PFNDAI

FOOD, NUTRITION & SAFETY MAGAZINE

BULLETIN AUG 2024

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FOOD, NUTRITION & SAFETY MAGAZINE

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MEAT AND DAIRY EXTENDERS CAN TACKLE MANY ISSUES

Some decades ago, CFTRI won Industrial Achievement Award from Institute of Food Technology in 1971 for developing Peanut-protein-fortified ("toned") milk drink that expands the supply of milk in India.

That not only won international recognition for our food technological developmental efforts but also gave rise to Miltone, the extended milk product containing milk and peanut protein isolate that expanded our milk availability without sacrificing quality or taste. However, when our milk production improved over the years, that extended product became redundant and was withdrawn. As the scarcity of milk was the reason for the product, when real milk was available plentily there was no need for extended product. However, now the situation has come up for permanent scarcity, not temporary, so we need to introduce this extended product again, may be permanently or for a long period.

Also in 70s, many meat-extender products were developed and marketed in the West, using soya proteins and concentrates. They were prepared using about 10 to 20% plant proteins and the taste and textural properties were so close to actual meat, it was quite well accepted. Again, this was a problem of supply and prices and such hybrid products did the job and when the supply improved with prices stabilizing, they disappeared from the market. Now we have again plant-based analogues are being used for meatless or vegan products. The developers are trying to substitute the animal ingredients with plant, giving rise to both sensory and cost problems. It is difficult to completely imitate the animal products with plant-based ingredients unless one uses a lot of processing and a list of additives. The products are quite acceptable but the cost is too high. When one tries to balance the two, there are problems of acceptability. So, there hasn't been good growth globally for such products. Here, the aim to prepare vegetarian products simulating animal foods, so those who do not wish to or cannot eat them.

There is another category of people who are trying to cut down meat and milk consumption for either health reasons or for environmental cause as future global warming may necessitate reduction in meat and milk production. This may be a large proportion of clientele that may not be averse to consuming a little amount of meat and milk products. Reduction in these would certainly achieve both their desires. It has been shown, that cutting down in consumption helps cut down the carbon emission although total avoidance will help the most. It is going to be difficult to ask people to totally switch over to plant-based. Both milk and meat have their nutritional roles for humans besides the affinity for these products people have been eating for ages. Not only will there be opposition because of taste but because of economics. It would make sense to gradually change the consumption.

There is also another factor to be considered namely the farmers. We have a large number of animal farmers whose family's livelihood depends on animal foods. We can't ignore them totally but give them enough time to switch over.

One more point to be considered is, that red meat not only causes maximum damage to the environment but also health problems. Other animal foods including chicken, milk, eggs etc. have much lower environmental impact.

Global warming and environmental changes have brought in a situation where our food production is going to be much shorter than our needs. We cannot produce more of meat and milk, so we need to find a solution that is plant-based. However, total plant-based analogues have both nutritional and sensory shortfalls that will not be acceptable to consumers. We need products that will be acceptable as well as cost-effective. Those who want to cut down animal-based products without sacrificing taste and paying too much price, will go for such hybrid products or extenders. So we need a planning to switch people gradually to a diet reducing animal foods gradually and while doing this the hybrid foods with plant-based extenders would help enormously. We must explore these more vigorously and see if markets respond more positively.

Prof Jagadish Pai, Editor, PFNDAI

References:
https://www.ift.org/community/awards-and-recognition/achievement-awards/food-technology-industrial-award &

https://www.researchgate.net/publication/360181099_Meat_Consumption_and_Sustainability

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HUMAN BEHAVIOR AND FOOD CHOICES

By
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Chairman- Scientific Advisory Committee & Hon. Scientific Director, PFNDAI

Lifestyle disorders seem to have become the most discussed health problem all over the world. The reason for lifestyle diseases is partly because of the food choices that people make. These food choices in turn depend on several other factors and among them one is the availability of a wide range of foods. Is there any way of making people choose the better ones and lead a better lifestyle. So let us look at all factors that determine a person's food choice but even before that let's look at the definition of lifestyle itself.

WHO defined Lifestyle in 1986 as "Patterns of (Behavioral) choices from the alternatives that are available to people according to their socio-economic circumstances and the ease with which they are able to choose certain ones over others ".

There was a time when our socio economic circumstances did not provide us a wide choice of foods and hence our lifestyles were different.In the present circumstances with improved purchasing power there is also a parallel increase in the choice of foods in the market.This probably led to certain behavioural changes in the choice of foods.

The factors which determine food choices are
1. Biological determinants such as hunger, appetite, and taste
2. Economic determinants such as cost, income, availability
3. Physical determinants such as access, education, skills (e.g. cooking) and time
4. Social determinants such as culture, family, peers and meal patterns
5. Psychological determinants such as mood, stress and guilt
6.Attitudes, beliefs and knowledge about food (EUFIC 2006)
The satiety factor in food also determines the quantity and the quality of food that one consumes. For example proteins have a higher satiating ability than carbs which are greater than fats so depending on the nature of the food ingredients a person can have satiety when high protein diets are consumed which also helps in weight management. On the contrary high fat high sugar foods do not satisfy our appetite and on the contrary, stimulate us to consume more of it and that's contributing to our higher energy intakes. Low energy dense foods are more satiating then high energy dense foods.Sugar sweetened beverage is less satiating than when the same beverage is consumed along with high protein food. Hence one of the options for the consumer is to identify foods that are providing satiety and for a longer period of time and to use such foods to replace the ones which are more energy dense. It is also possible that food labelling can help a consumer to choose such foods based on the relative proportions of the various macro nutrients.

Palatability of food is another important factor and more palatable the food , greater is the food intake.A palatable food however may not achieve satiety. An interesting study (Sorensen at al 2003) showed that when we have a wide variety of foods in front of us our food intake goes up and even our energy intake increases. Which means a buffet dinner probably makes us consume more calories than an Ala cart dinner. The genetic variability in taste perception is probably different between us and is also a factor in weight control. Some flavours by themselves stimulate higher food intake.

Stress and Food Intake

Stress may either enhance or decrease food and energy intake Studies also suggest that if work stress is prolonged or frequent, then adverse dietary changes could result, increasing the possibility of weight gain and consequently cardiovascular risk.(Wardle J, et al. (2000). Stress, dietary restraint and food intake. Journal of Psychosomatic Research 48:195-202.)
Caution: DO NOT INCREASE WORKING HOURS

Knowledge Attitude Practices of Consumers

This is the most important determinant for food choices. It is assumed by all that traditional foods and home-made foods are healthier than processed foods or foods obtained from outside catering places but this is a knowledge and an attitude which is not entirely correct. Many traditional foods or even foods prepared at home could still be high in sugar, salt , saturated fat or calories. If consumers are educated about the basic ingredients and their biological effects ,such knowledge will help

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REGULATORY VIEWPOINT

WHY WE EAT WHAT WE EAT NEEDS BETTER NUTRITION INSIGHTS

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Nutrition reports typically begin with the double burden of disease afflicting the country.

Manifestations of wasting, stunting, obesity, diabetes, and ischemic heart disease covered in great detail are attributed to improper diets. For over two decades, populations have been advised to consume balanced and varied diets, yet they don't. When what we eat matters so much, reasons for not doing so need deeper insights. Data analyses assessing diet-related health outcomes focus on disease (problems) rather than reducing them (solutions). Even though there is abundant data on food prices, quality of life, accessible drinking water, family education, unemployment, urban migrations, maternal health, early life mortality, and physical inactivity, their dietary impact fails to elicit equal concern. The national debate should move to the magnitude of change required in income, price or education to induce healthier diets.

Processed or packaged foods are strongly advocated as a reason for unhealthy diets. A counter proposition is that traditional diets are deficient in important food groups because they are unaffordable. For this discussion, commodity foods are those used in home cooking, grain, cereal, flour, milk, tea, coffee, nuts, meats, eggs etc, whether packaged or sold loose. Ready-to-eat foods, ice cream, halwa, chocolate, biscuits, savouries, pickles, papad, sauce, jam, beverages etc., are non-commodity processed foods (NCPF). Populations in all countries consume NCPFs as a percent of total daily energy. In countries with staple-based diets, NCPF consumption is lower than in high-income countries.

Eaten frequently and in larger quantities, staple diets supply a major proportion of energy and nutrients. They fall short when certain food groups though available are unaffordable. Diets low in fruit and vegetables are defined as eating less than 310–340g and 280-320g per day respectively excluding juices and starchy vegetables (e.g., potatoes). According to the Global Burden Disease (Lancet 2020) diets low in fruits are responsible for 27•7 million DALYs (disability-adjusted life-years) and 1•05 million deaths, the third-leading dietary risk factor. Diets low in vegetables were responsible for 13•0 million DALYs and 529 000 deaths, the ninth-leading dietary risk factor roughly half, to that of fruit.

NIN recommends increasing per day consumption to 100 g of fruit and 400g of vegetables, reducing cereals/millets from 380g (2011-12) to 250g per day. While this is a significant shift towards healthy diets it is untested for cost and satiety. According to Agricultural Economics Research Review (2016), bananas are the most consumed fruit per capita, among low-income groups 1.98 kg/yr., compared with 10.36kg/yr. in high-income groups; a 5-fold difference. India is the second largest producer in the world but due to losses availability shrinks. Per capita availability (NIN 2019) of fruit and vegetables was 200g/day and 378g/day respectively. Consumption for urban and rural was 46g/day and 26g/day for fruit; for vegetables, it was 172g/day and 130g/day, respectively. Reports project that diets alone contributed to a 56.4% rise in CVD DALYs and moving up fruit and vegetable consumption, the projected NCDs DALYs (68%) and CVDs (17%) can be reduced to 48% and 7% (approx.). Improved productivity and affordability alone can reduce dietary risk factors significantly. Though fruit intake has a higher dietary risk reduction impact, the recommendation is lower than vegetables.

Dietary risk assessment requires the determination of exposures - high or low - that raise the risk of disease. India is the third largest producer of biscuits, the per capita consumption is 2.1kg compared to 10kg in the US, UK and Western Europe. China consumes 1.9 kg. Not everybody loves chocolates: India's per capita consumption is 0.17 - 1kg; the US is 9kg; Switzerland 11kg; China is 0.2 kg. Per capita consumptions provide insights into dietary behaviours. The Food Frequency Questionnaire (FFQ), is the most appropriate assessment tool for measuring the relative dietary risk and health-related outcomes. Easy to apply by researchers yet it is scarcely done or brushed aside. Too much salt is linked to high blood pressure. However, the practice of adding salt to food is different.More than 75% of salt in India, is added to

CONT'D

CONT'D FROM FOOD FOR THOUGHT OR THOUGHT FOR FOOD

make judicious choices not only of processed foods but also from all other foods traditional or otherwise. The Level of education can influence dietary behaviour during adulthood.(Kearney M et al, 2000)
Paradoxically Nutrition knowledge and good dietary habits are not strongly correlated.

Knowledge about health does not lead to direct action when individuals are unsure how to apply them. Nutrition Information comes from a variety of sources and is viewed as conflicting or is mistrusted, which discourages motivation to change (De Almeida MDV, et al. 1997). There is an urgent need to convey accurate and consistent messages through various media, on food packages and of course via health professionals. A recent media (Times of India) article showed that some schools have started cooking classes for primary school kids and found that as the best way to help children learn healthy food options and eating habits.

To summarise the conclusions drawn by the European Union Food Information Council in 2006.
1. There are many influences on food choice
2. We should provide means to intervene into and improve people's food choices.
3. There are a number of barriers to dietary and lifestyle change, we need to overcome

These vary depending on life stages and the individual or group of people in question.
It is a major challenge both to health professionals and to the public themselves to effect dietary change.

Bhagavad Gita Chapter 6. Verse 16
O Arjun, those who eat too much or too little, sleep too much or too little, cannot attain success in Yog.(Balanced state of mind and body)

Bhagavad Gita 6.17
But those who are temperate in eating and recreation, balanced in work, and regulated in sleep, can mitigate all sorrows by practicing Yog.

Bhagavad Gita 6.18
With thorough discipline, they learn to withdraw the mind from selfish cravings and rivet it on the unsurpassable good of the self. Such persons are said to be in Yog and are free from all yearning of the senses.

Let us revisit the wisdom and knowledge of yesteryears to manage the problems related to lifestyle and health.
Food choices may be good but without commensurate physical activity the goal can never be achieved

REGULATORY VIEWPOINT

CONT'D FROM PREVIOUS PAGE

cooking not packaged foods which is the case in Western countries. Why we eat what we eat may not be a matter of choice but dictated by tradition or compelling circumstances.

