Benefits of bio fortification:

Increasing the micronutrient levels in staple crops can help prevent and reduce the micronutrient deficiencies in the poor. E.g. In a trial in Mozambique, eating sweet potatoes biofortified with beta-carotene reduced the incidence of vitamin A deficiency in children by 24%. It reaches the country's most vulnerable people living in remote rural areas with no access or money for commercially marketed fortified foods. It is cost effective after an initial large research investment. The recurrent costs are low and the germ plasm can be shared globally making it highly cost-effective. Biofortification is sustainable. It produces higher yields eco-friendly.

Rice: CR Dhan 310, DRR Dhan 45 which contain high protein and high zinc in polished grain.

Wheat: WB 02, HPBW 01, PusaTejas (HI 8759), PusaUjala (HI 1605), MACS 4028 (d) which are rich in zinc and iron.

Other biofortified crops are maize (which possess high provitamin-A, tryptophan and lysine), Pearl millet, Mustard (contains low erucic acid), Soybeans, Sweet potato which contains high β-carotene, Pomegranate which contains high iron, zinc and vitamin C.

4. Home fortification:

Home fortification is an innovation aimed at improving diet quality of nutritionally vulnerable groups, such as young children. Home fortification is recommended where complementary foods do not provide enough essential nutrients. This occurs as following:

a) Dietary diversity is low.

b) Complementary foods prepared for the small child have insufficient nutrient content and density

c) The bioavailability of micronutrients is poor due to absorption inhibitors in the diet which is especially the case in plant secure based meals.

Example: Addition of Vitamin D drops. Sachet should be made available throughout the year for the target groups and be no less than 60/ 6 months and no more than 180 / 6 months. (No more than one sachet per day). A target of 90 sachets per six months period which thus provides as additional intake of 50 % RNO/d for each micronutrient is likely reasonable for most situations.

ADVANTAGES OF FORTIFICATION:

- Increase in intake of most of the population
- Decrease nutrient deficiency
- Improves productivity and reduces health care expenditure
- Addresses several sustainable developments
- Socially acceptable, fast & broad
- No effect on organoleptic properties
- Cost effective approach
- Readily reaches the target risk groups, such as malnourished kids, elderly, pregnant and lactating women and others who have unbalanced diet.

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CHALLENGES IN FOOD FORTIFICATION:

- Bioavailability of food fortificants in the Food products added – Methods to ensure that the quantity of micronutrient added has 100% bioavailability after Processing.

- Adverse effects - Quantity of Micronutrients added should not create any side effects in the physiological system, thus affecting the overall health

- Homogeneity during fortification - Achieving homogeneity of the micronutrients added, in the finished product

- Shelf life & Packaging of foods - Micronutrients added in food products should not influence the shelf life, Hygroscopic micronutrients may lead to moisture pick up, packaging material to be selectively opted

- Off odour in the end product – Micronutrients added should not affect the end product
- Behavioural change communication – Need to educate people that micronutrients added do not have adverse effects on health but instead are increasing the nutritional value

- Selecting best combination of micronutrients that will reduce deficiency and improve functional outcomes.

- Partnership with Industry – Scale up of translatable technologies (Tie up with such industries)

- Addressing financial implications – Start-up costs

- Procurement of Essential micronutrient and Premix procurement

- Setting standards – RDA of micronutrient as standards that will prevent clinical signs, reduce inadequacy of specific biomarkers

- Integrating into National nutritional programmes

- Educating the population about the importance of food fortification

- Establishing regional reference Laboratory capable of conducting all the required tests.

- Effective monitoring – require careful consideration of effect of other fortified foods and supplements without exposing populations to levels above Upper limits

- Need for and Effectiveness of fortification varies by age, sex, life stage and genetic profile groups that are at high risk of inadequacy and/ or excess deserve special attention

- Coated Vitamins and their usage in the premix without losing their potency

- Nutrition & Food fortification are not sufficiently prioritized in India and resources for nutritional improvements are not optimised.

- Conversion of Grains to fortified flour has huge financial implications & limited shelf life is an impediment.

- Thorough knowledge of dietary habits and nutrient intake of the target group to be known and Complementary educational programme is required particularly

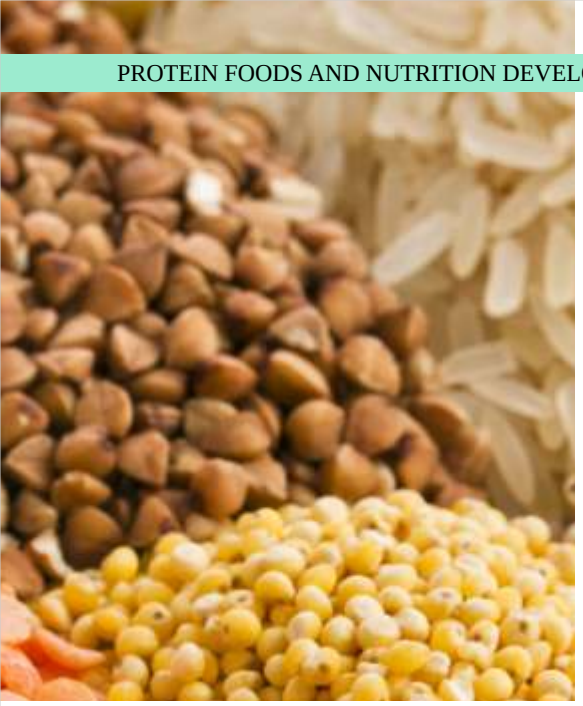
OPPORTUNITIES IN FOOD FORTIFICATION:

- FSSAI is supporting the fortification and recommend few food products that are consumed by most of the people (Oil, Milk, Salt, Wheat, Rice etc.). Soon, The fortification may become mandatory in few of the food category.

- WHO (World Health Organisation) and FAO (Food and Agriculture Organisation) has recognised Food fortification as one of the best methods for reducing micronutrient malnutrition at global levels.

- Around 79 countries have made it mandatory to fortify at least one major grain (Fortification can be done wither with Vitamin A, Iron, Folic acid which prevent blindness, anaemia, reduce birth defects and increase cognitive abilities

- Indian government through MDM (Mid-day meals) and ICDS (Integrated Child development services) schemes are designed to reduce malnutrition and deficiencies through food fortification of a particular group of people like infants, children, pregnant and lactating women



- Food fortification is best as compared to, having of Supplements in form of tablets where Bioavailability would be very less.

- National Nutrition Monitoring Bureau and National Eat Right Mela encourage Food fortification based on the Daily values required. Increase in Open market availability of fortified food products

- Empower States/ Union territories/ Line ministries and encourage convergence to reduce micronutrient malnutrition

- Consumed on regular and frequent basis, Fortified foods will maintain body stores of nutrients more efficiently and more effectively than other supplements

- Food fortification has the potential to improve nutritional status of large proportion of population

- Cost effective than other strategies and the technology for the same already exists and it is easy to be incorporated in Foods during processing.

- Fortification of rice, wheat and salt has been mandated in the food distributed via India's public food distribution systems (PDS), such as to schools, anganwadis, feeding mothers or children under six years of age, although this has not made it to the open market as of yet.

Food Fortification Research Centre has been established under Food Standards Safety Authority of India, with its main objective being to promote large scale fortification of Foods. It also encourages major widespread production of Fortified foods creating +F logo for food following staple foods.

At present, 2% of Foods available in the Indian market are estimated to be fortified and there is a huge scope in Indian market to fortify the staple foods.
Ex: Fortification of Vitamin D Milk and the quantity of the same should not exceed 550IU as per FSSAI.

Change in the lifestyle is the need of the hour and Fortified foods are playing an important role in pushing boundaries. Process is slowly but steadily changing food habits & is helping a nation widely devoid of nutritional food to tackle the issue.

Staple food fortification is an evidence based strategy and a practical solution which needs to be scaled up in India,
Create Awareness about goodness of fortified foods

EAT RIGHT….. EAT FORTIFIED…. LIVE HEALTHY

COMING EVENTS

International Conference on Applications in Food Research and Food Security Systems
November 05-06, 2020
Amsterdam, Netherlands
Contact:
https://panel.waset.org/apply/2020/11/amsterdam/ICAFRFSS?step=5

International Conference on Food Science, Nutrition and Health
November 05-06, 2020
Cape Town, South Africa
Contact:
https://panel.waset.org/apply/2020/11/cape-town/ICFSNH?step=5

Functional Food & Advanced Nutrition 2020
November 29-30, 2020
Contact:
nutrition@eventcontact.org

International Conference on Probiotics, Prebiotics, Synbiotics & Gut Nutrition
December 07-08, 2020
Registration:
probiotika@americameetings.com

10th International Conference on Nutrition and Food Sciences (ICNFS 2021)
April 20-22, 2021
Univ of Barcelona, Barcelona, Spain
E-mail: icnfs@cbees.org
Contact: +852-3500-0137

PLANT-BASED INNOVATION

BEYOND THE IMITATIONS

AUTHOR
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Innovation Leader, South Asia,
DuPont Nutrition & Biosciences

More than one in four Indian consumers want more protein in their diet – and many seek protein from a plant-based source. New ingredient technology can help fill the gap in the market for everyday plant-based foods.

Global dietary guidelines widely extol the virtues of plant-based foods. The World Health Organization (WHO), for example, specifically recommends a varied, nutritious diet that originates mainly from plants rather than animals. So, in a country like India, where vegetarianism is engrained in the culture, you might think following those recommendations is no problem at all. Yet, as the plant-based megatrend rolls over the world, a closer look at the market reveals a realm of challenges and untapped opportunities.

Market research by Mintel has shown that Indians are indeed most likely to describe themselves as vegetarians, particularly those over the age of 45. However, a large minority exists who call themselves non-vegetarian, while vegan and dairy-free consumers represent only a few percent of the participants in Mintel's 2019 survey.

Mintel further reports that plant protein was an ingredient in just 5% of food products launched in India in the first half of 2020 – compared to 8% of global food launches.

That's interesting when you consider the growing awareness of protein intake. Again from Mintel, figures show that more than one in four Indian consumers want more protein in their diet. One in five believe plant proteins are healthier than protein from animal sources, are open to trying new products with plant proteins¬– and they are willing to buy them at a premium price. Mintel predicts that consumer interest in protein intake will continue to rise in the years ahead.

The gap in the market

These statistics speak of a clear gap between what India's food industry currently provides and what consumers are seeking – a gap that, without action, is bound to get wider over time. And which represents a major opportunity for food manufacturers who endeavour to fill it.

The drivers of the plant-based market in India are roughly similar to other parts of the world. Health and sustainability are key consumer concerns, and a delicious taste is number one for building a loyal following to a novel brand. In plant-based product development, these are also the factors at the heart of the technical challenges. It takes a holistic approach to solve them.

From real meat to real plants

Let's start with meat alternatives. In quick service restaurants, vegan alternatives to chicken, mutton and fish are increasingly visible on the menu. While such products have historically appealed to vegans and vegetarians, the primary consumer group today is the non-vegetarians, who expect the taste and texture of real meat from a healthy and sustainable source.

Years of development work with soy and pea proteins, in particular, have created a range of opportunities to satisfy such expectations. Thanks to advanced processing technology, plant proteins can now mimic the structure, bite, appearance and flavour of chicken, pork or seafood. Plant-sourced stabilisers, texturizing ingredients and protectants are available to optimise these sensory attributes and ensure their stability throughout shelf life. When brought together by experienced product developers, the potential for innovation is virtually unlimited.

Some manufacturers are already experimenting with

applications beyond the meat alternative category. Vegan ready fillings for samosas, parathas and spring rolls, tasty plant-based pizza toppings and high-protein instant noodles feature among the possibilities – each one a demonstration of soy protein's textural versatility. Instantized soy protein is another option for quick and easy dispersion in protein-rich soup.

Innovation in a dairy nation

Within the dairy alternative segment, the starting point for innovation is somewhat different. Here, manufacturers who ignore the fact that India is a major dairy nation do so at their peril. Consumers are likely to need more coaxing before they will choose a dairy alternative wholeheartedly – a reality reflected in the still niche market for plant-based drinks. Across the dairy lobby, the question of whether non-dairy beverages may be called 'milk' is the subject of ongoing debate.

Despite these challenging circumstances, some manufacturers have launched soy and almond beverages with success, positioning them as healthy drinks for active individuals. Within the ingredient business, the development of vegetarian cultures supports the formulation of fermented yoghurt-like snacks for on-the-go consumption throughout the day.

New up-and-coming opportunities for coffee lovers include plant-based coffee creamers and all-in-one powder premixes that contain soy proteins and coffee and which can be served hot or over ice. For the best result, manufacturers can draw on tailored blends of stabilizers and emulsifiers, which deliver a creamy mouthfeel, smooth texture and a rich body.

Application specialists have also experimented with vegan frozen desserts – similar to ice cream but based on almonds – using a stabilizer-emulsifier blend to provide a similar rich body and texture to milk solids.

Going healthy and sustainable

Today's ingredient technology can certainly ensure the sensory appeal of innovative plant-based products. But how does it accommodate consumer demand for a healthier, more sustainable diet?

From a health perspective, soy protein is the commercial plant protein that best matches meat and dairy protein in terms of digestible amino acid content. Meat, whey and soy protein all get a top rating according to PDCAAS (Protein Digestibility-Corrected Amino Acid Score), the method recognised by the UN Food and Agriculture Organization and WHO for measuring nutritional quality.

Plant-based proteins also typically work well with probiotic cultures, which clinical studies have widely documented for their health benefits.

Focus on the footprint

Responsibly produced soy has further good credentials as a sustainable, high-yield crop. In a lifecycle assessment by DuPont Nutrition & Biosciences, the carbon footprint of soy protein isolate was found to be more than six times lower than that of chicken and ten times lower than pork. When consumers choose food products based on pea protein from yellow peas, the carbon footprint is roughly a third that of chicken.

Another interesting take on the sustainability question concerns the use of fermentation cultures and enzymes to unlock the proteins in locally grown crops and create tastes and textures with novel appeal. On the global market, oats are the big success story, as shown by their rapidly gained popularity in plant-based beverages and desserts.

In other words, whether manufacturers focus on meat and dairy alternatives or are rethinking plant-based as a category driven by its own merits, the opportunities to satisfy consumer expectations are in place. With the right ingredient technology, there are few limits to meeting needs for nutrition, sustainability and a great taste and texture. The enduring challenge lies in the ability of strong branding communication to create awareness and give consumers a gentle nudge towards a new plant-based adventure.

PROCESSING & HEALTH BENEFITS OF FRUIT JUICES

AUTHOR
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PFNDAI

People love juices and now that there are varieties of juices available people have started exploring more.

It is liked by all age's children, adult and elders. Sometimes when it is difficult to eat fruits because of difficulty in swallowing due to old age or sickness, juices become the next best thing. Typical Western diet starts with orange juice with breakfast and there is usually juice with meals too. Indians are now getting fond of juices, so its consumption has also increased.

Global market has been estimated by different research organisations and is expected to reach around US$ 110 or 170 or even 250 billion by 2024 to 2025. In comparison Indian market is very small because even though Indians have started drinking juices, it has not yet been very prevalent in Indian diet. The market was about US$ 200 million but is rapidly increasing at the double digit rate and may become almost US$ 500 million by 2025.

Although this is called fruit juice market it is dominated by fruit drinks and beverages with pure fruit juice just about one third of the total market. Fruit juices also may be without added sugar or sweetened with sugar. Nectars may contain 40% fruit juice content for orange and pineapple whereas just 20% for other fruits. Drinks and beverages may contain even less, e.g. they may contain 10% fruit juice for most fruits and just 5% for lime & lemon drinks. These are figures of organised sector as there is a fairly sizeable unorganised market which includes roadside as well as restaurants where juice may be freshly prepared for consumption.

Why are they prepared

Fresh fruits are certainly better health-wise compared to juices although some of the dietary fibre and other nutrients may be removed during preparation of juices. Some decades ago it was easy to get fresh fruits in urban markets being produced in nearby orchards. Ripe Fresh fruits were harvested by farmers early morning and brought to city markets by trains and sold to consumers. Consumers could enjoy the freshness of the fully ripe fruit at the peak of its sensory as well as nutritional qualities with respect to vitamins and other healthy components. Only those who could not eat fruits would then be satisfied with juices. As things started changing with urbanisation and cities growing much larger with farms and orchards going further and further away requiring shipping and transportation of farm produce by train or trucks over large distances and requiring storage in warehouses at times. Thus it would take several days for fruits to reach the markets. This created a different problem.

If fruits are harvested when they are ripe their sensory and nutritional qualities are at the peak and then on slowly they diminish. Since they are also soft, transport over great distances and storage in warehouses would cause a lot of spoilage while handling. This necessitated harvesting them when they are unripe and hard. At this stage their quality is not at its peak. In city warehouses mostly they are artificially ripened as and when they are needed to be taken to market so even when they are soft and ripe enough to eat they are not at their peak which would have reached if they were allowed to ripen on plant itself.

Juices are prepared most of the time in factories located near the farms and orchards. Harvested fruits are cooled immediately and transported to factory and within hours they may be processed to juices so their vitamin and healthy phytochemicals

are retained. Of course there are processing losses but these are much less when proper modern processing is used. These juices could be prepared in such a manner to have higher amounts of dietary fibre with pulpy juices. Juices are also very convenient to consume any time any place.

Processing of Fruits to make juice

Fruits may be allowed to ripen on the tree or they may be harvested while they are unripe because they are harder and will be able to withstand the mechanical forces involved in their transport, storage and handling over long distances. Then when they reach their destination they may be ripened by ethylene gas which is a natural ripener that fruit itself produces while ripening process occurs. Ethylene will cause the chlorophyll to degrade, allow many of the enzymes to act to convert starch to sugar in many fruits and also to soften the fruit by making changes in the other carbohydrates along with starch to form soluble carbohydrates. This makes the textural changes.

When chlorophyll degrades the underlying pigments including anthocyanins and carotenoids become visible. Thus the colour of fruit changes from green to yellow or orange or red or blue. Although fruit may look and feel ripe, there may be many substances not accumulated to their best capacity so the quality is somewhat less than the fruit which is ripened on the tree itself.

Flavours, pigment and many health providing substances may not have been formed adequately. Hence there is always this difference between harvested unripe and then ripened after a time gap compared to the fruits that were harvested after they were ripe on the tree. However, there has to be a balance between damage and quality. The fruits after harvesting continue to respire and carry out changes aided by the hormones and enzymes. To minimise these changes which lead to further softening of the tissues they are cooled. At lower temperature their respiration is less. Some fruits however like bananas and mangoes cannot be chilled as there is darkening of tissues.

Fruits when they are to be processed are washed and peeled. Some thin skinned fruits may be pulped without removing peel. Others like apple and pear may need peeling knives. After peeling, the pieces are pulped before juicing. There are machines available for tight skin oranges wherein they are pierced and then squeezed so juice is forced out.

Then there are difficult fruits like pineapple which have skin which is tough and needs to be removed with force manually or by machines. After peeling and pulping or squeezing of juice, the juice may be thin like in apple, berries, grapes etc. or may be pulpy as in the case of oranges. Pulp contains dietary fibre so more recently pulpier and healthier juices are popular. Pulp however settles so needs to be processed to very small particle size to delay settling.

Certain juices like apple and grape are preferred clear so these juices containing some pulp or peel particles are filtered out to improve clarity and appearance. However, more and more juices are now available with pulp particles in them. The dietary fibre in them provides health benefits. Some juices are concentrated to remove much of water in them. These concentrates could be stored and transported with ease because of less bulk. These concentrated juices may be frozen and sold as frozen concentrates to consumers or may be sold to processor that makes juice out of it by adding water and bottling.

Here, some improved processes are available wherein while concentrating, they can capture the volatile flavours and add them back to concentrate to retain the original flavour of the juice.

The juice is then processed and packed in different ways. It may be packed in cans or in glass jars and thermally processed. It may be processed using UHT process using very high temperature for a very short time using high performance heat exchangers and then filled and sealed aseptically without allowing contamination. Juice may also be hot filled without further processing. Concentrates may be frozen and packed and stored frozen until consumer actually uses it by diluting it to single strength juice level. As this does not get much heat its natural vitamin contents as well as flavour and colour are preserved.