Nutrition education should be simple for households to follow. The food pyramid is simple, intuitively restricting foods at the top and favouring those at the bottom. My Plate is graphically not as intuitive. The seventeen guidelines elaborating the pyramid are difficult for households to recall or follow. HFSS and ultra-processed foods (UPF) were always included in the pyramid; restricting fat, salt and sugar (at the top) and favouring coarse grains or minimally processed foods (at the bottom). Nutritional labelling connects to nutrient amounts at the top of the pyramid by restricting fat, salt and sugar to 67g, 5g and 50g per day from all foods. Dietary risk attribution is when diets exceed these daily amounts. These connections should be made clear instead of ambiguous abbreviations.

A prospective nutrition goal would be to get 50% of Indian households (302.4 million comprising 4.4 individuals, 2021) consuming the recommended amounts of fruit and vegetables without affecting monthly non-food expenditure and healthcare costs. At a policy level, at what price projections, would this be achieved on a time scale? What mission statements are necessary to drive agricultural and public health outcomes? The two are critically linked. Advice on balanced and varied diets is not enough without solution-based actions being taken. Reformulating NCPFs to boost fruit, vegetable, protein and fibre intake is unlikely to work when the base cost of NCPFs is multiple times higher. Improving traditional diets with more fruit and vegetables is cheaper.

There is a substantial body of evidence identifying key dietary priorities for action. Solving these goes beyond individual responsibility. It requires policymakers to consider whether today's food systems fail to deliver healthy diets for all. Malnutrition is a continuum starting from infant wasting and stunting to obesity, diabetes and heart disease in higher age groups that needs an integrated approach - not a double burden message.

UNDERSTANDING FOOD LABELS & SERVING SIZE IN PACKAGED FOODS

AUTHORS
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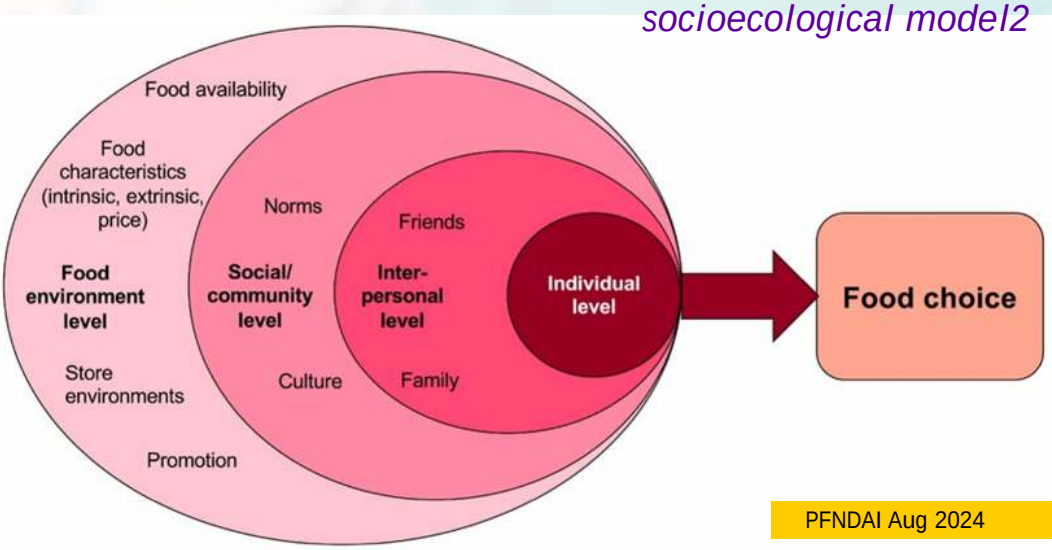
Consumer Lens: Understanding the importance of product information in making food choices.

"Food Choice is Multifaceted, Contextual, Dynamic, Multilevel, Integrated, and Diverse[1]".

The topic of consumer food choice has received much attention among researchers and stakeholders within the food industry. As per systematic review of reviews conducted between 2017 and 2021, this study[2] highlights decisive factors in food choice, i.e. product, available information, price, context, personal and group influences and sensory perceptions. The synthesis of findings follows a socioecological model, originally proposed by Brofenbrenner. Food choice is influenced by the processes and characteristics at different levels.

Another study[3] conducted to understand consumer's purchase intention, found that product information was one of the key determinants influencing consumer's choice to purchase and consume convenience food.

Figure 1: Conceptual analytical framework according to the socioecological model2



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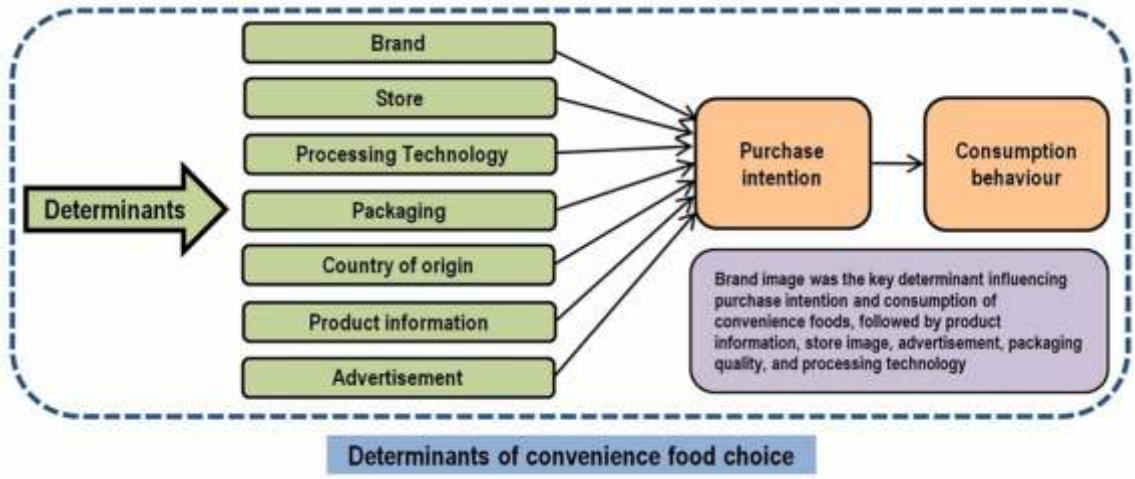

Figure 2: Proposed Research Model3

Hence it is important that consumers are getting sufficient product information.The primary responsibility of providing relevant information to consumers lies with regulators and organizations. Proper labelling ensures that consumers receive the necessary details to make informed choices about the food.

Key Responsibilities:

- Regulators ensure that labelling regulations are in place and enforced.
- Organizations are responsible for providing clear and accurate information on their product labels.

Decoding labels: Regulatory assurance points

"Labelling" means any written, printed or graphic matter that is present on the label, accompanies the food or is displayed near the food (As defined in Food Safety and Standards (Labelling and Display) Regulations, 20204). Current regulatory framework of India requires that certain information be included on food labels to ensure transparency and consumer safety.

Essential Label Components:

- Name of the Food
- Veg & Non-Veg Declaration
- Ingredients Information
- Allergens Information
- Nutritional Information
- Storage & Instructions for Use
- Consumer Care Details
- Net Quantity
- Batch or Lot Number
- Date Marking
- FSSAI Logo and License Number
- Name & Address of Brand Owner/ Manufacturer/ Marketer/ Packer or bottler etc.

Decoding label: Ingredients Information

Ingredient list: Every packed food except for single ingredient foods, declares a list of ingredients on the label. This lists all the ingredients that are used in the manufacture of food in descending order of their composition by weight or volume.

The list of ingredients additionally includes information about additives used in the product, the additive usage is set by Food Safety and Standards Authority of India as they define standards for different food products. Authority further regulates usage of additives into different food categories along with its maximum limit. Additives safety assessment is mandated by scientific bodies like The Joint FAO/WHO Expert Committee on Food Additives (JECFA), European Food Safety Authority (EFSA). These scientific bodies evaluate the safety of food additives for human consumption basis risk assessment/ safety evaluation and exposure assessment.

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Other than Ingredients list, FSSAI also mandates to declare the 8 major ingredients that trigger food allergies. The identified food allergens are cereals containing gluten, crustacean, milk, egg, fish, peanuts and tree nuts, soyabeans and sulphite. The direct presence of the allergens is provided on the label by statement "Contains" and there is additional layer of assurance which indicates presence of ingredients due to cross contamination which are known to cause allergy to be declared separately as "May Contains"

Every package of food containing the specific ingredients/additives as per list provided in the regulations shall provide mandatory declarations on the label in a rectangular box, e.g. products containing 10% or more polyols to declare "Polyols may have laxative effect".

Decoding label: Understanding Nutritional information & Serve Size Nutrition Information

Every packed food label provides access to information about its nutritional quality for the parameters as defined in labelling regulations by FSSAI. The labelling regulation4 was extensively reviewed in 2020 and now elaborated Nutritional Information requirements are provided on the labels. The Nutrition Information provides important information about the calorie content, macronutrients (carbohydrates including total sugars & added sugars, total fat, saturated fat and trans-fat, protein) and micronutrients content (if the food claimed to be enriched with nutrients). Additionally, cholesterol & sodium are also required to be labelled.

Nutritional Information Per 100g or 100 ml and per serve of the product (unless otherwise exempted from the regulations) is provided and includes following:

Serving size and number of servings in a pack.

Per serve percentage (%) contribution to RDA calculated on the basis of 2000kcal energy, 67g total fat, 22 g saturated fat, 2 g trans-fat, 50 g added sugars and 2000 mg of sodium (5 g salt) requirement for average adult per day.

RDA (Recommended dietary allowances) typically means the average daily dietary nutrient intake level sufficient to meet the nutrient requirement of nearly all (97 to 98 per cent.) healthy individuals in a particular life stage and gender group."

Nutritional information is decided basis robust processes set by organization. By understanding nutrition labels and its relevance with RDA, consumers can make informed choices.

Decoding Labels: Claims: Who regulates and how?

"Advertising is the process of calling the attention of the public to a product or service by a business" (by Johnson).

Claim: assertion that something is true. Claims serve as a means of communication between manufacturers and consumers, helping buyers make informed choices about the foods they purchase.

Advertising and claims are governed by regulatory framework and well-known bodies which are Food safety and standard authority of India (FSSAI), Advertising Standards Council of India (ASCI) and Consumer Protection Act, 2019.

FSSAI: Food Safety and Standards (Advertising and Claims) Regulations, 2018[5]

General Principles: Advertisements in respect of a food product that undermines the importance of healthy lifestyles or portrays the food product as a complete replacement of normal meal are not permitted. Further, food businesses are also prohibited to advertise or make claim undermining the products of other manufacturer so as to promote their own food products or influence consumer behaviour.

Any person, including a third party, who advertises or is a party to the publication of any misleading advertisement not complying with these regulations would be penalised with a fine extending up to Rs.10 lakhs, as per Section 53 of the Food Safety and Standards Act 2006.

Clear Definitions:

Regulations have clear definitions example: "Advertisement" means any audio or visual publicity, representation or pronouncement made by means of any light, sound, smoke, gas, print, electronic media, internet or website and includes through any notice, circular, label, wrapper, or other documents.

"Claim" means any representation which is printed, oral, audio or visual and states, suggests, or implies that a food has particular qualities relating to its origin, nutritional properties, nature, processing, composition or otherwise.

Criterion for claims have also been defined in regulations example: -

Nutrient Content Claim: Describes the level of nutrient content, minimum requirements of nutrients are defined to make "source" or "high" claims.

Nutrient Comparative Claim – Compares the nutrient level of 2 or more foods, relative difference in content is defined for the comparative claims like reduced, enhanced etc.

Equivalence Claims – Describes that food contains same amount of nutrient or equivalent source of nutrient or the nutrient in the food is same level as the naturally occurring reference food nutrient.

Non – addition claims - which covers non-addition of sugars, non-addition of sodium salts and non-addition of additives.

Health claims – defines and sets criteria for Nutrient Function claim, other function claim and Reduction of disease risk claims.

Claims Check Points: The regulations also provide General Principles which need to be ensured while making claim, some of the principles are:
Claims must be truthful, unambiguous, meaningful, not misleading and help consumers to comprehend the information provided.

The claim that a food has certain nutritional or health attributes shall be scientifically substantiated. Claims in advertisements shall be consistent with information on the label of the food or beverage. Where the claim benefit is related to or dependent on the method of preparation of the food the same shall be provided on the label.

Key Factors considered during claim design:

- Product construct and Relevant testing
- Scientific literature and

Advertising Standards Council of India[6]:

The Indian advertising market is regulated and controlled by a non-statutory body, the Advertising Standards Council of India (ASCI). ASCI is voluntary self-regulatory council established in 1985. Its main aim to ensure the protection of consumers and fair competition among advertisers by promoting responsible advertising. The directives of ASCI are:

To ensure Advertisements are not offensive to generally accepted standards of public decency.

To safeguard against the indiscriminate use of advertising for the promotion of products regarded as hazardous to society or to individuals.