There are some other non-thermal processes now commercially available such as High Pressure Processing which creates very high pressure on juices while slightly elevating temperature. This destroys spoilage microbes. There is another type of juices available namely cold pressed juices. While most juices are hot pressed for better recovery when separating juices from pulp and residue, cold pressed ones are juiced without heat to prevent any damage to sensitive components like vitamins and other botanicals present in them. Some juices contain added sugar as well as preservatives. However, as consumer preference is for natural juices these are avoided by most processors.

Health benefits of juices

Fruits juices of different types are known to be rich in vitamins and minerals including iron, potassium, magnesium and C &B vitamins. They contain dietary fibre. They also contain carotenoids, polyphenols and flavonoids all linked to reduction of various diseases.

Are these juices as good as fruits?

Well, may be not. We must realise a few things. Firstly they are extracted from fruits, leaving behind residue which contains valuable dietary fibre and some other plant components. In that respect, the fruits will provide more. More recently this gap has been reduced by pulpy juices which contain more fibre and other plant substances that are usually removed while clarifying juices. Soluble fibre increases viscosity, so trying to make richer in fibre creates a problem of juice being too thick to drink. This is partly solved by partial hydrolysis of fibres by enzymes to reduce the viscosity. Another fact that must be considered is that fruits if freshly harvested while at their peak of ripeness they would have the maximum health benefits. However, if they come from far away and are ripened artificially then their health benefits are not so high. Juices are normally prepared from fruits that are harvested near the peak of their ripening and quickly processed. Thus they retain the healthy vitamins and plant components to a greater extent.

It is always better to consume very colourful juices that do not have added colours. They are quite healthful. Finally it is better to use fruit juices without added sugar. Already most fruits have plenty of sugar so there is no need to add sugar if the sweet fruits are blended with not so sweet ones. Also there is a benefit of getting juices from fruits out of season and one can have juice blends or separately have juices from different fruits, which is difficult when it comes to fruits.

REGULATORY ROUND UP

By
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Review of proposed amendments in Food Safety and Standard Act, 2006

Dr Joseph Lewis, in one of the seminar on Regulatory Affairs, mentioned that complete change of an ACT is once-in-a-life-time experience. The erstwhile Prevention of Food Adulteration Act came into force the year I was born! I am fortunate enough to see a new Food ACT during my life time! Food Safety and Standards Act came into force in 2006 which was followed by Rules and Regulations. Regulatory Affairs gained popularity (or at the least food business operators acknowledged its existence) since early nineties with the opening of economy, import and export.

I, as a Product development and QA person, started to look at the operating part of the regulations seriously and the Prevention of Food Adulteration Act (1954), out of interest. Surprisingly, not many amendments were introduced in the PFA Act during its life time.

However, Ministry of Health and Family Welfare has introduced a Bill in the Parliament proposing close to 80 amendments in the fourteen year young Food Safety and Standards Act, 2006 (FSSA). This is inevitable as change is the most constant thing.

It also means FSSA is constantly reviewed in light of the challenges encountered during its implementation and new scientific evidences. The amendments include introduction of new elements and also giving clarity to existing sections.

The amendment proposes to include feed, animal feed and export. Inclusion of animal feed is in the right direction as it becomes a part of human food chain through farming.

The Amendment Bill proposes new agency for the administration of feed regulations. The responsibility of formulating feed standards have been entrusted with the Food Authority.

It is not clear as to the purpose of the Amendment Bill covering export. Exported products are expected to comply with the laws of importing country and not India. Consumer definition is tweaked to delete the phrase “personal needs”.

A person who receives or buys food but not for sale is deemed as a consumer. I become a consumer if I buy food but give it away free. A new definition of food contact material, processing aid, food incident have been introduced. The definition of the food business has been expanded to include export. Brand owners are now considered as "manufacturers" thereby increasing their responsibilities.

A few changes have been made in the appointment of Food Authority members. Present ACT requires that a selection committee appoint a Chief Executive Officer (CEO) and representatives from Food Industry, Consumer and farmer forum, and eminent food technologists.

In the amendment it is proposed that only the CEO will be appointed by the selection committee and the others by the Central Government in consultation with the concerned ministry (Ministry of Health and Family Welfare in this case).

The CEO has now been vested with the powers of food commissioner, through the present amendment. The CEO shall be the member secretary of Food Authority and has been vested with voting right in the Authority meetings.

Under Section 22, definition of Novel Food and proprietary has been made in line with the corresponding regulations. Section 22 in FSSA restricts vitamins and minerals to 1 RDA in products like Health Supplements, Foods for Special Dietary Use, Foods for Special Medical Purpose, etc.

As they are enshrined in the ACT, no regulation can override it. It is strange that such fine technical point appears in the Act. Comments from the stakeholders are invited. I urge all the readers to request for the deletion of this 1 RDA restriction from the Act. They should be dealt in the regulations.

In the proposed amendment, Commissioners of Food Safety have been given suomotopower to launch prosecution in case of offences related to misbranding, possession of adulteration, manufacturing under unhygienic conditions, carrying out food business without licenses, etc on the basis of the report submitted by the food safety officer.

However, the Food Safety and Standards Rules, 2011 has safety nets in terms of improvement notices, etc. Offences relating to unsafe food leading to grievous injury, rightly, has been viewed seriously. There is a significant enhancement of fine and imprisonment in such cases.

The amendments exempts distributors and retailers from any prosecution if they can prove that the packaged food was stored, distributed and sold as per the recommended conditions. In these cases, the entire responsibility lies with the manufacturer.

As Act is an intent and as the saying goes, the devil is in the details. We need to wait for the corresponding rules and regulations to assess the impact.

CERTIFICATION PROGRAM REPORT

INDIAN TRADITIONAL SWEETS

Protein Foods & Nutrition Development Association of India (PFNDAI) organized and hosted a Certification Program on "Indian Traditional Sweets" on 19 September 2020, from 2:00 p.m. - 5:00 p.m. IST. The objective of the program was to disseminate the information on the traditional sweet products. It aimed to cover various concepts like different types of traditional Indian sweet products, manufacturing processes, factors driving the market growth of sweets, and the FSSAI regulations and guidelines.

For the program, we had Dr Jagadish Pai (Executive Director, PFNDAI), Dr Joseph Lewis (Regulatory Consultant and Vice-Chairman - Regulatory Affairs Committee at PFNDAI) and Mr. Indraneel Chitale (fourth-generation Partner at 80-Year-old Chitale Group) as speakers along with Ms Swechha Soni (Manager - Food Science & Nutrition, PFNDAI) as the moderator. The attendees included food product developers, aspiring and existing entrepreneurs, professionals working in food industries and regulatory bodies, students, and nutritionists.

AUTHOR
Seles Gupta,
Food Technologist,
PFNDAI

The program included a welcome note by Dr Jagadish Pai; a brief introduction of speakers to the audience by Ms Anuja Rawool (Food Scientist, PFNDAI); three presentations, each followed by an interactive Q & A session and a feedback collection from all participants. The day ended with a vote of thanks to the attendees and speakers by Ms Swechha Soni.

Presentation I: Indian Traditional Sweets By Dr Jagadish Pai

Dr Pai opened the webinar by providing an overview of different type of products that are considered traditional Indian sweets, global and Indian market scope of this food category, and factors that drive the growth of this segment.

Next, he explained how the ingredient composition of Indian sweets makes them different from non-traditional confectionery and sweet products. He talked about different sub-categories- dairy-based, cereal-based, pulse-based and fruits & vegetables based sweets, and their pros and cons in relation to health and nutrition.

Then, he discussed the manufacturing processes involved in the making of different products and the challenges faced in scaling up the production, extending the shelf life and ensuring the development of desired flavour and colour during the manufacturing.

This presentation was followed by a Q & A session where he answered the questions raised by the participants.

Presentation II: Regulations Concerning Indian Sweets By Dr. Joseph Lewis

Dr Lewis, in his presentation, talked about the various FSSAI regulations that apply to Indian sweets industry and how do they impact food business operators (FBO) and public health. He explained the liabilities of FBO's (including manufacturers, packers, wholesalers, distributors and sellers) under different sections of FSSA (Food Safety and Standards Act).

Then, he talked about food category system, explained how it is structured, and based on the ingredient composition, how different sweet products will fall into different food categories.

While food regulations are subject to change in the upcoming years, Dr Lewis explained the basics and a few key points that should be taken into consideration while one is trying to read and comprehend the FSSAI regulations and guidelines. He also discussed labelling guidelines laid down by the regulatory body and the amendments that have been made, recently, to regulations.

This was followed by a Q & A session where he and Dr Pai jointly answered the doubts raised by the audience.

Presentation III: The Modern Halwai By Mr Indraneel Chitale

He started the presentation by giving an introduction to Chitale Group and its journey till now. He told how the company started with milk production and then, it entered the sweets segment to find ways to prevent/ reduce wastage and spoilage of milk. He talked about how the market has transformed, in the last few decades, for halwais in India.

Mr. Chitale inspired the audience by lively interacting on topics such as using modern technology to scale up the production, track raw materials' quality to bring traceability and transparency in the market, and ensure that sweets manufactured are safe and of good quality. He discussed building a brand, building great teams and how to integrate tradition and innovation while developing products that can cater to a diverse consumer base.

Then, he explained the impact and importance of integrating technology illustrated by the example of cloud computing, one of the tools that can help to ensure that the cows and the milk they are producing are healthy and safe. He also insisted on considering today's consumer needs while developing new products.

The day ended with a brief Q & A session moderated by Ms Swechha Soni, where Mr Indraneel answered the questions asked by the attendees.

In the end Ms Swechha thanked all the speakers and participants those helping in the organisation. Participants were later given the certificates of participation.

RESEARCH IN HEALTH & NUTRITION

Excessive fructose consumption may cause a leaky gut, leading to fatty liver disease

August 24, 2020 Science Daily

Excessive consumption of fructose -- a sweetener ubiquitous in the American diet -- can result in non-alcoholic fatty liver disease (NAFLD), which is comparably abundant in the United States.