Advertisements observe fairness in competition so as to inform the consumer on choices in the marketplace while observing the canons of generally accepted competitive behaviour in business.

Consumer Protection Act, 2019[7]

The Consumer Protection Act is to provide for protection of the interests of consumers and for the said purpose, to establish authorities for timely and effective administration and settlement of consumer's disputes and for matters connected therewith or incidental thereto.

In general, the consumer rights in India are listed below:
Right to safety, Right to Informed, Right to Choose, Right to be Heard, Right to seek redressal, Right to consumer Education.

To conclude, Packed Food Label has complete information about product. Organizations by simplifying product information, empower consumers to make informed dietary choices, promoting better health awareness and supporting the nation towards improved nutrition.

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ROLE OF A BALANCED DIET IN MAINTAINING A HEALTHY LIFESTYLE AND PREVENTING DEFICIENCIES

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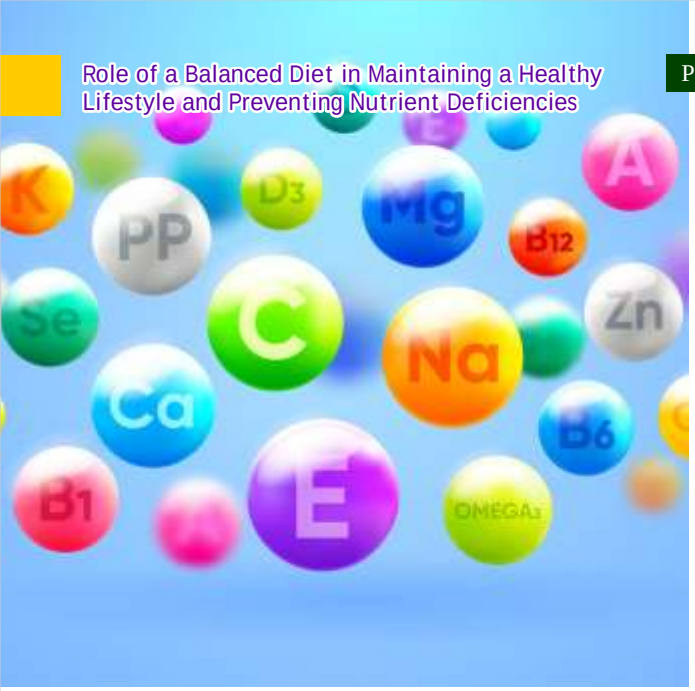
A balanced diet produces enough energy for the working muscles and recovery after exercise. It provides- energy, fuel for muscles to move, repairs injured tissue, helps growth and contributes to good general health. A balanced diet means not eating too much of one thing. You choose your daily food intake across different food sources to allow a good a balance of different nutrients. Eat a variety of food types so that we get all the nutrients that we need.

Cereals, pulses, legumes, meats, vegetables, fibre, fruit, fats and sugars will give necessary nutrients. Some people have allergies for example lactose intolerance or allergy to nuts. Some religious beliefs restrict specific food types and those have to be considered too. We need to make their diet suitable for them. It is necessary to balance the intake of energy to the output. Otherwise, one can put on weight. People with active lifestyles burn more calories and they need to eat more to compensate.

MACRONUTRIENTS:

Carbs, proteins and fats, all have been in discussions many a times. Today, however with the rising prevalence of diabetes and CVD we have come to the conclusion that protein is very important for glycaemic control. Thus, it is necessary to include a variety of protein rich foods in the diet. Indians love their sweets and carbohydrate rich diets. Personally, I feel increase physical exercise and burn out all that is consumed. Do not tell a person who loves sweet not to eat it at all. Such advice makes them eat on the sly. Explain to them that eat and walk/ jog/ exercise additional 15 minutes for each portion.



MICRONUTRIENTS:

All the vitamins and minerals that we need are present in fruits and vegetables. Today we find that not many eat all vegetables and fruits. If it's a fruit then banana is the choice. In vegetables it's the potato! All colours of fruits and vegetables should be included in the diet. Thus, the new concept of The Plate is important. It clearly shows that lots of vegetables and fruits should be included in the diet.

MY PLATE:

My Plate for the day promotes health prevents hidden hunger and protects from diseases. Regular consumption of foods in proportions as per the model plate improves immunity and resistance to infections. It maintains good microbial flora (beneficial bacteria in the gut). My plate will help prevent diabetes mellitus, cardiovascular diseases (CVDs) and many other diseases. It helps to maintain appropriate alkalinity and thereby reduces inflammation and decreases chances of kidney stone formation. My Plate prevents insulin resistance and maintains appropriate insulin sensitivity and glycemic index. Also, ensures adequate intake of fibre and therefore prevents constipation. It prevents adverse effects of environmental pollution and toxins such as heavy metals and pesticides by working as a detoxifying.

Centuries ago, a Satvik diet was the right one according to our saints. Foods included in a Satvik diet were sprouted whole grains, whole grains, fresh fruits, land or sea vegetables, Nuts and seeds milk, legumes, nuts, seeds, sprouted seeds, honey, herbs, ghee. Today our My Plate also includes seeds, millets and sprouted foods.

Today food is processed. We definitely need the processed food as it saves time and are very convenient to use. A lot of women are now working and they get lesser time in the kitchen. Thus, processed foods are an essential part of our diets. We therefore have to balance our meals by including fresh foods, vegetables, fruits, nuts and seeds.

MY PLATE CONCEPT:

My Plate was introduced by NIN in 2020. Earlier there was RDA (Recommended Dietary Allowances). If we study the RDA for energy every time it is revised, we see that recommended energy intake is reduced. Now it is EAR (Estimated Average Requirement) and even TUL (Tolerable Upper Limit) is given for some nutrients.

Saffola

SAFFOLA GOLD

YOUR ROZ KA HEALTHY STEP!

MALNUTRITION:

The risk of malnutrition is increased by reduced physical activity, unbalanced intake of nutrients, restricted range of foods, affordability issues, medical conditions, psychological conditions and Uncle Google! Each person you meet is a nutrition expert. Add to that the internet which is flooded with wrong and right nutrition information. There are hundreds of fad diets which are blindly followed. Due to this malnutrition issues are rampant. Anemia puzzle we have not been able to solve as yet. Vitamin D deficiency in a sunlit country also has to be looked into. Though Kwashiorkar and Marasmus are lesser seen today, vitamin D deficiency, B-12 deficiency and anemia need attention.

Tackling deficiencies:

Identify the deficiency. Add a nutrient rich food or increase portion size for that. Provide fresh food items. Promote and encourage kitchen gardens. Provide fortified foods. Use nutrient supplements, educate masses. Promote exclusive breastfeeding and appropriate complementary infant feeding practices.

HEALTH STATUS: Yesterday and Today:

Apart from micronutrient deficiencies, overweight and obesity is on the rise in all age groups. The reasons-

- Lack of physical activity. ...
- Unhealthy eating behaviours. ...
- Not getting enough good-quality sleep. ...
- High amounts of stress. ...
- Health conditions. ...
- Genetics. ...
- Medicines. ...
- Your environment

Why are we inactive?

Sedentary lifestyle
Use of mobile phones
Screen Time: TV watching/ OTT
Online games/ Tab /Phone

What are our unhealthy eating behaviours....

Missing breakfast / missing meals
Wrong timings of food
Midnight snacks
Large portion sizes
No fresh foods only ultra-processed foods

Maintain normal weight and stay healthy

Individuals trying to reduce weight may cut-down on cereal intake
Balance meals with home cooked and ultra-processed foods
Follow my plate concept
Balance energy
Consciously increase physical activity
One may consume sugar, but it must be restricted to 25 to 30 grams per day. To adjust the total calories cereals must be reduced if sugar is taken.
Eggs/fish/meat can substitute a portion of pulses
Prescribed amount of vegetables (excluding potato) may be consumed either in cooked form/ salad
Prefer fresh fruits and fruit juices. If sugar is added reduce calories from other foods.
Use different varieties of cooking oils, vegetables, fruits, nuts etc., to obtain a variety of phytonutrients, vitamins, minerals and bioactive compounds

Remember:

Today none of us can avoid processed food. Processed are very much necessary. They extend shelf life, maintain sensory properties, maintain or improve nutritive properties, ensure safety and are more convenient. One caution is that use the processed food with fresh food. Do not choose only processed foods just because they are convenient.

Food Safety:

Also remember to have safe food. The reasons for food spoilage are-

Poor personal hygiene: Transferring pathogens from your body to food

Cross-contamination: Transferring pathogens from one surface or food to another

Time-temperature abuse: Letting food stay too long at temperatures that are good for pathogen growth

Poor cleaning and sanitizing: Transferring pathogens from incorrectly cleaned surfaces to food.

Cook food thoroughly:

Food should be heated up to 700 C.

Uncooked fruits and vegetables should be peeled and eaten.

Unpasteurized milk should be boiled before use.

Remember that cooking does not destroy all pathogens.

Prepare food for one meal at a time

Prepare fresh meals.

If food has to prepared in advance or there are leftovers, store cold (below 50), Hot (above 700)

Cooked food should be thoroughly reheated before consuming.

Avoid contact between cooked food and raw foods

Slightest contact can cause contamination.

Chopping boards and knives should be thoroughly washed after use.

Cover food and store so that drippings of one food do not contaminate the other foods.

Use safe water

Drinking water should be pure and safe.

Ice should be made with safe drinking water.

If water is not clean it should be boiled and used.

Be cautious of processed foods purchased outside

See the expiry date

Inspect the packaging for any leaks or openings

Buy only from reputable suppliers

Sample temperatures of received food items

Put refrigerated and frozen items away immediately

Conclusion:

'INVEST IN YOUR HEALTH'. Your diet is your health account. Good and safe food choices are good investments. Good nutrition is essential for health and well-being.Daily well-balanced diets should be consumed. Inadequate nutrition can lead to deficiencies (anemia). Be moderately active. Give up sedentary lifestyle. Nutrition interventions include improved food fortification, vitamin and mineral supplementation and basic knowledge of nutrition.

HOW MINDFULNESS, SATISFACTION, AND PORTION SIZE INFLUENCE EATING BEHAVIOR

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Snacking is a widespread practice globally, transcending food cultures, as many people incorporate snacks into their daily routines between meals to boost energy or enhance mood. It often plays a pivotal role in festive occasions, fostering social connections among individuals.

The frequency of snacking varies significantly worldwide. In China (1), individuals typically snack an average of once per day, whereas in France (2) and Denmark (3), this can occur up to four times daily. The energy derived from snacks relative to total daily energy intake also shows considerable variation: from 4% in China, to 22% in the US, and up to 29% in Nordic countries.

In India, snacking is deeply ingrained in daily life for nearly 9 out of 10 consumers, according to a survey by Mondelez International (4). A significant 70% of Indian consumers engage in this daily ritual twice a day. For Millennials and Gen Z, snacking serves to momentarily detach from worldly concerns. As one consumer put it, "Amid our hectic routines, sharing snacks brings us back to the simple joy of connecting with others."Recent lifestyle changes have notably influenced how consumers approach snacking over the past five years. More than 70% now pay closer attention to their hunger levels, savoring snacks for a heightened sensory experience. Increasingly, consumers are making personalized choices that cater to their specific dietary needs, focusing on health, nutrition values, and portion sizes when selecting snacks. This shift reflects a growing emphasis on overall well-being among Indian consumers.

Complan

Zydus Wellness

63% More Protein# | 34 Vital Nutrients

2X FASTER GROWTH*

SUPPORTS MEMORY & CONCENTRATION*

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#Complan New Royale Chocolate contains 18g Protein/ 100g, while the leading malt-based food drink for children has 11g Protein/100g. This means that Complan has 63% more protein. (Complan New Royale Chocolate - pack July 2023, and malt-based food drink - pack July 2023). In one serving (33g) of Complan contains 5.94g protein, whereas one serving (27g) of the malt-based food drink contains 2.97g of protein. Recommended Two serve per day. *Refers to the outcome of clinical study published in Ind. J. Nutr. Dietet; (2008). ^An alternative version of Complan (apart from the regular) is available in a 75g sachet at an MRP (inclusive of all taxes) Rs. 30/- only. Super Saver Pack - Complan Royal Chocolate is also available in 400 g pouch to give saving when compared with 500g jar of the Complan Royal Chocolate. Refer pack for more details. 1.1.2 Dairy Based Beverage Mix (Proprietary Food).

Our food choices and how much we consume at each meal are influenced by various dimensions. These include portion sizes, external factors such as environment or social influences, and internal cues such as hunger or cravings that guide our decisions regarding food selection. These dimensions collectively shape our eating behaviors and dietary habits.

Let us first unpack the role of portion size.

Numerous studies have investigated the impact of portion size on energy intake, revealing a consistent finding: larger portions tend to result in greater food consumption, leading to an overall increase in daily energy intake. Systematic reviews of these studies provide compelling evidence, firmly establishing this relationship, and underscoring its importance in understanding dietary habits and managing calorie consumption (5).

But do smaller portions really lead to reduced energy intake?

Two systematic reviews examine the impact of smaller portions on daily energy intake. According to Vargas Alvarez's review (6), there was no observed change in daily energy intake. Conversely, Robinson et al.'s (7) review identified a positive effect, indicating that portion control leads to a reduction in daily energy intake. The contradictory findings stem from differences in the selection criteria used in each review. In Vargas Alvarez's meta-analysis, intervention studies included volunteers who were provided with instruments or tools to control portion sizes and were expected to apply these techniques in their typical living conditions. In contrast, Robinson et al.'s meta-analysis included studies conducted under highly controlled conditions where portion sizes of foods were modified and served to volunteers. These differences in study design and implementation likely contributed to the varying conclusions regarding the effectiveness of portion control on daily energy intake observed between the two reviews.

Reducing portion sizes can indeed contribute to limiting daily calorie intake. However, the extent to which this translates into practical benefits for consumers depends on their typical daily behaviors. It may not be feasible to expect everyone to live in a highly controlled environment with limited food choices. Nevertheless, there are other promising findings suggesting that smaller packs of pre-packaged foods can assist in managing total calorie intake (8).

Apart from portion size, another crucial factor to consider in free-living conditions is the satisfaction that consumers derive from their eating experience.

Eating satisfaction encompasses the overall enjoyment and appreciation of food. This includes factors such as the perceived value of the food, its intended purpose, and whether it meets the individual's needs at the time of consumption. These aspects play a significant role in shaping dietary behaviors and consumer choices beyond just the physical quantity of food consumed.

How Mindfulness, Satisfaction, and Portion Size Influence Eating Behavior

When you are making your food choice, you probably seek something to satisfy your physiological needs for example curbing your hunger or an energy boost. You likely anticipate a burst of flavor in your mouth for enjoyment. These cues are crucial in determining whether the food choice will meet your needs.However, satisfaction from food also depends on internal cues, such as memories from previous eating experiences or, if it's a new food, whether you enjoy its taste.

In considering strategies for portion reduction, it is important to ensure that each portion delivers adequate satisfaction. Our studies indicate that adjusting portion sizes to maintain a satisfactory level of enjoyment can be an effective approach for reducing portion sizes of pre-packaged foods. It is also essential not to make portions too small without considering the food's role in satisfying both physiological and mental needs.

To derive maximum satisfaction from the food one eats, comes in the role of Mindful eating:

Mindful eating involves being fully present during the eating experience, paying attention to signals from your body such as hunger versus cravings, and being aware of external triggers that influence your food choices. It also includes recognizing satiety signals and distinguishing them from sensory-specific satiety. Mindful eating encourages a deep focus on the actual sensory experience of eating and appreciating the taste of food without judgment.

Research indicates the positive effects of mindful eating, especially in the context of snacking. A study conducted by a group of neuroscientists in the US explored the impact of mindfulness-based interventions on the psychological and behavioral aspects of eating. The study involved over 100 undergraduate students, mostly young adults with an average age of 21 years, who were divided into three groups (different environments) and were prompted to eat a piece of raisin and rate their experience in terms of enjoyment on a scale of 1 to 10. The process then repeats 4 times through the experiment period.

Group 1: Mindfulness Technique Group: Participants in this group learned mindfulness techniques and were coached to pay close attention to their eating experiences, engaging all their senses during tasting exercises.

Group 2: Task-Focused Eating Group: Participants in this group were instructed to focus on completing a word puzzle as quickly and accurately as possible while eating.

Group 3: White noise Group: Participants in this group listened to a psychology textbook while eating the raisin and rated their enjoyment similarly.

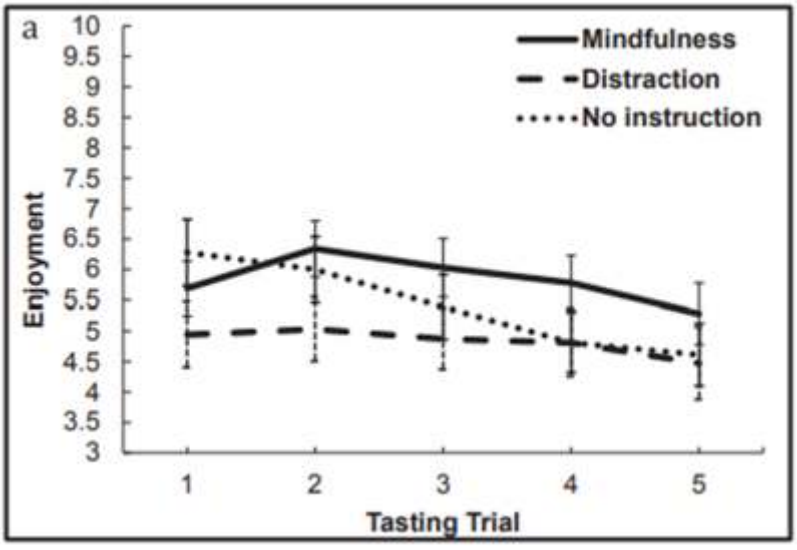

Figure 1: Enjoyment ratings across the raisin tasting trials by condition ((Mean ± 1)

Figure 2: Six Mindful Snacking Behaviors

After completing the raisin trials, all participants were asked to fast for two hours. Following this period, they were offered a variety of foods including chocolates, potato chips, pretzels, unsalted nuts, and carrot sticks.

The results showed that the Mindfulness Technique Group consistently reported higher enjoyment of the raisin compared to the other groups. This enjoyment was sustained over the trial period, suggesting that mindfulness in eating enhances the sensory experience and appreciation of food.The researchers also observed that the group trained in mindful eating consumed fewer calories compared to the other groups.

This finding suggests that mindfulness in eating not only enhances the enjoyment of food but also promotes better regulation of food intake, potentially leading to reduced calorie consumption. Hence, emphasizing the potential role of mindful snacking in promoting healthier eating habits and managing calorie intake (9).

At Mondelez International, we believe in the significant role that mindfulness can play in snacking, and we encourage six behavioral tips to guide consumers towards mindful eating (10):

Know your craving:
Before you reach for any food, know what you want. Check in with yourself: are you hungry? Are you craving something sweet or salty? Something crunchy or creamy?

Be aware of Portion Sizes:
Instead of eating directly from a large bag or container, portion out your snack. This helps you be more conscious of how much you're consuming.

Enjoy and appreciate the food:
Engage Your Sense, activate all your senses while eating. Pay attention to the taste, aroma, and texture of your food. Consider closing your eyes to enhance your sensory experience and discover new tastes or sensations even in familiar foods.

Be In Present Moment:

In our digital age, it's easy to be distracted by screens. Give yourself permission to focus solely on eating without multitasking. Being present allows you to fully enjoy and appreciate your food.

Be aware of your hunger and Satisfaction:

Throughout your eating experience, be mindful of your hunger levels, how full you feel, and your overall satisfaction with the snack. Reflect on whether you're satisfied with what you've eaten or if you genuinely need more.

Reflect on your eating experience:

After eating, take a moment to reflect on your entire snacking experience. How did the food make you feel physically and emotionally? This reflection can help you make conscious choices about your next snack or meal.

By practicing these mindful eating tips, you can enhance your snacking experience, improve your awareness of hunger and satisfaction, and make more mindful food choices overall.

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FINE Additives to enrich the chocolate experience

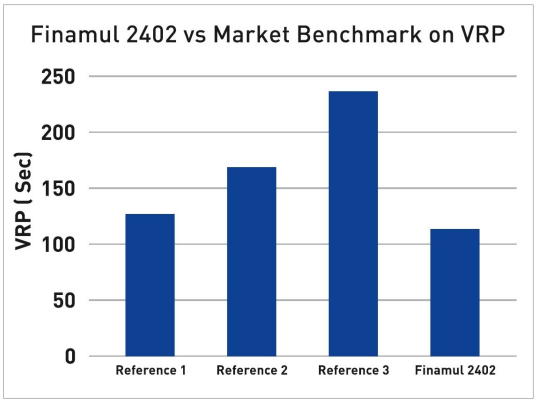
FINE ORGANICS

Chocolate manufacturers continuously strive to create an indulgent experience for the consumers. The major challenge is typically posed by the intricate chocolate rheology. Some of the key factors affecting the chocolate viscosity are the total fat content, emulsifiers, conching phase, duration and degree of temper. Furthermore, a complex matrix of various ingredients such as butter, cocoa powder, moisture can also play a critical role to control the overall chocolate viscosity.

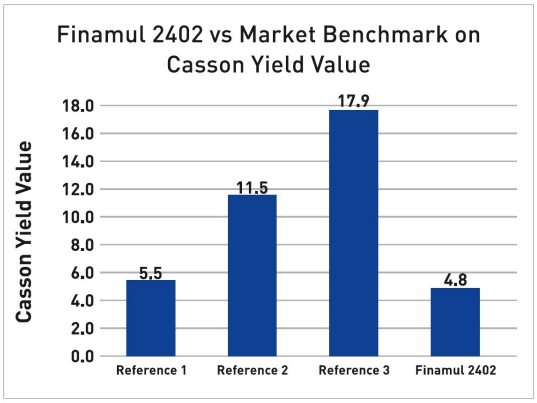
- The high viscosity chocolate is well-suited for 'moulding', where you need a thick coating of chocolate so that it can hold the final shape without air bubbles, such as moulded chocolates, chocolate spread, and fudge.
- On the other hand, low viscosity chocolates are ideal for 'enrobing & dipping' applications, where a thin coating of chocolate is desired, such as in the chocolate wafers, softy serves, or chocolate-dipped fruits.

Finamul 2402 is FINE's specialized grade of PGPR which is specially designed to help chocolate manufacturers take control over the chocolate's rheology and optimize the flow properties and yield value.

Performance evaluation of Finamul 2402 in rheological studies conducted on chocolate formulations at 0.15% dosages



Excellent viscosity reducing power (VRP) attained with Finamul 2402



Remarkably lower force required to initiate the uniform chocolate flow with Finamul 2402

Key technical features	Benefits
Custom-designed to reduce the Casson yield value	Excellent viscosity and controlled enrobing
Works in synergy with Finamul 1909 (AMP) and Lecithin	Optimal dosage – cost effective
Easy handling - Pumpable at room temperature	Easy moulding – no air bubbles
Taste & odor free	No aftertaste in the chocolate

Key applications:

• Moulded Chocolates • Chocolate paste • Chocolate enrobing / coating • Chocolate spread

Finamul 2402 can be used in combination with Finamul 1909 (lecithin replacer) and Finamul 6030 (anti-bloom agent) in order to achieve a synergistic effect to optimize the product viscosity and render excellent flow control to your chocolate mass.

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FROZEN FOODS: AN OVERVIEW ON NUTRITION AND BENEFITS

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Foods provide essential nutrients and energy that helps in maintenance of normal bodily functions, growth and optimal health. As per Indian dietary guidelines nutritionally adequate diet or balanced diet should be consumed through a wise choice of food items from diverse food groups. It is recommended to source macro- and micro-nutrients from minimum of 8 food groups. Most of the foods are perishable and require any of the preservation techniques (freezing, drying, sterilization, canning etc.) to maintain nutritional and sensorial quality of food, increase shelf-life, to optimize the use of agricultural resources, minimize food loss and waste, and to ensure food availability across geographies.

Freezing is nature's pause button to keep food safe and healthy. Freezing or frozen storage is one of the most well-established, popular, long-term and effective approaches to maintain nutritional quality of foods for extended periods of time. It is the only large-scale process to connect availability and demand of raw materials such as fruits, meat, vegetables over seasons. Freezing reduces the deterioration (chemical and microbial) of foods because of low temperature employment. Further, frozen foods are known to have an excellent safety record. It is also one of the highly accepted conservation techniques as it does not involve the use of preservatives with imparting prolonged shelf-life.

Frozen Foods: An Overview on Nutrition and Benefits

India's frozen food sector is growing rapidly from being a niche segment to a mainstream segment with annual growth rates of approximately 13% - 14%. The frozen ready-to-cook segment alone is growing annually at 15% and presently a Rs 3,500 crore category. Modern technological advancements, evolving lifestyles and urbanization have surged the demand for convenient and nutritious food options particularly among younger and working population as it helps them save time and effort on ingredient shopping and meal preparation. Today, the industry utilizes commercial rapid-freezing advanced technologies like IQF(Individual Quick Frozen) or cryogenic freezing to preserve the texture, taste, flavour and nutrition of food products to avast degree.