But contrary to previous understanding, researchers at University of California San Diego School of Medicine report that fructose only adversely affects the liver after it reaches the intestines, where the sugar disrupts the epithelial barrier protecting internal organs from bacterial toxins in the gut. Developing treatments that prevent intestinal barrier disruption, the authors conclude in a study published August 24, 2020 in Nature Metabolism, could protect the liver from NAFLD, a condition that affects one in three Americans. "NAFLD is the most common cause of chronic liver disease in the world. It can progress to more serious conditions, such as cirrhosis, liver cancer, liver failure and death," said senior author Michael Karin, PhD, Distinguished Professor of Pharmacology and Pathology at UC San Diego School of Medicine. "These findings point to an approach that could prevent liver damage from occurring in the first place."

Fructose consumption in the U.S. has skyrocketed since the 1970s and the introduction of high fructose corn syrup (HFCS), a cheaper sugar substitute that is broadly used in processed and packaged foods, from cereals and baked goods to soft drinks. Multiple studies in animals and humans have linked increased HFCS consumption with the nation's obesity epidemic and numerous inflammatory conditions, such as diabetes, heart disease and cancer. The U.S. Food and Drug Administration, however, currently regulates it similar to other sweeteners, such as sucrose or honey, and advises only moderation of intake.

The new study, however, defines a specific role and risk for HFCS in the development of fatty liver disease. "The ability of fructose, which is plentiful in dried figs and dates, to induce fatty liver was known to the ancient Egyptians, who fed ducks and geese dried fruit to make their version of foie gras," said Karin. "With the advent of modern biochemistry and metabolic analysis, it became obvious that fructose is two to three times more potent than glucose in increasing liver fat, a condition that triggers NAFLD. And the increased consumption of soft drinks containing HFCS corresponds with the explosive growth in NAFLD incidence."

Fructose is broken down in the human digestive tract by an enzyme called fructokinase, which is produced both by the liver and the gut. Using mouse models, researchers found that excessive fructose metabolism in intestinal cells reduces production of proteins that maintain the gut barrier -- a layer of tightly packed epithelial cells covered with mucus that prevent bacteria and microbial products, such as endotoxins, from leaking out of the intestines and into the blood. "Thus, by deteriorating the barrier and increasing its permeability, excessive fructose consumption can result in a chronic inflammatory condition called endotoxemia, which has been documented in both experimental animals and pediatric NAFLD patients," said the study's first author Jelena Todoric, MD, PhD, a visiting scholar in Karin's lab.

In their study, Karin, Todoric and colleagues from universities and institutions around the world, found that leaked endotoxins reaching the liver provoked increased production of inflammatory cytokines and stimulated the conversion of fructose and glucose into fatty acid deposits.

"It is very clear that fructose does its dirty work in the intestine," said Karin, "and if intestinal barrier deterioration is prevented, the fructose does little harm to the liver." The scientists noted that feeding mice with high amounts of fructose and fat results in particularly severe adverse health effects. "That's a condition that mimics the 95th percentile of relative fructose intake by American adolescents, who get up to 21.5 percent of their daily calories from fructose, often in combination with calorie-dense foods like hamburgers and French fries," Karin said.

Interestingly, the research team found that when fructose intake was reduced below a certain threshold, no adverseeffects were observed in mice, suggesting only excessive and long-term fructose consumption represents a health risk. Moderate fructose intake through normal consumption of fruits is well-tolerated. "Unfortunately, many processed foods contain HFCS and most people cannot estimate how much fructose they actually consume," said Karin. "Although education and increased awareness are the best solutions to this problem, for those individuals who had progressed to the severe form of NAFLD known as non-alcoholic steato-hepatitis, these findings offer some hope of a future therapy based on gut barrier restoration."

Vitamin D twice a day may keep vertigo away

August 5, 2020
Science Daily

Taking vitamin D and calcium twice a day may reduce your chances of getting vertigo again, according to a study published in the August 5, 2020, online issue of Neurology®, the medical journal of the American Academy of Neurology.

"Our study suggests that for people with benign paroxysmal positional vertigo, taking a supplement of vitamin D and calcium is a simple, low-risk way to prevent vertigo from recurring," said Ji-Soo Kim, M.D., Ph.D., of Seoul National University College of Medicine in Korea. "It is especially effective if you have low vitamin D levels to begin with." Benign paroxysmal positional vertigo happens when a change in head position gives you a sudden spinning sensation. It's one of the most common types of vertigo. Treatment includes a doctor performing a series of head movements that shift particles in the ears that cause the vertigo, but the condition tends to recur frequently. About 86% of people with this form of vertigo find that it interrupts their daily life or causes them to miss days at work.

The study looked at 957 people in Korea with benign paroxysmal positional vertigo who were treated successfully with the head movements. The participants were separated into two groups, intervention and observation. The 445 people in the intervention group had their vitamin D levels taken at the start of the study. The 348 people with vitamin D levels below 20 nanograms per ml (ng/mL) were started on supplements with 400 international units of vitamin D and 500 milligrams of calcium twice daily, while those with vitamin D levels equal to or greater than 20 ng/mL, were not given supplements. The 512 people in the observation group did not have their vitamin D levels monitored and they did not get supplements.

Those in the intervention group who took the supplements had a lower recurrence rate for vertigo episodes after an average of one year than those in the observation group. People taking supplements had an average recurrence rate of 0.83 times per person-year, compared to 1.10 times per person-year for those in the observation group, or a 24% reduction in the annual recurrence rate. There appeared to be greater benefit for those who were more deficient in vitamin D at the start of the study. Those who started with vitamin D levels lower than 10 ng/mL saw a 45% reduction in annual recurrence rate, while those starting with vitamin D levels at 10 to 20 ng/mL saw only a 14% reduction. A total of 38% of the people in the interventional group had another episode of vertigo, compared to 47% of those in the observation group.

"Our results are exciting because so far, going to the doctor to have them perform head movements has been the main way we treat benign paroxysmal positional vertigo," said Kim. "Our study suggests an inexpensive, low-risk treatment like vitamin D and calcium tablets may be effective at preventing this common, and commonly recurring, disorder." A limitation of the study is that a large number of participants did not complete the entire study, with more people assigned to take the supplements dropping out of the study than in the observation group. This study was supported by the Korean Ministry of Health and Welfare.

Vitamin C may ward off age-related muscle loss, say researchers

27 Aug 2020 Nutrition Insight

Vitamin C may be the key to maintaining muscle mass for older ages according to new UK research.

The study found that older people who eat plenty of vitamin C – commonly found in citrus fruits, berries and vegetables – have better skeletal muscle mass than those who eat less of these foods. The researchers believe that the findings may help prevent age-related muscle loss by increasing vitamin C consumption.

"We studied a large sample of older Norfolk, UK, residents and found that people with the highest amounts of vitamin C in their diet or blood had the greatest estimated skeletal muscle mass, compared to those with the lowest amounts," says Dr. Richard Hayhoe from the University of East Anglia (UEA)'s Norwich Medical School. "We are very excited by our findings as they suggest that dietary vitamin C is important for muscle health in older men and women and may be useful for preventing age-related muscle loss. This is particularly significant as vitamin C is readily available in fruits and vegetables, or supplements, so improving intake of this vitamin is relatively straightforward," Hayhoe explains.

The research team discovered that almost 60 percent of men and 50 percent of women were not consuming as much vitamin C as recommended by the European Food Safety Agency (EFSA). "We're not talking about people needing mega-doses. Eating a citrus fruit, such as an orange, each day and having a vegetable side to a meal will be sufficient for most people," he notes.

Importance of muscle

Maintaining muscle mass is pivotal as people tend to lose skeletal muscle mass as they get older, potentially leading to sarcopenia. This is a condition characterized by loss of skeletal muscle mass and function, frailty and reduced quality of life. Lead researcher, Ailsa Welch, Professor at UEA's Norwich Medical School, says that people over 50 lose up to 1percent of their skeletal muscle mass each year. This loss is thought to affect more than 50 million people worldwide. "It's a big problem because it can lead to frailty and other poor outcomes such as sarcopenia, physical disability, Type 2 diabetes, reduced quality of life and death," she adds. "We know that vitamin C consumption is linked with skeletal muscle mass. It helps defend the cells and tissues that make up the body from potentially harmful free radical substances. Unopposed these free radicals can contribute to the destruction of muscle, thus speeding up age-related decline," Welch details.

Examining over 13,000 people

Until now, few studies have investigated the importance of vitamin C intake for older people, Welch explains. Therefore more research on the matter may be warranted. The research team studied data from more than 13,000 people aged between 42 and 82 years, who are taking part in the EPIC (European Prospective Investigation into Cancer and Nutrition) Norfolk Study. They calculated their skeletal muscle mass and analyzed their vitamin C intakes from a seven-day food diary. They also examined the amount of vitamin C in their blood.

The research was led by the UEA, in collaboration with the University of Cambridge and Strangeways Research Laboratory in Cambridge and developed from a UEA medical student project by Lucy Lewis. The EPIC-Norfolk study was supported by grant funding from the Medical Research Council and Cancer Research UK.

With senior nutrition coming to the fore as an important area of focus, industry is turning its eye on key opportunities in this space. Consumers are increasingly seeking a more holistic approach to healthy aging, according to a new Innova Market Insights survey.

The research revealed that seven out of ten consumers have made changes across the past year to improve their health. Innova Market Insights' 2019 data also indicated that 76 percent of consumers aged between 26 and 55 years agree that healthy aging started with what they eat and drink. Meanwhile 56 percent said that they had increased their consumption of functional F&B over the previous year. The segment allows for further opportunities. Recently, Jordan Donohue, Business Development Manager, Sports Nutrition & Health Food at Arla Foods Ingredients, discussed how this new consumer base may affect the sports nutrition sector as well.

Edited by Kristiana Lalou

Annatto Tocotrienol may improve markers of liver health in people with NAFLD

By Stephen Daniells 03-Aug-2020 – NutraIngredients Asia

Supplementation with delta tocotrienol may improve liver health markers in people with Non-Alcoholic Fatty Liver Disease (NAFLD), says a new study that claims to be the first to the efficacy of this vitamin E form in this population.