Further, with innovations in product diversity, frozen products are now-a-days available in multiple palatable formats - for example, frozen vegetarian products like kebabs, veggie pockets etc contain an array of vegetables like carrot, capsicum, corn, onions, beans, peas, spinach along with the goodness of plant-based proteins. Meanwhile non-vegetarian options like frozen chicken breast strips, nuggets, patties etc are good sources of animal-based proteins. Frozen meats, seafood, pre-packaged vegetables and fruits encourage consumers to incorporate more produce in their diets by making the meal preparations quick and easy. They also help consumers get access to diversified diets across meals and occasions. Consumption of such convenience foods like frozen- ready (h)eat products or meals require minimal cooking skills and equipment thereby catering to a wide range of audience towards addressing nutritional challenges.

There are numerous studies that have stated that nutrient levels in frozen foods stay intact depending on how the frozen food is processed. It does so, by preventing micro-organisms from growing and by slowing enzyme activity that causes food to spoil. Freezing locks in the goodness of any food we consume, hence extending its life naturally when stored in the right conditions at -18°C or below. Freezing pre-treatments play an important role in limiting physical and structural damage of foods. The rate of freezing also is instrumental in protecting the quality of frozen foods. For animal-based meats, proteins remain unchanged during frozen storage but fats maybe susceptible to changes from oxidation. For plant-based products like vegetable and fruits studies mention that quick-freezing supports in maintaining the original colour, flavour, and vitamins to a greater extent. Functional properties of plant-based foods in frozen state may positively increase the antioxidant activity and quality of foods by releasing bioactive compounds like anthocyanins and phenolic acids.

Nutritional research from studies (Bouzari, 2015) that compared the retention of vitamins and minerals in several fruit and vegetable commodities like blueberries, corn, strawberries, carrots, broccoli, green beans, spinach, and peas for β-carotene, α-tocopherol, ascorbic acid and riboflavin, magnesium, calcium, iron, zinc, and copper demonstrated that the vitamins and minerals of the frozen foods were comparable to their respective fresh counterparts.

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Variabilities may occur depending upon treatments involved prior freezing, or in terms of raw materials procured. Another study by Storey et al 2017 saw significant increase in consumption of fruits and vegetables (FV) in the frozen state whilst evaluating FV consumption across age-groups and genders towards meeting the recommended dietary guidelines in Americans. This thereby enabled higher intake of nutrients like vitamin D, calcium, etc amongst consumers who opted for frozen FV.

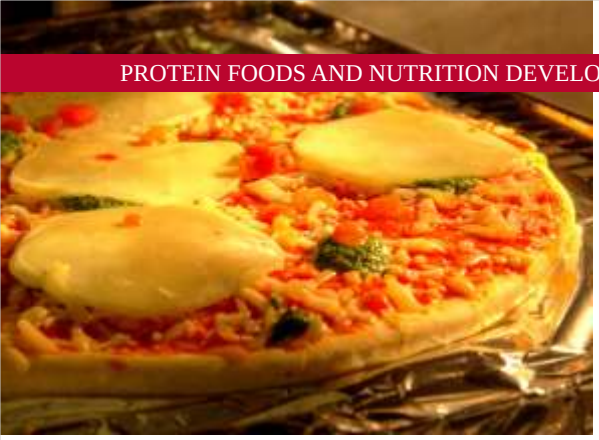
Advantages of Frozen Ready-to-Eat and Cook Foods:

1. Convenience and Time-Saving: Frozen ready to eat and ready to cook foods are extremely convenient for individuals and families with busy lifestyles. They help in reducing meal preparation time, allowing people to enjoy nutritious meals without spending hours in the kitchen. The ease of preparation allows healthier eating habits for people with a hectic lifestyle who find it difficult to cook food from fresh produce every day, as people are less likely to opt for less nutritious fast food or takeout options.

2. Portion Control and Waste Reduction: Frozen foods often come in pre-portioned packages, helping individuals work on their portion sizes and avoid overeating. The longer shelf life of frozen foods helps in reducing food waste. Individuals can choose the quantity of food to be consumed and keep the rest of the product for future use therein minimizing wastage.

3. Nutrient Preservation: Freezing food is a convenient way to preserve its nutritional value, but there are nuances to how well different nutrients are retained. During the freezing process, the water present inside the cells transforms to ice crystals which can affect texture but not necessarily compromise on the nutrient content. Fat-soluble vitamins, such as vitamins A, D, E, and K, are generally more stable during freezing. Minerals are also well-retained in frozen foods, as they are not destroyed by freezing. The protein and carbohydrate content in food remain largely unchanged through the freezing process. Modern freezing techniques, like flash freezing, help in preserving more nutrients by reducing the time it takes to freeze the food, which results in smaller ice crystals and less damage to the cell structure. Proper storage is crucial; maintaining a consistent temperature and avoiding thawing and refreezing cycles helps preserve nutrient content. This is truly beneficial for those living in areas where the fresh produce takes time to reach the local market. Frozen foods can be a reliable source of essential nutrients, ensuring that individuals meet their dietary requirements even when fresh produce is scarce.

4. Cost-Effectiveness: Certain frozen foods can be more affordable than fresh foods. It is easier for people to incorporate variety of fruits and vegetable in the diet, even during out of season.



Addressing Common Concerns:

Additives and Preservatives: A common concern about frozen Ready to Eat and Ready to Cook foods is the presence of preservatives. While some frozen foods may contain added ingredients, frozen food without preservatives are also available in the market as the freezing itself works as a preservation process.

Texture and Flavour: The texture and flavour of frozen foods can differ from fresh foods, which may discourage some people from choosing frozen options. However, advances in freezing technology have improved the quality of frozen foods, making them more palatable. Proper cooking techniques may help enhance the texture and flavour of frozen foods. For example, roasting frozen vegetables can bring out their natural sweetness and give a desirable texture.

Tips for Choosing and Using Frozen Foods:

- **Proper Storage and Handling:** Storing frozen foods at the recommended temperatures to maintain their quality. Thawing and freezing should be avoided to keep the texture and nutrient content intact. Store frozen food as instructed on the label
- **Incorporating Frozen Foods into Meals:** Frozen vegetables can be used in soups, stews, stir fries, to add nutrients and flavour. They can be blended in smoothies or used as toppings in the yogurt, oatmeal or desserts.
- Preparing frozen meals according to package instructions, and considering adding fresh herbs or spices to enhance flavour.

Thus, frozen ready-to-eat (RTE) and ready-to-cook (RTC) foods offer a convenient, cost-effective, and nutritionally valuable option for modern diets. The essential nutrients like vitamins, minerals, and antioxidants can be preserved by the freezing process. By choosing high-quality frozen foods and incorporating them into balanced meals, consumers can enjoy the benefits of nutritious, delicious, and time-saving food options. In a fast-paced hectic world, frozen foods provide a practical solution to contribute towards daily balanced diet, ensuring that individuals and families have access to essential nutrients regardless of season or availability. Embracing frozen RTE and RTC foods can lead to reduced food wastage and convenience, making them a valuable addition to any kitchen.

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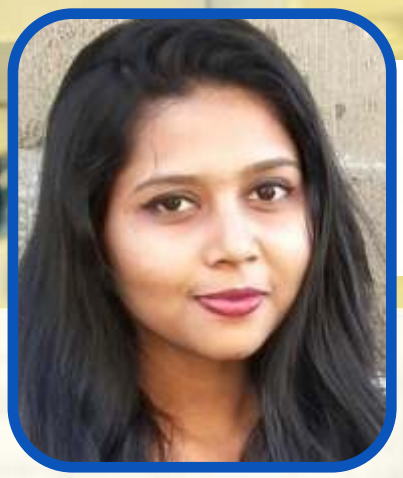
TISSUE CULTURE AND ITS APPLICATIONS IN FOOD & AGRICULTURE



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Totipotency, the remarkable ability of a single cell to develop into an entire organism, most prominently observed in fertilized eggs and certain plant cells, it allows complete regeneration of tissues and organs. In 1902, Gottlieb Haberlandt presented the idea of totipotentiality (now called totipotency) where a single cell can give rise to a complete plant. Tissue culture relies on the principle of totipotency. This technique involves growing a tiny fragment of plant or animal tissue in an aseptic, controlled environment on a nutrient medium which develops into whole plants or tissues. Tissue-culture-regenerated plants or tissues are genetically identical clones of the original cell (1,2).

How is tissue culture done?

Explants are very small parts of plants such as shoot tip, root tip, seed, embryo, pollen grain, or even a single cell. These explants are sterilized and put in petri plates with nutrient media. The media lacks the growth hormones that normally instruct cells on which tissue to develop into. Consequently, the cells fail to differentiate and instead aggregate into a mass known as a callus, which lacks tissue-level differentiation. Growth hormones like auxins (promotes root formation) and cytokinins (promotes shoot formation) can be added to the media to cause the callus cells to develop entire plants as plant cells are totipotent. Subsequently, the regenerated plants are placed in test tubes. They are placed in soil after they have grown to a specific size (7).

Tissue culture techniques include callus culture, suspension culture, shoot tip culture, lateral bud culture, and isolated root culture. Callus is an undifferentiated tissue formed on explants after a few weeks on growth medium. Suspension culture is when friable calluses (loosely organized cells) are grown on a liquid medium and regularly agitated to provide free cell suspension. Suspension cultures are classified as batch or continuous, with batch cultures containing a part of the original cell suspension and continuous cultures introducing new media. Shoot tip culture is developed from excised shoot tips/buds larger than the shoot apices, with several leaf primordia. Lateral bud node culture is carried out on stem tissue, with each bud producing a single shoot. Isolated root culture can generate a branching root system by growing roots not attached to shoots

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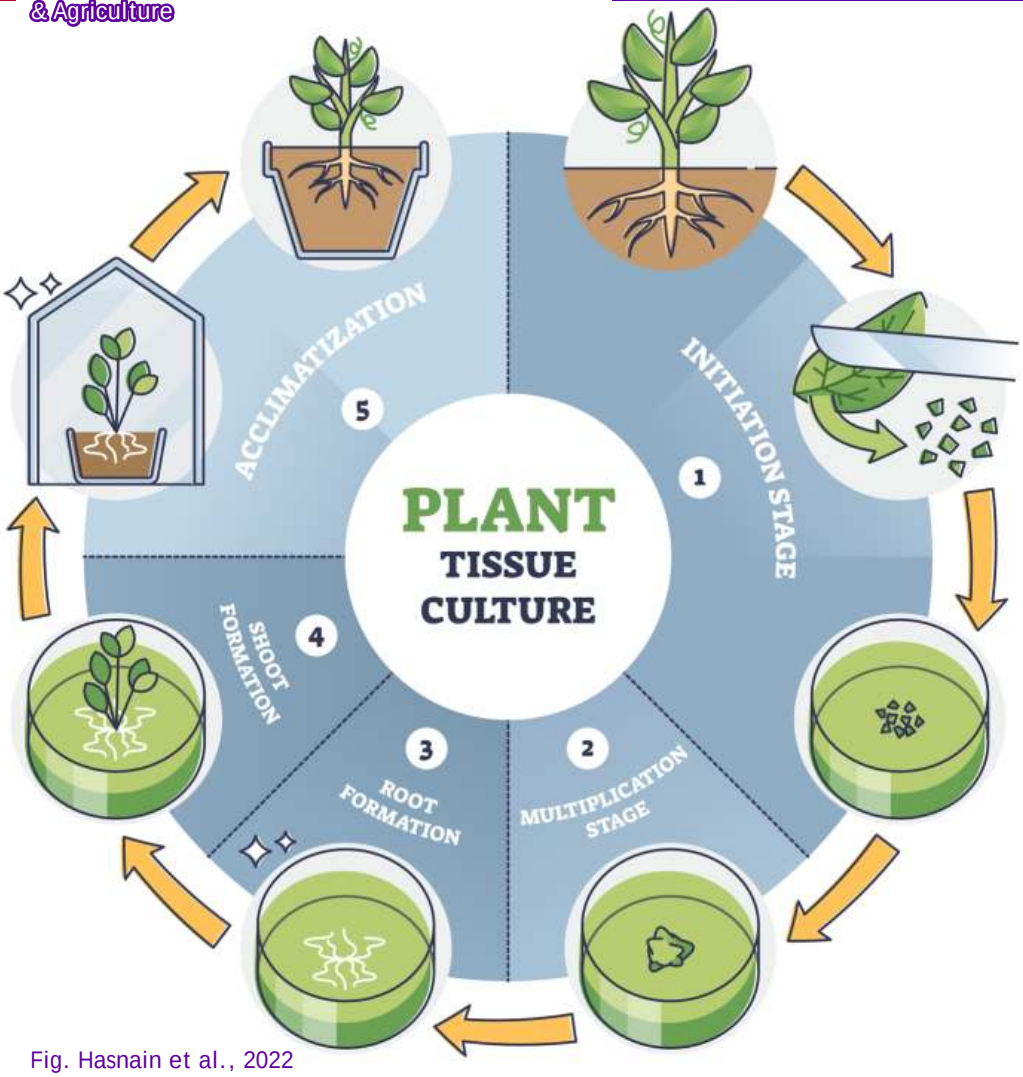

Fig. Hasnain et al., 2022

There are different methods to carry out plant tissue culture:

• Micropropagation – Micropropagation is a tissue culture method that generates thousands of plant copies, resulting in faster growth, taller plants, and a shorter production cycle. The process begins with donor plant preparation, followed by sterilization of the explant. Plant structures called propagules are responsible for vegetative reproduction, and the multiplication stage focuses on increasing propagules. Roots may appear at this stage, but sometimes modification of the media may be necessary. These plants cannot be directly planted in the field due to their lack of photosynthesis. Hence, they need to be gradually adjusted to field conditions through hardening. The plants are then moved to a suitable substrate and hardened in a greenhouse.