Six hundred milligrams per day of the delta-tocotrienol supplement for 24 weeks led to significant reductions in levels of liver enzymes, markers of oxidative stress, fatty liver index, and HOMA-IR scores (a measure of insulin resistance), according the study conducted at the Armed Forces Institute of Pathology. Data published in Complementary Therapies in Medicine also indicated that both the placebo and tocotrienol groups experienced in anthropometric values, such as weight, BMI and waist circumference since both groups were assigned to a low-fat diet, but participants in the tocotrienol group experienced significantly greater reductions in all three measures, compared to placebo. NAFLD is the most prevalent liver abnormality in Western countries and parallels the epidemic of metabolic syndrome, obesity and diabetes. Frequently disabling and occasionally leading to cirrhosis, fatty liver disease has currently costs the US health care system about $32 billion annually. Vitamin E is a family of eight separate but related molecules: four tocopherols (alpha, beta, gamma, delta)and four tocotrienols (alpha, beta, gamma, delta). Tocotrienols are derived from three major sources, including rice, palm and annatto. The new study used annatto tocotrienols from Delta Gold, which is free from tcopherol

and was manufactured by US-based manufacturer American River Nutrition. Commenting on the research, Dr Barrie Tan, President of American River Nutrition, said: "While an earlier12-week study already suggested significant benefits of Delta Gold for NAFLD patients, we now have evidence of a compelling duration-response benefit of tocotrienol to liver health. "Doctors currently recommend alpha-tocopherol supplementation for NAFLD patients in an effort to reduce oxidative stress, but we think that tocotrienol will be much more powerful and will go further to help. This is the subject of an ongoing 12-month clinical trial, which will compare the effects of alpha-tocopherol versus Delta Goldin NAFLD patients, and we look forward to sharing those results soon."

For the new 24 week study, the researchers recruited 71 people with NAFLD and randomly assigned them to receive either placebo or Delta Gold tocotrienol (300mg twice daily). The results showed that liver enzymes (serum amino-transferases (ALT, AST)) decreased by 18-21% after 24weeks in the tocotrienol group, while significant decreases in triglycerides (13%), malondialdehyde (MDA, a marker of oxidative stress: 19% reduction), and hs-CRP (21%) were also reported. The Fatty Liver Index (FLI), which includes measures of weight, BMI, waist circumference, GGT, and triglycerides, decreased by 15% after 24 weeks of Delta Gold supplementation. Improvements in anthropometric measures were also significantly greater in the tocotrienol group, with weight reductions of 6.8 kg (14.9 lbs) after 24 weeks, compared to 2.1 kg (4.6 lbs) in the placebo group. In addition, BMI and waist circumference in the tocotrienol group decreased by 2.4 kg/m2 and 2.9 cm, respectively, compared to 0.7 kg/m2 and 1.15 cm in the placebo group. Examining metabolic syndrome risk factors, other measurements at 24 weeks included HOMA-IR, adiponectin, and leptin. HOMA-IR, a calculation that marks for the presence and extent of insulin resistance, was reduced by 15% in the tocotrienol group.

Both adiponectin and leptin are hormones that are critically secreted by adipose tissue. Adiponectin regulates glucose levels and fatty acid breakdown, whereas leptin can be pro-angiogenic, pro-inflammatory, and chronically elevated in obesity. In the tocotrienol group, adiponectin levels increased by44%, whereas leptin decreased by 18%. In comparison, adiponectin in the placebo group increased by only3%, with leptin decreasing 3%. IL-6 and TNF-alpha, also thought to be major inflammatory mediators ofboth NAFLD and insulin resistance, were reduced by 24% and 21%, respectively, in the tocotrienol group. "The present study demonstrated that delta-tocotrienol supplementation for 24 weeks effectively improved biochemical markers of hepatocellular injury and steatosis in patients with NAFLD," wrote the researchers.

"Therefore, delta -tocotrienol might be considered as a therapeutic option in the management of patients with NAFLD. "However, multi centric clinical trials are recommended to validate the results of present study and to elucidate the pathways and molecular mechanisms of delta -tocotrienol actions in patients with NAFLD."

Probiotics for memory? Morinaga-backed RCT reveals strain improves cognitive functions in older Japanese population

By Guan Yu Lim 04-Aug-2020 – NutraIngredients Asia

A randomised control trial on Japan's Morinaga Milk Industry's Bifidobacterium breve A1 probiotic strain has shown it could improve memory functions in older adults with mild cognitive impairment (MCI).

B.breve A1 is a strain originating from an infant, and had been previously studied in a mouse model for its therapeutic potential in managing memory functions and suppressing brain inflammation. MCI is characterised by a decline of cognitive functions that does not usually interfere with daily life but is usually associated with the increased risk of developing Alzheimer's disease (AD) or dementia. A previous study by Hiroyuki Shimada et al, reported that the prevalence of MCI in an elderly Japanese population was about 13.9%. The global average was about 18.9% reported in this present study. Researchers wrote: "The present study is the first double-blind, placebo-controlled study in humans to show the cognitive function enhancement benefit of the probiotic B. breve A1 in subjects with suspected MCI ."

The study recruited 79 healthy non-obese older adults aged 50 to 79 years in Tokyo. All suffered from MCI, which was identified as a lower RBANS score (average 31.5) and an MMSE score of 22 or more (average 24.5). Participants diagnosed with dementia or used supplements that affected cognitive function were excluded from the study. They were then divided into two groups, treatment group (B. breve A1) or placebo. The treatment group was given a lyophilized powder of B. breve A1 (2×10 CFU), which mainly contained maize starch as a carrier. Placebo capsules were composed of maize starch only. Each participant was asked to consume two probiotic or placebo capsules daily for 16 weeks.

Primary outcome was assessed by the cognitive scores of the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS) while secondary outcome by the Japanese version of the MCI Screen (JMCIS) tests. The RBANS total score was significantly improved by 11.3 points in the treatment group compared to placebo ($p < 0.0001$). In particular, findings suggested significant improvements in immediate memory, visuospatial/ constructional, and delayed memory ($p < 0.0001$). Only language and attention scores saw no improvement over placebo. Researchers pointed out: "The 11.3-point improvement seen after 16 weeks of B. breve A1 is remarkable. In comparison, dietary supplementation of arachidonic and docosahexaenoic acids in a similar MCI population showed a significant improvement of around 6 points in RBANS immediate memory score after 13 weeks ." They remarked: "Future longer longitudinal studies with B. breve A1 may reveal further tangible memory improvement." JMCIS score was also improved in the treatment group over placebo.

Researchers suggested that B. breve A1 may have an impact on the hippocampus, which is critical for short term and long-term memory. While it was not investigated in this study, they said: "Future positron emission tomography imaging studies (PET) using TranSlocatorPrOtein (TSPO), a marker of brain inflammation that was used in MCI subjects to study microglial activation/inflammation, would be helpful to visualise B. breve A1 extent effect on the brain noninvasively."

The next steps for the researchers now was conducting exploratory biomarker studies using blood, cerebrospinal fluid, and faeces to understand how B. breve A1 was causing an amelioration of memory in the MCI population as well as evaluate its potential to treat AD dementia. "The identification of the precise mechanism would also shed much-needed light on what is causing dementia and related CNS disorders and potentially help justify further intervention studies in various neuropathologies." The treatment was well-tolerated with no reported side-effects, and could offer a safe and effective approach to prevent the development of cognitive impairment in the general population.

& FOOD SCIENCE INDUSTRY NEWS

Tackling allergy escalation: Industry addresses food sensitivities and milk digestibility

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Many allergies and food sensitivities are on the rise, with some consumers flagging difficulties digesting many dairy products, for example.

As a result, industry is embracing new technology to help consumers enjoy the foods they want to eat. A2 milk and hydrolyzed proteins are some notable areas of development in the dairy sector. Childhood food sensitivities are also a key market, both within the dairy space and more broadly. NutritionInsight speaks with movers in the allergy and food sensitivity arena to explore how this sector is developing.

"Food allergies at large have been trending upward. Over each of the past few decades, there has been a doubling of food allergies and a tripling of some nut allergies, leaving 8 percent of the US population of children affected. That's two children in every classroom and six million children in total. Some allergies are on the rise here – like sesame, for example – that used to be rare. We're seeing these more as the diet of US consumers becomes more global," says Dr. Wendy Sue Swanson, a pediatrician and Chief Medical Officer at SpoonfulOne.

SpoonfulOne is part of Before Brands, which received a major investment from Nestlé Health Science last year. It offers an advanced childhood nutritional product touted as reducing food allergy development risk by introducing babies to 16 different common allergens. Additionally, each packet of SpoonfulOne contains 30 mg of proteins that increase the production of IgG4, which are protective antibodies.

"This upward allergy trend will sadly continue to rise in the next ten years without strategic changes in guidelines, recommendations and solutions for busy families raising infants and toddlers. Fortunately, there will be more efforts toward prevention, therapeutics to treat and research to solve all the issues and concerns of food allergies worldwide. Promisingly, more effort will be put into preventing allergies and their impact, so the next generation of children will not have to suffer from food allergies," continues Dr. Swanson.

Addressing infant dairy allergies Lotte Neergaard Jacobsen, Pediatric Research Scientist at Arla Foods Ingredients (AFI), also notes that the prevalence of many different allergies has increased worldwide in recent decades.

"One of the most common in infancy is cow's milk allergy (CMA), which affects two to three percent of infants. Meanwhile, atopic dermatitis (also known as eczema), which can be related to CMA, affects as many as 20 percent."

She notes that the key consumer group is parents, who are intensely focused on making the right nutritional choices for their children. "Infant discomfort is one of the most common reasons parents switch formulas, so it's essential that the risks of allergy and gastrointestinal problems are minimized."

Responding to this need, AFI offers a range of hydrolyzed casein and whey proteins that can be used in formulas for infants with allergies and those at risk of them. In these ingredients, allergy-inducing epitopes have been removed or reduced. Jacobsen points to clinical studies that observed a reduced risk of atopic dermatitis in infants fed hydrolyzed formulas compared with those based on intact proteins.

"There is evidence that awareness of the health benefits of whey protein hydrolysates is high among mothers worldwide. In 2018, we surveyed 5,658 mothers in seven different countries and 31 percent said they would prefer a formula containing hydrolysates," she adds.

Jacobsen further details that hydrolysates offer several advantages, including better taste and absorption than free amino acids. She explains that one of the biggest recent changes has been the increasing use of whey protein hydrolysates in formula. According to Innova Market Insights, global launches of this type increased by 7.9 percent CAGR between 2014 and 2018.

A new type of milk?

Also active in the dairy space is a2 Milk, which produces dairy milk containing only A2 protein, and no A1 protein, which is found in standard milk. Blake Waltrip, US CEO of The a2 Milk Company, explains that through a safe genetic test, the company identifies cows that only produce the A2 protein.

"[The trait] is like having brown eyes versus blue eyes. Then, we segregate those cows to get our a2 Milk. With only the A2 protein and no A1, published research suggests that A2 Milk may help avoid stomach discomfort in some people," details Waltrip.

He continues that with a recent boom in milk alternatives within the past decade, millions of US consumers have self-diagnosed that lactose intolerance is causing their stomach discomfort without a medical diagnosis. "In reality, it may be a sensitivity to the A1 beta-casein protein type that is found in ordinary milk."

However, he highlights that as A2 Milk is real dairy milk, it contains lactose and whey. Therefore, it is not appropriate for people with a dairy allergy or who have been medically diagnosed with lactose intolerance.

Waltrip adds that the company is currently focusing on building awareness and trial with consumers in the grocery and mass channels through education of the A2 protein. Notably, products without A1 proteins have suddenly burst onto the scene. Last month, Re:THINK Ice Cream relaunched its desserts to include both collagen and lactose-free A2/A2 dairy.

Meanwhile, Nestlé-owned Gerber recently launched Good Start A2 Infant Formula and Good Start A2 Toddler Drink in the US.

Commenting on the rise of A2 milk, Chris Cornyn, Chief Innovation Officer at SpoonfulOne, says that the company supports any product that allows people to enjoy the foods they love. "A2 milk products have been designed, as we understand it, to help people digest milk more easily. We support this advancement."

Circumventing challenges

For SpoonfulOne, it is crucial that production facilities do not impede those for free-from products. "The food manufacturing industry has dedicated itself to upgrading and updating sanitation and product segregation practices to keep families who do navigate food allergies safe," explains Cornyn.

Ultimately, the company works with its manufacturing partners to help them handle common food allergens. SpoonfulOne also invests in its own dedicated equipment and production space to manufacture its products to protect consumers who rely on the free-from marketplace.

"The world needs both segments to address food allergies, so we do take extraordinary measures to protect the free-form space by building separate procedures and capabilities to produce our products," Cornyn details.

Meanwhile, the rise in plant-based diets is on the radar for a2 Milk. "As consumers move from animal milk to plant-based alternatives, they are losing out on that natural nutrition of dairy milk. Milk has no added sugar with a clean label that doesn't include fillers, stabilizers or thickeners.

In the next ten years, you may see more health issues arise as consumers – old and young – are not getting enough of the important nutrients they need for good health because they assume plant-based is equal to milk in nutrition," argues Waltrip.

Assessing today's consumers
Reflecting on a2 Milk's target market, Waltrip explains that its prototypical consumer keeps a healthy lifestyle close to heart, always striving to educate their friends and family on good nutrition and self-care. "Additionally, our consumer does their research on trends and innovative products, but looks for local and socially responsible companies."

This emphasis on health is also important for AFI, with Jacobsen pointing to research revealing that "healthy" and "natural" are now the two most important characteristics for consumers of food products. In this space, the company has just launched a micellar casein isolate, which is also available in an organic version. According to Innova Market Insights, NPD with natural claims has seen a CAGR increase of 5 percent over the past three years (2017-2019), growing at around 8 percent annually compared to the past year. "As a general point, consumers' needs have become more varied and complex. Many want products to be free from additives or GMO ingredients, some are focused on avoiding allergens and others need them to be halal or kosher. Increasing concern about allergies can be seen as one element of a broader consumer focus on health and an expectation of wholesomeness," concludes Jacobsen.

By Katherine Durrell

"Protein diversity is key to providing sustainable nutrition for society," flags Kerry exec

31 Aug 2020 Nutrition Insight

A more nuanced understanding is necessary when discussing the connection between sustainability and plant-based trends.

Perceptions of a vegan versus carnivore binary are outdated, with many consumers embracing a mix of different protein sources.

Additionally, one source is not necessarily more sustainable than another, with a host of factors needing to be assessed. This is detailed by Juan Aguiriano, Group Head of Sustainability & Technology Ventures at Kerry Group, who speaks to FoodIngredientsFirst ahead of an upcoming webinar on plant-based protein.

"From our perspective at Kerry, it's not about choosing dairy protein over plant - it's about offering protein diversity. We also help our customers see the added value when it comes to extending what they have to offer to meet the needs of a consumer base that cares about the environment and the future," he explains.

He argues that solely relying on the meat and dairy industries to meet these nourishment requirements will have a detrimental impact on people and the planet. Therefore, plant protein is a "necessary" component of sustainable nutrition for the collective future. However, it is crucial to note that no protein source is inherently "sustainable" or "unsustainable."

For plants, yield per hectare, protein content, extraction energy, protein yield, distribution and further processing all need to be considered. Over-reliance on a limited number of crops can cause issues such as water scarcity, deforestation and biodiversity loss, flags Aguiriano.

Weighing up the pros and cons

There are trade-offs within all production systems, flags Aguiriano. He argues that it is key that people understand these elements and make sustainable choices accordingly. "When assessing the environmental impact of plant-based protein alternatives, the full value chain needs to be analyzed. Therefore, a number of approaches needs to be considered in terms of plant-proteins. These include source diversification, regenerative agricultural practices, shifts in diets and food waste minimization in general."

He further details that, as with all elements within the food system, the answer to this question is not black and white. Without animals, many food side streams would go to waste, and marginal lands would no longer be productive. "It is not a question of choosing one over the other. Instead, it's about understanding and fostering the finely balanced relationship needed to provide sustainable nutrition for society."

The rise of the flexitarian

The flexitarian consumer is the driving force behind the tremendous plant-based food market growth, according to Aguiriano. Kerry's research recently found that consumer demand for plant-based protein continues to grow, driven by a combination of environmental, ethical and health concerns. "We know that the consumer-driven shift toward plant protein-based foods and beverages has existed over the last few years. However, we believe that in a post-COVID-19 landscape, plant-based will accelerate and continue to be a huge area of growth," states Aguiriano.

He explains that the pandemic has led consumers to feel vulnerable and seek to incorporate healthier foods into their diets to support their long-term health. Many are moving toward plant-based foods as they re-evaluate their diets and become more aware of the benefits of increasing consumption of a more plant-based diet, including reduced risk of developing heart disease, diabetes and stroke. The last few months have also highlighted the importance of a robust and resilient food system that functions in all circumstances and can ensure access to a sufficient supply of affordable food, according to Aguiriano. "We need to do much more to keep ourselves and the planet healthy as we prepare for future challenges to our food system – whether those are pandemics, extreme weather, changing climate, natural disasters or new pests."

Overcoming obstacles

Despite current demands for plant-based proteins, Aguiriano flags that the category originally had a reputation for being "unappetizing" due to struggling to deliver on taste, texture and succulence in meat alternatives or creaminess in dairy alternatives. "Some of the key R&D challenges with plant protein can be off-notes, gritty texture and mouthfeel. However, there has also been significant progress with flavour-masking technologies and processing-technique innovations to improve the overall taste. It also helps to reduce grittiness of proteins in food and beverage applications," he explains. Meanwhile, transparency is a key concern for many consumers, further motivating companies to ensure their raw materials are sustainably sourced. "We actively work to bring additional value to our customers by helping them achieve their responsible sourcing goals and connecting consumers to positive impacts at farm level. We also work with our suppliers to drive impact through key raw material supply chains."

Additionally, Kerry has a target in place to source all priority raw materials sustainably by 2030 through certification or agricultural improvement programs that address key sustainability challenges associated with each priority commodity. Finally, Aguiriano notes that industry must continue to focus on developing new plant protein solutions. "There are over 300,000 species in the plant kingdom, yet only 0.1 percent of plant phytonutrients have been examined. We also need to continue to deliver innovative technologies that will enable us to produce and process these plant proteins at scale so that we can offer them at the right price points," he concludes.
By Katherine Durrell

Can food processing produce hypoallergenic egg?

Food Science September 2020

Eggs and their derived products are common foods that can induce food allergic reaction, especially in children.

The reported incidence of egg allergy is 1% to 2%, and its prevalence has rapidly increased in recent years. Currently, there is no approved treatment for it. The clinical guidance for this adverse food reaction is the complete elimination of egg (and their derived products) from diet, which is difficult due to the wide use of egg ingredients in food industry. Food processing methods can affect the conformational and/or linear epitopes of allergens and may change the allergenicity of egg. Thermal treatment and various other processing methods based on the enzymatic hydrolysis and irradiation have been found useful in reducing allergenicity of certain egg allergens. However, processed egg proteins can also show an increased allergenicity after treatment and the correct pattern to follow for the generation of hypoallergenic products remains unclear. This review explores the influence of processing methods on egg allergenicity and reports the best options for the generation of hypoallergenic egg products to date.

Raising the bar: Snacking NPD targets energy, protein and low sugar demands

06 Aug 2020 Nutrition Insight

The nutrition industry rises again to the challenge of providing consumers functional bars for healthy on-the-go snacking.

A new line of snacks called VK Energy Bars now delivers a "super-dose" of vitamin B12 at a 1,000 percent daily value for sustained energy without the crash, VK Energy states. Meanwhile, One Bars have launched mini versions of its existing snack for a more convenient on-the-go protein kick, while new RXBAR Layers protein bars walk the tightrope of providing indulgence and nutrition.