• Embryo Culture – Embryo culture involves growing isolated plant embryos in vitro to obtain viable plants. It includes mature embryo culture for dormant or low-survival embryos and immature embryo culture (embryo rescue) to save embryos from unripe or hybrid seeds. Both methods bypass dormancy and developmental issues, ensuring plant viability (5). It has helped to propagate seedless grape cultivars by rescuing embryos that stop developing after fertilization. Turkey first invented it in the year 1933, with pioneering experiment, which involved growing a cherry embryo on synthetic media. Since then, numerous vegetable and fruit crop embryos have been cultured like Apples, Capsicum, and Onions (6).

• Somatic embryogenesis - Somatic embryogenesis is useful tool for mass plant propagation. Somatic refers to any cells except the reproductive cells. Somatic embryogenesis is a method of plant regeneration that involves developing somatic cells or tissues into differentiated embryos, which can develop into whole plants without sexual fertilization. Plant generation occurs by inducing embryonic cultures from leaves or stems and then multiplying these embryos to produce new plants. After maturation the embryos are cultured to germinate, develop plantlet and then transferred to soil. Plant growth regulators (PGRs) play a very crucial role in the development and regeneration of these embryos. Grapevine and rose hybrids were successfully used to test somatic embryogenesis.

• Organogenesis: Adventitious meristems refer to the formation of plant organs like roots, shoots, and leaves that can develop directly from meristem tissues. Plant regeneration through organogenesis involves creating callus tissue and then inducing these callus cells to form organs by changing the levels of plant growth hormones in the nutrient medium.

• Anther Culture - Anther culture is a popular method for producing homozygous lines in rice cultivars worldwide. It involves cultivating anthers or haploid plant explants. Androgenesis is the process of producing haploid plants from young pollen cells without fertilization. Today, haploid technology is integral to crop improvement programs, speeding up inbred line production and overcoming seed dormancy and embryo non-viability. This technique has succeeded in genetic transformation, producing haploid plants resistant to various stresses, including wheat and drought-tolerant plants(3,4).

Application of tissue culture in agriculture

Plants are a major source of nutrition for humans as well as other living creatures. Pests, diseases, and a scarcity of planting supplies are the commons hurdles in production of crops. Plant tissue culture proves to offer solutions to these problems and are widely used in agronomic crops.

• Bananas, a staple food in developing countries and an important export produce in tropic regions, have experienced reduced production due to a lack of dependable and safe planting materials. Traditional methods, such as suckers, are insufficient and of low quality. Tissue culturing is an efficient method for addressing this issue. Micro-propagated bananas often perform better than those grown with traditional methods, but unwanted genetic variations, or off-types, are a major challenge. Commercial labs are now using tissue culture techniques to reduce these variations and improve early detection of off-types.

However, some off-types have significant agronomic utility, such as 'Mons Mari', a micro-propagated Cavendish cultivar which has longer fruit and higher wind resistance.

• Pineapple production in tropical areas is limited due to a lack of planting materials. Traditional methods like suckers and slips resulted in limited seedlings. Tissue culture offers a practical technique for producing desired flora. In vitro propagation of pineapple has shown multiplication rates of 30-50 per month, compared to 4-5 per year with traditional propagation.

• Wheat, a staple crop, is crucial for meeting human nutritional needs. To meet this demand of the growing population, wheat production should increase by 2% annually. Wheat tissue culture offers an alternative to conventional breeding, allowing for the development of disease resistant varieties. Tissue culture and biotechnological methods were used to create the transgenic wheat lines that provide resistance against sharp eyespot and take-all disease, which damages plant roots. Using tissue culture technique, it was found that wheat varieties had overexpressed transcription factors involved in carbon and nitrogen metabolism pathways, which showed potential in increasing wheat yield.

• Rice, a major food crop, has been cultivated for over 7000 years and is a rich source of nutritional carbohydrates. Rice breeders focus on hybridization and recombination methods to increase rice production. Plant tissue culture offer faster solutions to crop improvement. Explants, including immature and mature embryos, root segments, coleoptiles, and leaf bases, are used to initiate rice calli, which play a significant role in increasing rice yield (8)..

Cellular agriculture

In 1932, Winston Churchill stated: “We shall escape the absurdity of growing a whole chicken in order to eat the breast or wing, by growing these parts separately under a suitable medium”. Due to advances in cellular agriculture, this idea has become a reality. Similar to plant tissue culture, animal tissue culture or cellular agriculture involves maintaining and growing isolated cells, tissues, or organs in a controlled artificial environment. Under the right conditions and with the addition of nutrients and growth factors, many animal cells can be made to grow outside their original organ or tissue.

For cultured meat, cells from any animal species or breed are used. Starter cells are typically sourced from living animals, or after slaughter. Embryonic stem cells, muscle, fat, and skin cells can be used as starter cells as well. Cultivators, also known as bioreactors, are vessels that provide temperature-controlled, clean, and closed environments for cells to grow. A cultivator rapidly duplicates cells, allowing them to mature into muscle and fat when attached to scaffolding. Inside the cultivator, growth media contain the same components as in vivo components; carbohydrates, amino acids, fats, vitamins, minerals, growth stimuli (signalling molecules). Appropriate growth medium is crucial as it promotes cell proliferation and differentiation.

Scaffolding is a crucial component in meat cultivation, providing a surface for cells to mature into desired muscle and fat composition, texture, and form. Inside the cultivator, it replicates the environment in which cells grow. It can be made of edible biomaterials like gelatin or derivatives of plants, algae, or fungi, and can be introduced with growth stimuli. Smaller, less complex scaffolding is effective for ground meat, while more complex scaffolding is needed for specific structures and thickness like steak. The production of cultivated meat takes 5 to 7 weeks, depending on the factors like type of cells and growing conditions among others. The meat that is harvested is identical to conventional meat (9, 10).

Applications in food industry

Over the years, there have been developments in cell culture, and some are now ready to move from laboratories to production. Along with the beef burger and chicken nuggets been approved, several startups are working on creating alternative dairy products. Perfect Day, a dairy startup, uses yeast to produce dairy. Real Vegan Cheese uses microbial precision fermentation to make mozzarella cheese. Geltor is developing a proprietary protein production platform using bacteria and yeast to produce gelatin.

In 2021, the world's first synthetic coffee products were created by two biotechnology companies. These products, which can be produced via cellular agriculture in bioreactors, may have equal or highly similar effects, composition, and taste as natural products but use less water, generate less carbon emissions, require less labour, and cause no deforestation. Finless Foods is developing and mass manufacturing of marine animal food products (11).

Limitation vs Advantages of tissue culture

The tissue culture process is a quick and efficient method for growing new plantlets, ensuring they are free from viruses and diseases, and can be done year-round. However, it is an advanced technique that requires knowledge and practice. It can be costly and time-consuming. Reducing off types or somaclonal variations is another challenge in plant tissue culture. Cell culture has lower environmental footprint. It reduces animal cruelty and make products that are exactly like conventional animal products. However, the costs of production are high. Although the cultures can be replicated, overtime toxic chemicals in culture mediums can disrupt cell functions, potentially leading to cell death or metabolic changes. Lack of a regulatory framework is an obstacle to grow it to a commercial stage (8,11).

Tissue culture technology not only enhance our ability to utilize living organisms but also address some of the issues surrounding sustainability, and food production. They are extremely useful in the fields of biotechnology, agriculture, and many other fields, despite their many drawbacks.

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GLUTEN INTOLERANCE: FROM SYMPTOMS TO SOLUTIONS

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Wheat, barley, rye, and their derivatives contain a kind of protein called gluten.

Gluten proteins are prolamins and are rich in glutamine and proline and have different names according to grain species, including gliadins (monomers) and glutenins (polymers) in wheat, hordeins in barley, and secalins in rye. Semolina, pasta, cereal, couscous, beer, and many more everyday foods and beverages contain gluten. Likewise, cosmetics, supplements, and even certain medications may also be comprised of it.

When someone experiences symptoms of fatigue, nausea, or bloating after consuming gluten, it may indicate gluten intolerance, sometimes referred to as Non-Celiac Gluten Sensitivity (NCGS). This condition is marked by negative reactions to gluten intake, even in the absence of wheat allergy or celiac disease.

Are gluten intolerance, wheat allergy, and celiac disease the same?

Wheat allergy, celiac disease, and gluten intolerance are not the same thing. An overreaction by your immune system to a particular food containing wheat is known as a wheat allergy. It is an IgE-mediated allergy, which usually is self-limiting and often resolves in a few years. There is no intestinal damage present but rather symptoms of breathlessness, vomiting, rashes or itching are present. Complete wheat avoidance is necessary. About 0.1 % Indian population is affected by wheat allergy (1).

Celiac disease is the most common gluten-related disorder globally. Individuals who have celiac disease react to gluten with an autoimmune reaction as it is a permanent autoimmune disorder. This indicates that their systems attempt to fight gluten as if it were a virus. Their digestive tracts get inflamed and damaged as a result of this reaction.

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SCAN FOR **FREE SAMPLES**

A gene defect is the cause of celiac disease. Antibodies that fight gluten are also present in high concentrations in the blood of those who have celiac disease. According to experts at the All-India Institute of Medical Sciences, celiac disease affects close to six to eight million people in India (2).

A strict gluten-free diet is recommended. Although the prevalence of celiac disease in southern India is unknown, it is well-identified in northern India. Since rice is a staple in south India, variations in dietary patterns or genetic makeup may account for differences in the prevalence of celiac disease between north and south India (3).

Whereas in Non-Celiac Gluten Sensitivity there are intestinal and extra-intestinal manifestations however no antibodies are present. A differential diagnosis of NCGS from other functional digestive disorders is challenging due to a large similarity in symptoms between them. The pathophysiology of NCGS is largely unclear, and there are contrasting data on the trigger of this condition. Gluten elimination is the main key to this condition. According to self-reported data, the prevalence rate of NCGS ranges between 0.5% and 13% in the general population globally and ranges from 0.6-10.6% in the Asian population but there is less data available on the exact prevalence of NCGS in India as this condition is often self-diagnosed and can vary widely among populations (4, 5).

Symptoms & Diagnosis of NCGS:

Intestinal manifestations- Abdominal Pain, bloating, diarrhea, constipation, nausea, excessive flatulence.

Extra-intestinal manifestations- Headaches or migraines, fatigue, generalized muscle pain, anxiety, brain fog, difficulty in concentrating, skin rashes, numbness, anemia.

Diagnosing gluten intolerance: As of present, there is no reliable biomarker for NCGS, and the diagnosis is made only based on exclusion criteria. A patient must have symptoms to be diagnosed with NCGS, and those symptoms must go away a few days after the patient begins a gluten-free diet. The patient should also be ruled out if they have any other illnesses (such as Celiac disease, Wheat allergy, type 1 diabetes, inflammatory bowel disease, Helicobacter pylori infection), and if their skin prick test results for wheat or autoantibody serology are negative (6).

Additionally, intestinal endoscopy should indicate normal mucosa. The diagnostic process typically includes:

- Medical History and Symptom Review: A detailed examination of the patient's symptoms and dietary habits.
- Celiac Disease Testing: Blood tests and, if necessary, a biopsy to rule out celiac disease.
- Wheat Allergy Testing: Allergy tests to rule out wheat allergy.
- Elimination Diet: Removing gluten from the diet for a period (usually 2-6 weeks) and monitoring symptom improvement.
- Gluten Challenge: Reintroducing gluten to observe if symptoms recur

Lack of certain nutrients if Gluten is avoided:

People think that gluten is not healthy and try to avoid it even when they may not be sensitive. This deprives them of good nutrition from wheat, barley, rye, and sometimes even oats. Sheela Krishnaswamy, a nutrition consultant, advised avoiding practicing a gluten-free diet to lose weight while the number of those intolerant to gluten continues to rise.