Innova Market Insights data reveals that 41 percent of sports snacks and bars launches in the first half-year (H1) of 2019 had an Energy/Alertness positioning. Meanwhile, Low Sugar claims were featured on 22 percent of new launches in this space in H1 2019, compared to 25 percent from the first half-year of 2018. High/Source of Protein positionings continue to lead the health claims category at 61 percent of NPD snacks launches from H1 2019.

Vitamin B12 for a "1,000 percent" energy boost

The snacks scene is "not short of overly sweet energy bars," says Chef Vikki Krinsky, Founder and CEO of VK Energy, "Because of this, I was determined to showcase my innate flair for savoury, dramatic tastes and textures in the products I am creating. Most importantly, I want everyone to be able to experience the effects of B12 in a bar that is both tasty and functional," she highlights.

The VK Energy bars are fully plant-based, vegan, dairy-free, gluten-free, high in protein and prebiotic fibre. They are also made with organic ingredients and do not add sugar. Each of the bars is crafted around three key ingredients: rosemary, olive oil and chickpea flour. Rather than using a chemical stabilizer to increase shelf life like most energy bars, the rosemary provides herbaceous flavour and prevents oxidation and microbial contamination. Meanwhile, the robust, fruity olive oil is rich in mono-saturated fats and antioxidants. Lastly, the chickpea flour incorporates umami tones that blend well with the bar's other Mediterranean ingredients, while elevating the macronutrients in each bar. The family of three snack bars arrives in Almond Rosemary, Cocoa & Sea Salt and Meyer Pistachio flavours.

Mini bars, big boost

One Brands revealed new One Minis to its expanding portfolio of "powerfully delicious" protein bar options in Maple Glazed Doughnut and Birthday Cake flavour varieties. Each One Minis bar has 7 g of protein, 80 calories and has less than 1 g of sugar in a small portable package for on-the-go convenience. The company states its One product portfolio is ideal for "breakfast, lunch, on-the-go snacking, post-workout recovery or 'just because.'"

Snack brand RXBAR launched a layered protein bar that provides "a balance between indulgence and nutrition," the company states. The peanut butter layer provides a "chewy, creamy, crunchy texture to the wholesome ingredient list" for a post-workout fuel or a midday pick-me-up. The new RXBAR Layers combine egg whites for protein, nuts for texture and dates as a binder with nut butter and real honey for an added layer of indulgence. With up to 15 g of protein per bar, RXBAR Layers are the highest protein offering from RXBAR.

In terms of the future snack bar market, Innova Market Insights predicts fibre to make a comeback, as well as insect protein to debut as a high-quality ingredient base. Also, there is a growing demand for products that are intrinsically low in sugar and free from artificial sweeteners.

Edited by Anni Schleicher

Nutrition labelling is improving nation's diet

August 12, 2020 Science Daily

Nutritional information displayed prominently on food products which give consumers information on salt, sugar and calorie content play a significant role in nudging people towards better dietary choices, according to new research.

The study, from health economists at the universities of Bath and Bristol published in the Journal of Health Economics, is the first to evaluate the impact of Front-of-Pack nutritional labelling on retailers' store-branded products, which was first introduced back in 2006. Their results find a reduction in the quantity of labelled store-branded food purchased (for example ready meals, pizzas, burgers, etc.) and an overall improvement in the nutritional composition of consumers' shopping baskets where labelling was displayed. Significantly, these improvements in food shopping habits were most prominently observed across poorer households.

In 2006, the UK Food Standards Agency (FSA) recommended retailers to introduce Front-of-Pack (FOP) labelling on their store-brand products on seven types of foods (ready meals, burgers/sausages, pies, breaded/coated meats, pizzas, sandwiches and cereal). The recommendation was taken up by several UK retailers (Waitrose, Co-Op, Marks & Spencer, and Asda) who each introduced it at different times between March 2006 and September 2007. Retailers introduced two types of nutritional labelling. Some introduced a Traffic Light System, a colour-coded scheme denoting the amount of nutrients by the colours red (high), amber (medium) and green (low), whilst some others introduced a hybrid system incorporating both a traffic light system and Guideline Daily Amounts (GDAs), where both colours and the contribution that each of these nutrients make towards the adult GDA were displayed.

By drawing on differences observed in the food choices of consumers who shopped in stores where labelling was displayed, to changes for consumers shopping elsewhere, the results from the new study show that on average, as a result of labelling, households improved the quality of their diet by reducing the total monthly calories from labelled store-brand foods by 588 Kcal, saturated fats by 14g, sugars by 7g, and sodium by 0.8mg. Hybrid labelling was found to be most effective at shifting choices. The research comes as the UK government sets out its new obesity strategy in response to covid-19, unveiling as part of it a number of measures including menu calorie labelling to help people make healthier choices when eating out. The team behind the study say these new results can help inform future policies in this area.

Lead researcher, Dr Eleonora Fichera from the Department of Economics at the University of Bath explains: "Our results suggest that nutritional labelling on food products can play an important role in starting to shift behaviours towards more healthier food choices whether that be during the weekly shop in a supermarket, or potentially through new healthier menu choice options. Labelling has a dual effect in better informing consumers about the nutritional value of the products they put in their shopping basket, but it may also incentivise manufactures towards better quality food products.

"This of course is not a panacea to solve the obesity problem, which is multi-faceted and needs to be tackled with a much more systemic approach. But these results provide policymakers with further evidence that such measures can make an important contribution."

Whole grain labels baffle US consumers, finds study

11 Aug 2020 Nutrition Insight

Confusing and potentially misleading whole grain labels on cereals, bread and crackers have been flagged by a new study led by US researchers at Tufts University and New York University.

The scientists tested whether consumers are able to pick out the healthier, whole grain option based on food package labels, with the investigators concluding that the findings could help lead to enhancements in labelling. "For food manufacturers, having this information about consumer misunderstanding may encourage reporting of the percentage of grain content that is whole grain. Some have suggested that policymakers should consider adopting a requirement for that type grain content label, on products that make explicit or implied whole grain content claims," Parke Wilde, lead author and Professor at Gerald J. and Dorothy R. Friedman School of Nutrition Science and Policy at Tufts University, tells Nutrition Insight. Over 1,000 US adults responded to a survey with photos of both hypothetical and real products. The photos displayed various whole grain labels on the front of the package, along with the nutrition facts label and ingredients list for each product. Participants were asked to identify the healthier option for the hypothetical products or assess the whole grain content for the real products.

For real products that were not mostly composed of whole grains, 43 to 51 percent of respondents overstated the whole grain content. Specifically, 41 percent overstated for multigrain crackers, 43 percent for honey wheat bread, and 51 percent for 12-grain bread. Consumers more accurately stated the whole grain content for an oat cereal product that really was mostly composed of whole grain. For the hypothetical products, 29 to 47 percent of respondents answered incorrectly. Specifically, 31 percent answered incorrectly for cereal, 29 to 37 percent for crackers, 47 percent for bread).

"The side-by-side comparisons allowed us to vary the ingredient lists, but this only is possible with hypothetical products. The whole grain content questions allowed us to use real products, but we could not modify the ingredients to investigate particular trade-offs in whole grain content. Our biggest obstacle was recognizing that our two methods each had a key strength and a key limitation, so we decided to use both methods," explains Wilde. The study also found that consumers who were younger, had less education, were Black or African American, or reported having difficulty understanding food labels were more likely to answer incorrectly in the test involving hypothetical products.

Weighing up against a legal standard

The study aimed to assess whether consumer misunderstanding of the labels meets a legal standard for enhanced US labelling requirements for whole grain products. The legal standard relates to deceptive advertising, and evidence that the labels are actually misleading consumers can bolster support for regulations. "With the results of this study, we have a strong legal argument that whole grain labels are misleading. I would say when it comes to deceptive labels, 'whole grain' claims are among the worst. Even people with advanced degrees cannot figure out how much whole grain is in these products," highlights co-author Jennifer Pomeranz, Assistant Professor of Public Health Policy and Management at NYU School of Global Public Health. Wilde explains that manufacturers may use various methods to persuade consumers that a product has whole grains even if it doesn't. This includes calling a product "multigrain" or coloring it brown. "For consumers, it would be helpful if manufacturers reported what percentage of grain in a particular product is whole grain," he adds.

He continues that in comparison to other ingredients that appear as a row on the Nutrition Facts Panel – like sodium – whole grain is much more difficult for consumers to understand. "Even the most closely relevant row of the Nutrition Facts Panel (fiber) does not really track the whole grain content very precisely.

Therefore even knowledgeable consumers may have difficulty determining the whole grain content," Wilde concludes. These findings are particularly important in light of the 2015-2020 Dietary Guidelines for Americans, which recommend that half of all grains consumed should be whole grains. Adequate intake of whole grains has been linked with reduced risk of heart disease, Type 2 diabetes and cancer.

By Katherine Durrell

Alcohol policy action: India emerges as top supporter of control policies as researchers blast ANZ changes

By Pearly Neo 11-Aug-2020 – Food Navigator Asia

India has emerged as the top supporter of stronger alcohol policy implementation in a new study, where researchers also criticised labelling changes in Australia and New Zealand and called for stronger, more effective measures to be put in place.

The study was conducted on over 7,500 participants via an online survey, assessing their support for 14 alcohol control initiatives such as warning labels, alcohol advertising, alcohol sponsorships at sports events, education campaigns and government control taskforces.

The participants hailed from seven countries (Australia, Canada, China, India, New Zealand, the United Kingdom, and the United States). Across all the policies put up in the survey, support was highest in India which consistently scored above 80% for all measures.

"There is likely to be a cultural element here - In India alcohol hasn't been part of cultural rituals to the same extent that it has been in most of the other countries included in the study, and there is a stronger perception that alcohol is a vice product," study head researcher Professor Simone Pettigrew from the George Institute for Global Health told FoodNavigator-Asia .

"Cultural rituals in India typically involve other forms of consumption (e.g., tea) more so than alcohol as compared to countries such as the UK and Australia, where alcohol is involved in most forms of socialising and celebration. Additionally, India already has alcohol control policies in place, and there is a general trend for the public to become more accepting of health policies over time once they have been implemented."