However, a lot of people are avoiding gluten because they think it aids in weight loss (7). Foods containing gluten represent a significant portion of many diets. These foods are easily cultivated and affordable to produce, making them a good choice for meeting the calorie needs of large populations. Because of its texture and flavor, gluten is frequently added to prepared foods.

Given the growing popularity of Gluten Free Diets, it's critical to know the availability, prices, and nutritional value of this diet in addition to the potential impacts of a gluten-free diet on the general public and the food industry.

Avoidance of gluten completely can cause nutritional deficiencies since many common grains and foods that have been fortified are excluded. Since these are frequently found in whole grains and fortified cereals, key nutrients at risk include iron, calcium, vitamin D, magnesium, zinc, and B vitamins (such as thiamin, riboflavin, niacin, and folate). Also, consumption of fiber which is crucial for maintaining digestive health may be compromised.

According to research by Thompson and colleagues, a lot of gluten-free foods are not enhanced and might be lacking in several nutrients, mentioned above.

Additionally, upon analysis, it was discovered that processed gluten-free products had higher amounts of lipids, trans fat, protein, and salt than their gluten-containing counterparts (8).

Hence people following a gluten-free diet must focus on adding a range of naturally gluten-free foods that are high in these nutrients in order to prevent these deficiencies.

Such approaches are:

- Select whole grains that are free of gluten: buckwheat, amaranth, quinoa, brown rice, and millet.

- Including a range of fruits and veggies: To ensure sufficient intake of fiber and micronutrients.

- Including seeds, nuts, and legumes: as excellent sources of fiber, magnesium, and other vital elements.

- Choosing gluten-free, fortified products: Certain bread, cereals, and pasta that are gluten-free are enhanced with vitamins and minerals.

- Supplementation: If necessary, follow advice from a dietitian or healthcare professional.

Supplements that might aid Gluten digestion:

In the case of lactose intolerance, the enzyme lactase aids in the breakdown of lactose in dairy products, facilitating intolerant individuals to digest them. However, it is not the same when it comes to gluten sensitivity. There isn't a recognized treatment for gluten intolerance at present, many dietary supplements claim to help in gluten digestion in situations that a person is unintentionally exposed.

Enzymes such as dipeptidyl peptidase IV (DPP-IV), proteases, and endopeptidases can be found in combination with certain supplements. These enzymes assist in the breakdown of gluten proteins, which could decrease symptoms in some people with gluten sensitivity (9).

A few such supplements which are available in Indian as well as global markets are Gluten Ease, Gluten Digest, and Gluten Rescue. On the other hand, probiotics can also help decrease the symptoms of gluten sensitivity and help maintain gut health.

Although not being able to break down gluten, they can help maintain a healthy gut microbiota, which may enhance digestive health in general. However, these supplements are not a cure and should not replace a gluten-free diet.

Importance of Food labels:

Food labels carry useful information to help one make informed choices about what they eat or drink. People can identify whether a food product contains gluten by closely reading the label, as per India's current food labeling regulations. The following points can help make a better choice:

• *Find "Gluten-Free" Labels:* Certain products have a label that indicates "gluten-free." FSSAI regulations state that a product must have fewer than 20 parts per million (ppm) of gluten in order to be branded as gluten-free.The FDA regulation also applies to using the terms “no gluten,” “free of gluten,” and “without gluten” on product labels.

Understanding label terminology is also very important. Like, "wheat-free" is not does not mean "gluten-free," as gluten might still be present in other grains.

• *Look for Allergen Information:* All packaged food products are mandated by the Food Safety and Standards Authority of India (FSSAI) to have a clear list of allergies on their labels, including gluten. It's common to find this information next to the ingredient list or in a different section titled "Allergen Information.

• *Read the list of ingredients:* Gluten comes in a variety of forms. Certain components, such as wheat, barley, rye, malt, semolina, and durum should be checked out by consumers who are sensitive to gluten. Gluten's presence can even be identified by malt extract, hydrolyzed wheat protein, and modified food starch.

What are the replacements for gluten?

We cannot deny the fact that gluten is an important component in many foods as it gives texture and stretchy quality. Breads, cakes, pastries, and biscuits are majorly dependent on it. Using gluten-free flour substitutes in place of wheat flour for baking, such as almond, coconut, rice, and tapioca flour, along with binding agents like xanthan gum, guar gum, or psyllium husk, can mimic the structure and flexibility that gluten provides. However, because the texture of these flours is frequently dryer, they need to have more moisture added, which can be done by adding things like eggs, yogurt, buttermilk, oil, or butter.

General industry practices to create high-quality, safe, and appealing gluten-free products for customers with gluten sensitivity are important. These practices include avoiding cross-contamination, cleanliness of equipment, regular product testing, clear labeling, and educating the staff on the importance of gluten-free practices to maintain product integrity.

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WEBINAR ON NUTRIVERSE - NAVIGATING THE PATH TO HOLISTIC NUTRITION

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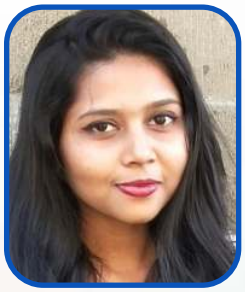
Protein Foods & Nutrition Development Association of India (PFNDAI) organized a Webinar on 'NutriVerse - Navigating the Path to Holistic Nutrition' on 26th July 2024. The event was sponsored by Hindustan Unilever Limited (HUL).

The welcome address of the webinar was given by Dr. Shashank Bhalkar, Executive Director at PFNDAI. He stated there has been a rise in non-communicable diseases globally and in India. The rise in processed foods is often blamed on food and diet, but factors such as rapid urbanization, migration, and changing lifestyles have also contributed to the rise in NCDs. Studies in Nutrigenomics show that individual diets affect genes and health, and new diet changes can affect health. Additionally, changes in physical activities, work from home, and increased stress have led to a reduction in physical activities and stress levels. Therefore, it is crucial to adopt a holistic approach to diet and nutrition to improve individual health. Dr. Bhalkar acknowledged Hindustan Unilever Limited for sponsoring the webinar and assured that the participants would be enriched in knowledge.



Ms. Sanyukta Telange, Food technologist & Regulatory support at PFNDAI introduced the speakers for the session, providing a brief about their background, qualifications, and expertise.

Dr. Anura Kurpad, Professor & Head, Department of Physiology, Division of Nutrition, St. John's Medical College & Research Institute talked on the topic 'What's in a Diet?'. He emphasized the importance of a diet that provides pleasure and all the necessary nutrients for good health.

Dr. Shally Awasthi Vice Chancellor, Bodhisatva University, Barabanki (UP) delivered the talk on 'What is the Malnutrition Problem in the Country?'. She explained malnutrition and the 3 groups of conditions namely, undernutrition, micronutrient-related malnutrition (MND), and obesity. MND affects almost one-third of the world's population. One or more MND is reportedly present in almost one half of school going children in India. She also displayed a map of India where more than 40% of the population was iron deficient. Further she presented the data of a multicentric (10 cities) study, where children of age 6-16 years were enrolled from randomly selected urban schools. Based on the BMI for age they were categorized as severely thin, thin, normal, overweight, obese, and severely obese. The study showed the distribution of MND and prevalence of MNDs with iron, vitamin D and Vitamin B12 being highest along with others. The distribution of dietary inadequacy of various macro and micronutrients was showed graphically. She listed the possible causes of MND like daily diet inadequacy, reduced bioavailability and malnutrition and concluded by stating a few solutions and the need of further research to solve the issue of malnutrition.

Meeting nutrient requirements in a diet is maintaining well-being that keeps us stable, energetic, strong, alert, and young. He introduced the concept of 'Reductionism'. Nutrient needs vary for individuals and populations, and people digest and use food differently. The Estimated Average Requirement (EAR) and Recommended Dietary Allowance (RDA) were explained. He also discussed the risks of giving too much of a particular nutrient, which can increase the demand for another nutrient. Nutrients can be toxic in excess and need to be detoxified. When iron is in excess, glutathione is needed to detoxify, excess omega 3 needs extra antioxidants. He stated that meeting the RDA in a reasonable diet is not easy. According to a recent report, multivitamin use in over 3 lakh participants showed no association with lower mortality risk. Ideally, the diet should be able to provide or meet at least 20-25 nutrient requirements.Advancements in AI can help provide meal-by-meal plans to meet these requirements. The talk was concluded by stating that holistic approaches should be taken, and one should focus on eating welland eating good food in moderation.

Dr. Sujatha Jayaraman, Head, R&D Foods and Beverages, Unilever South Asia delivered the talk on 'Healthy Gut for a Healthy Mind'. Dr. Jayaraman discussed India's nutrition problem, with 1 in 3 children malnourished, 1 in 4 stunted, and 15 million obese/overweight. The Indian diet, which consists of 70% carbohydrates and 7% protein, is not diverse enough for holistic management. She emphasized that every individual's response to the same diet is different, and personalized nutrition is crucial. The gut microbiome plays a crucial role in holistic health and well-being.It is the centre of holistic health and well-being. Every individual's microbiota is unique just as their genetic profile. The gut and brain communicate through the gut-brain axis as many chemicals like serotonin, and GABA

(Gamma-aminobutyric acid) are produced in the gut. Sleep is a crucial aspect as it lowers stress. The global gut health report, 2018 and 2020, revealed that consumers prioritize digestive help from foods and beverages. A diverse diet including prebiotics and probiotics leads to diverse gut microbiota, which helps maintain good health. Industries can supplement necessary ingredients that are not being consumed in the diet. HUL has worked for over two decades on microbiota, prebiotics, and probiotics in the diet. Their work on tea as a prebiotic has been successful, as it promotes the growth of good bacteria like lactobacilli, promoting digestion and nutrient absorption. They have developed products that provide a good source of prebiotics and probiotics, including a list of 50 ingredients and curated recipes open tothe public. Dr. Jayaraman concluded by emphasizing the influence of the gut and how personalized diets are the way of the future.

After every presentation, Dr. Bhalkar coordinated the questions raised by the attendees. The speakers enthusiastically answered the questions raised.

A panel discussion followed the presentations. Dr. Sujata Jayaraman was the panel moderator and Ms. Suchitra Tripathy, Head of Technical Services Food and Beverage Biosolutions at Novonesis, South Asia, Dr. Jagmeet Madan, Principal, Professor, Director (R&D Centre), SVT College of Home Science (Empowered Autonomous Status), SNDTWU, Mumbai, National President Indian Dietetic Association, Dr. Rekha Singhal, Professor of Food Technology at ICT, Mumbai were the panellists.


Dr. Sujata Jayaraman


Ms. Suchitra Tripathy


Dr. Jagmeet Madan


Dr. Rekha Singhal

Dr. Jagmeet elaborated on the benefits of holistic nutrition and emphasized the importance of diet diversity and nutrition literacy. Ms Suchitra talked about the novel solutions to design healthier diets and specific areas overlooked in holistic nutrition. Dr. Rekha elaborated on the Indian culture and traditional knowledge on functional food and fermented food. Dr Jagmeet and Ms Suchitra gave practical tips on designing a holistic diet and making better food choices.

At the end of the session, Ms. Samreen Shaikh, Jr. food technologist at PFNDAI gave a vote of thanks to the webinar sponsor, speakers, and panellists, along with her PFNDAI team members for making the webinar a success. She also thanked the attendees for patiently attending the webinar.

The entire webinar recording is available on the following link: https://fb.watch/tIjTFo2SuH/

REGULATORY ROUND UP

AUTHOR
Dr Shashank Bhalkar,
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Dear Readers, Please find below new notifications, orders, etc. since the last round-up

Launch of provision for instant (Tatkal) issuance of license/ Registration in certain categories of food businesses: Under the existing regulations of licensing, the licenses should be granted within 60 days and registrations within seven days. This order is about the alternative system of issuance instantly for selective kind of businesses. The verification is done digitally via GST, PAN, ADHAAR, CIN, etc. under the conditions which are given in the order. This will facilitate the ease of doing business.

Validity Order of FSSAI notified laboratories: The latest list of FSSAI recognised laboratories with NABL validity as of11.07.2024 is published.