As it is, India also the highest-rated in terms of existing policies at 81.8 points based on the Alcohol Control Policy Index, which is a measure of the stringency of existing alcohol policies – this was far in front of closest competitors the UK (52.2), China (50.0) and New Zealand (50.0). Top levels of support were found in India for the implementation of 'public education campaigns about alcohol-related harms' which received 86% of support, to implement pregnancy warning labels (85%), health warning labels (84%) and a 'special government taskforce dedicated to addressing alcohol harms' (84%).

India was also the only country to score above 80% for many of these initiatives – this was particularly glaring when it came to sports sponsorship restrictions and setting up a government taskforce for control, where all other countries scored above 68%. Responding to queries on whether this contrasted in any way with the recent 'alcohol rush' in India post-lockdown, Prof Pettigrew explained that this was unrelated as the rush was due to 'much more limited retail availability' there.

"Demand exceeded supply when only a few stores opened, whereas alcohol retail stores are very commonplace in many other countries (including online) so there was much less of an issue with being able to stay stocked up during COVID-19 elsewhere," she said. "It is sad to see that alcohol was considered a 'necessity' by some governments so people were allowed to go out shopping for alcohol during lockdowns."

The only other country that came close to India's high scores was China which expressed strong support for pregnancy warning labels (85%), more prominent standard drink quantity information (83%), health warning labels (81%) and calorie information (81%). However, it showed mediocre support for advertising restrictions (57%) and sponsorship restrictions (65%).

India and China were also the only two countries to strongly support pregnancy warning labels (both 85%) and health warning labels (81% and 84% respectively). In Australia and New Zealand, where Food Standards Australia New Zealand (FSANZ) has just opted to change the warning text on such labels from 'Health Warning' to 'Pregnancy Warning', support was at 67.5% on average for the former, and a much lower 59% for the latter.

According to Prof Pettigrew, this implies that the industry is still failing to acknowledge the public health issues here. "The most telling thing here is the strong resistance to the term 'health warning' by the alcohol industry because they still generally fail to acknowledge that alcohol use is a primary contributor to health problems globally (e.g., it is a group one carcinogen and there is no recognised 'safe dose')," she said. "By lobbying hard for the terminology to be restricted to 'pregnancy warning' they are hoping to limit damage to their sales."

She also lambasted the FSANZ's decision to prolong the mandatory implementation period from two years to three years. "The FASD burden in Australia is substantial and needs to be addressed as soon as possible. The timing extension is an unreasonable request by industry given the two-year time frame provided for food manufacturers to introduce mandatory country of original labelling, for example," she said. "Adding another year simply increases the number of babies born with FASD."

In addition, although labels were acknowledged to be a 'good starting point' , according to World Health Organisation guidance for all countries to reduce alcohol-related harm, these are essentially ' at the bottom of this list ' as compared to things like taxation, advertising bans and restricted sales timings.

"This shows that there are many other policies with potentially higher levels of effectiveness that we need to also implement," she said. "The most striking finding from this study is that most of the assessed policies have majority support in most of the included countries. These governments have public support for strategies that would make meaningful reductions in alcohol-related harm and that they should therefore implement these policies. So what is stopping them from doing so? To enact these policies will require governments to resist the strong efforts of the alcohol industry to control nations' alcohol policies."

Prof Pettigrew and her team are looking to also extend this study to more countries in the APAC region once funding is sourced.

Japan food labelling revision: 'Artificial' and 'synthetic' terms banned for food additives

By Pearly Neo 12-Aug-2020 – Food Navigator Asia

Japan has by banning the use of the terms 'artificial' and 'synthetic' to describe food additives on all food and beverage labels after consumer research found they were causing consumers to shun such products.

This was announced by the Japanese Consumer Affairs Agency (CAA) as a revision to the country's Food Labelling Standards, a revision based on a Food Additive Labelling study conducted by the agency. "According to the study results, consumers tend to avoid products that are labelled with the words 'artificial' and 'synthetic' when it comes to food additives even though these have been certified by the government," said CAA in the revision report.

"Hence after discussion it is the consensus that these terms should be deleted from food labels, so 'synthetic preservatives' and 'artificial sweeteners' should be termed 'preservatives' and 'sweeteners' so as to prevent further mis-identification by consumers. Additionally, surveys conducted with trade associations and other industry stakeholders have found that the term 'chemical seasonings' may affect consumers' understanding and a further study will be carried out to investigate this."

Food manufacturers will need to remove the terms 'artificial' and synthetic' from being associated with additives including sweeteners, colorants, preservatives, flavourings and fragrances. "All food manufacturing companies will be given until March 31 2022 as a transition period to implement this change," said CAA.

This change was supported by the national Consumers Japan (Shodanren) association, which issued a statement saying that: "Current regulations and risk assessments for food additives do not make the distinction between natural and synthetic, [so] consumers may get the false impression that these are dangerous." According a separate 2019 study dubbed the Consumer Inquiry Report on Food Labelling, 56.7% of Japanese consumers will refer to the additives label when making a food purchase, so a negative perception of food additives could potentially be highly detrimental to sales.

Earlier this year, the CAA also opted to loosen the food labelling regulations for the origins of raw materials, which allowed food manufacturers to keep their product labels as is even if they had to make changes to their raw material supply chain. This was implemented at the height of the COVID-19 pandemic in April, presumably to help local manufacturers that were having trouble sourcing raw materials from their usual local or foreign suppliers due to halted logistics and supply chains, but public health experts say that this is now being increasingly used to 'lie' about product origin instead.
For example, buying and supporting locally made products made from local ingredients is a very big consumer trend in Japan, but the loosened regulations means that the products could be made from ingredients sourced from elsewhere and still labelled as 'locally produced'.

"The origin and country of origin of raw materials are important information that is essential for food safety. If this changed without being reflected on the labelling, consumers are deprived of their rights to make the right choices, which is a big problem," pharmaceutical and food industry expert Dr Mikio Nakamura, who previously served on the Food Labelling Review Committee, said on local social media platform @nifty.

"China has been an important source of imports although it is now challenging to import from due to logistics and labour issues – but other countries have resumed operation, such as in Vietnam. Companies could very well choose to import from a country that is easier to access instead even though raw materials from there were previously found to be health risks, for example, Japan previously detected herbicides in Vietnamese shrimp. But if they do not need to put this on the label, there is a risk this will be chosen due to the ease of access."

Any discrepancies between information on the label and the actual ingredients used must be reported online via the companies' announcements or websites, but this was brushed aside as 'the regular consumer won't normally check the company website before buying a product', but will certainly check the product label.

USDA proposes stricter oversight, enforcement of organic to better detect, prevent fraud

By Elizabeth Crawford
05-Aug-2020 – Food Navigator USA

Responding to increasing fraud threats to the organic industry, the US Department of Agriculture seeks to strengthen oversight and improve the transparency and traceability of organic food through a four-prong plan that praises and mirrors actions already taken by the Organic Trade Association.

In a proposed rule published today in the Federal Register, USDA seeks to "close gaps in the current regulations to build consistent certification practices to deter and detect organic fraud" in part by reducing the types of businesses exempted from organic certification, requiring electronic import certifications for all organic products entering the US, clarifying recordkeeping and fraud prevention procedures to improve supply chain traceability and standardizing on-site inspections of organic operations.

The proposed amendments to the National Organic Program (NOP) comes after years of clamouring by the industry for increased oversight and enforcement of the USDA organic regulations, which reached a crescendo in 2017 and 2018 when a journalist discovered some imports from Eastern Europe were falsely labelled as organic.

USDA acknowledges in the proposed rule that "the absence of direct enforcement authority over some entities in the organic supply chain, in combination with price premiums for organic products, presents the opportunity and incentive for organic fraud."
It also notes increasingly complex organic supply chains to meet the rapidly expanding organic market's demand further underscore a need for modern oversight and enforcement methods.

As such, USDA proposes that NOP improve oversight at "critical links in the organic supply chain," including at points that previously did not require organic certification in order to handle some organic products. For example, previously if organic products were in a closed shipping container, some handlers need not be certified.

But according to the proposed rule, organic certification will be required of businesses that buy or sell organic products, negotiate sales of organic products between buyers and sellers and possibly of brokers, traders, importers and exporters, as well. Some retailers and transports may still not need organic certification under the proposal.

In addition to certification, which would open the door for audits and inspections, exporters and importers must request and review electronic NOP Import Certificates for all organic products entering the US. Exporters must request them of certifiers, and importers of exporters.

Data from the import certificate must be uploaded into the US Customs and Boarder Protection's Automated Commercial Environment at various points.

To further improve supply chain traceability beyond pitstops with suppliers, importers and exporters, the proposed rule would require certified organic operations to maintain records of organic products' source and chain of custody across the supply chain, identify products as organic on all records and labels and document monitoring practices.

The proposed rule also would outline for USDA-accredited certifiers how to identify high-risk products, verify their origin and chain of custody and share compliance related information. Beyond this, the proposal calls for standardized requirements for on-site inspections, including that at least 5% of operations be certified annually.

While the Organic Trade Association lauded USDA's and NOP's "commitment to the integrity of organic" through the publication of the proposed rule, they also noted that many of the core call-outs mirrored those in its existing Organic Fraud Prevention Solutions program.

OTA began exploring fraud prevention and detection strategies in 2017 with the help of a 48-member taskforce to create a best practices guide, the components of which would be piloted before being required of member companies.

The resulting guide "is based on buyer responsibility and supply chain management, and provides companies with a risk-based process for developing and implementing an organic fraud prevention plan."

It also is based on Michigan State University Food Fraud Initiative's prevention model that has since been adopted by the Global Food Safety Initiative (GFSI) Food Fraud Think Tank and is required for GFSI compliance under the Food Safety Modernization Act and Preventive Controls Rule, according to OTA.

So far, OTA reports that 55 organic businesses are enrolled in the program, which includes an online training course that walks users through a fraud vulnerability assessment and how to implement an effective organic fraud prevention plan.

If finalized, USDA's proposed rule would require every certified organic operation to have such a fraud prevention plan in place.

OTA encourages those interested to sign up for the Organic Trade Association's Fraud Prevention Solution while they await the proposed rule's progression through the comment and review period.

The trade group also noted that it will work with a "diverse member task force" to respond to the proposed rule ahead of the Oct. 5 public comment deadline.

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