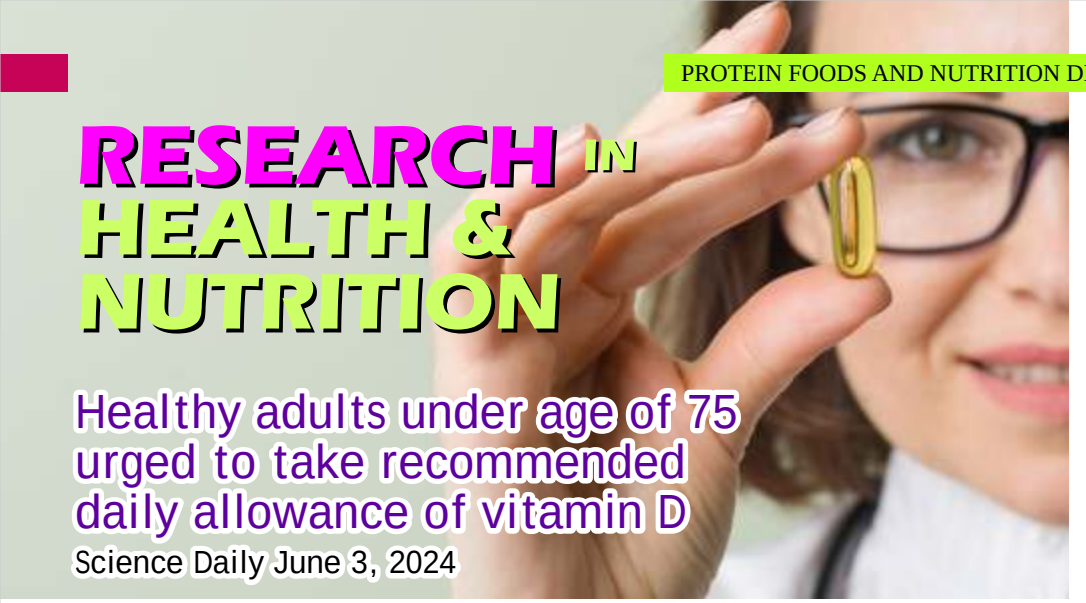
Introduction of new Kind of Business (KoB) for 'Direct Sellers' under FoSCoS: In case of persons (Direct Sellers) who were part of multi-level marketing were not required to obtain license or registration as long as the main entity had FSSAI license and gave an undertaking that it will ensure compliance of Direct sellers with all the applicable regulations. This exemption continues.

In case the main entity does not take responsibility, the direct sellers must register with or obtain a license from FSSAI according to the turnover. In this regard, FOSCOS has created separate KOB for such direct sellers. The order further clarifies certain food categories like infant food, etc cannot be sold by the direct sellers. The order has come into effect from 10th July 2024.

Direction regarding re-operationalisation of Food Safety and Standards (Licensing and Registration of Food Business) Amendment Regulations, 2021: FSSAI has framed FSSA (L&R) amendment regulations, 2018 for various sections. These regulations were operationalised and re-operationalised several times and the draft regulations were notified for the comments from stakeholders on 17.11.2020. It is further re-operationalising FSSA(L&R) Amendment regulations, 2021 with effect from 11.05.2024. FBOs can follow the regulations but the enforcement only after the Gazette notification.

Direction under Section 18(2)(d) read with Section 16 (5) of Food Safety and Standards Act, 2006 regarding omission of the sub-regulation (4) of regulation 7 of the Food Safety and Standards (Fortification of Foods) Regulations, 2018: According to FSS (Fortification of Foods) Regulations. 2018; it was mandatory to declare thatpeople suffering from Thalassemia and sickle cell anaemia should consume iron-fortified foods under medical supervision or avoid, respectively. A committee headed by DG ICMR reviewed the advisory on Thalassemia and sickle cell anaemia. As per the committee's recommendation, there is no requirement of such warning, and is duly deleted from the regulation.

RESEARCH IN HEALTH & NUTRITION



Healthy adults under age of 75 urged to take recommended daily allowance of vitamin D

Science Daily June 3, 2024

Guideline recommends vitamin D higher than the recommended daily allowance for children, pregnant people, adults over 75 and adults with prediabetes

Despite the ongoing debate surrounding the benefits of vitamin D supplementation and optimal blood levels, the panel of experts behind the new guideline has provided clear recommendations for healthy individuals with no underlying conditions that put them at risk of impaired vitamin D absorption or action. The guideline emphasizes that routine testing for vitamin D levels is not necessary in these populations, and that supplementation beyond recommended intakes by the IOM may only be beneficial for certain groups such as children and adolescents, individuals 75 and older, pregnant people, and adults with prediabetes.

The panel's key recommendations outline the potential benefits of vitamin D supplementation in specific populations, including reducing the risk of nutritional rickets, respiratory infections, mortality, pre-eclampsia, intra-uterine mortality, preterm birth, small-for-gestational age birth, neonatal mortality, and progression to diabetes. Furthermore, the guideline suggests daily, lower-dose vitamin D for adults ages 50 and older with indications for supplementation, rather than non-daily, higher-dose regimens. Overall, while the panel acknowledges limitations in the available evidence, including the lack of specific blood-level thresholds for 25-hydroxyvitamin D for disease prevention, the guideline provides valuable insights for clinicians and individuals seeking guidance on vitamin D use for optimal health.

Marie B Demay et al. Vitamin D for the Prevention of Disease: An Endocrine Society Clinical Practice Guideline. JCEM, 2024 DOI: 10.1210/clinem/dgae290

Picture this: Snapping photos of our food could be good for us

Science Daily May 30, 2024

New Curtin University research reveals taking pictures of food isn't just content for our social media feeds, but could be the key to improving people's diets.

The findings of the study published highlight the importance of accurate dietary assessment methods in understanding what the population is eating. The use of the mobile Food Record app, which asked participants to take photos of their meals, was shown to be far more effective in accurately recalling nutritional intake compared to traditional methods of self-reporting. This could have significant implications for supporting individuals in optimizing their health and making informed dietary choices.

The potential for artificial intelligence to automate the analysis of food photos holds great promise in simplifying the tracking of dietary intake for individuals. By streamlining this process, it may become easier for people to monitor their food consumption and receive more accurate dietary advice. As technology continues to advance, there is a growing opportunity to not only better capture what populations are eating, but also provide personalized and targeted dietary recommendations for individuals seeking to improve their health. The use of images as a tool for dietary assessment opens up possibilities for more accurate data collection and analysis, potentially leading to more effective public health interventions and strategies for promoting healthy eating habits.

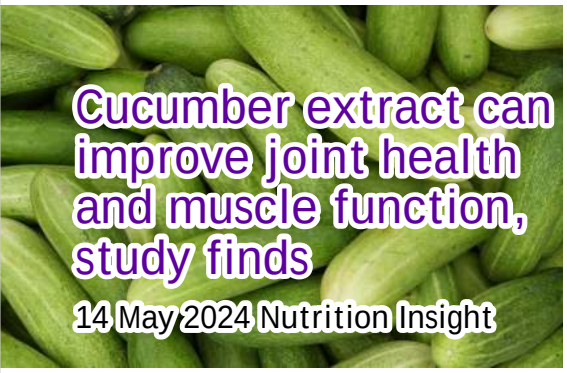
Whitton et al. Accuracy of energy and nutrient intake estimation versus observed intake using 4 technology-assisted dietary assessment methods: a randomized crossover feeding study. The American Journal of Clinical Nutrition, 2024; DOI: 10.1016/j.ajcnut.2024.04.030

An injectable emulsion containing two omega-3 fatty acids found in fish oil markedly reduced brain damage in newborn rodents after a disruption in the flow of oxygen to the brain near birth, a study by researchers at Columbia University Vagelos College of Physicians and Surgeons has found.

The results of this study are promising and suggest that the novel omega-3 therapy could be a game-changer in the treatment of hypoxic brain injury in infants. The fact that this therapy was more effective than therapeutic hypothermia, the current standard treatment, is particularly significant. Not only did the omega-3 diglyceride emulsion reduce brain damage more effectively, but it also preserved neurologic function in the animals, which is crucial in reducing long-term disabilities.

If this therapy proves to be successful in human trials, it could revolutionize the way hypoxic brain injury is treated in newborns, potentially improving outcomes and reducing the incidence of long-term disabilities associated with this condition. The ability to administer this therapy quickly after injury, compared to waiting for weeks or months for oral supplements to take effect, could be a game-changer in saving the lives and improving the quality of life for infants affected by hypoxic brain injury. The future looks promising for this novel omega-3 therapy, and further research is needed to confirm its efficacy and safety in human patients.

Zirpoli et al. Omega-3 fatty acid diglyceride emulsions as a novel injectable acute therapeutic in neonatal hypoxic-ischemic brain injury. Biomedicine & Pharmacotherapy, 2024; 175: 116749 DOI: 10.1016/j.biopha.2024.116749



The success of cucumber extract CuberUp in relieving joint pain and improving muscle function in the clinical study highlights the potential of natural extracts in addressing common health concerns.

With aging populations and increasing interest in maintaining active lifestyles, such products offer a promising option for individuals looking to support joint health and mobility. The standardized cucumber extract, obtained through sustainable farming practices, provides a natural and effective solution for those experiencing joint discomfort.

As the research on cucumber extract continues to be presented at conferences and published in scientific journals, the potential benefits of the product for a wide range of consumers become increasingly apparent. The positive results seen in the clinical trial, including decreased pain, improved physical function, and reduced inflammation, suggest that cucumber extract could be a valuable addition to the toolkit for managing joint concerns. With its proven efficacy and natural composition, cucumber extract offers a unique and appealing option for individuals seeking holistic solutions to support their overall health and well-being.

https://www.nutritioninsight.com/news/cucumber-extract-can-improve-joint-health-and-muscle-function-study-finds.html

Appl. Sci. 2023, 13(1), 485; https://doi.org/10.3390/app13010485

Early peanut consumption protects against allergies into adolescence, new research suggests

29 May 2024 Nutrition Insight

The groundbreaking results of the LEAP-Trio study offer hope for a future where peanut allergies are significantly reduced.

This research challenges the previous advice to avoid peanuts in infancy, showing that early introduction of peanuts can lead to long-term tolerance and protection from allergies well into adolescence. With a risk reduction of 71% for those regularly consuming peanuts from infancy to age five, there is strong evidence to support this simple and potentially life-saving intervention.

By following established guidelines and introducing peanut products to infants as early as four months old, parents and caregivers can help prevent peanut allergies in future generations. The findings from the LEAP trials highlight the importance of early peanut consumption and its lasting protective effects. Researchers hope that widespread implementation of this strategy could prevent tens of thousands of peanut allergy cases, making a significant impact on the growing rates of allergy prevalence in Western countries.

https://www.nutritioninsight.com/news/early-peanut-consumption-protects-against-allergies-into-adolescence-new-research-suggests.html

https://evidence.nejm.org/doi/10.1056/EVIDoa2300311

Ingredients by Nature touts the power of citrus flavonoids in prediabetes and healthy aging

09 May 2024 Nutrition Insight

As rates of diabetes and prediabetes continue to rise, Ingredients by Nature is shining a spotlight on the potential of its patented Eriomin supplement in managing healthy blood glucose levels, insulin sensitivity, GLP-1 levels, and prediabetic gut microbiota.

With a citrus flavonoid blend composed of Eriocitrin, hesperidin, and naringin, Eriomin has shown promising results in multiple clinical trials. Doug Lynch emphasizes the company's long history of promoting the benefits of citrus bioflavonoids, dating back to the 1930s, and the significance of having multiple human clinical trials to support the efficacy of their product.

Dr. Thais Cesar, who has led the clinical trials and serves as a scientific advisor to the company, highlights the antioxidant and anti-inflammatory benefits of Eriomin, particularly in metabolic conditions like prediabetes and obesity.

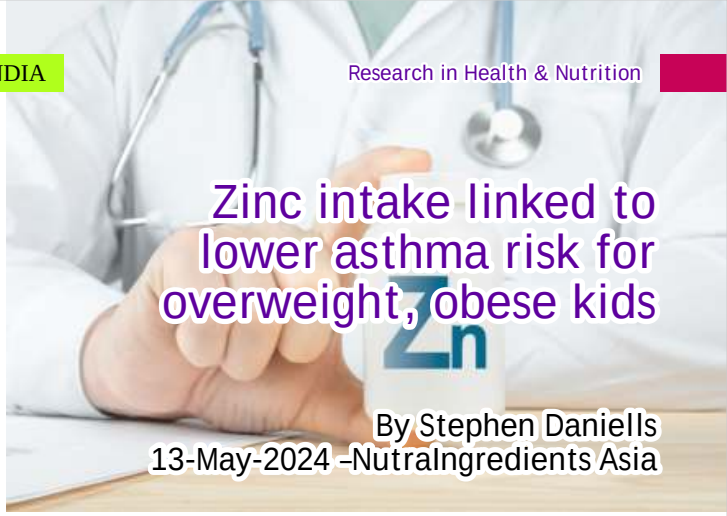
Recent research on the supplement also indicates its potential in supporting liver function and combating oxidative stress associated with aging.

In a study on elderly rats, Eriomin demonstrated its ability to modulate redox regulators in the liver, reduce oxidative stress, and enhance the activity of antioxidant enzymes critical for maintaining redox homeostasis.

Furthermore, Eriomin has shown promising results in managing prediabetes by promoting beneficial changes in gut microbiota, lowering blood glucose levels, and increasing GLP-1 production. Ongoing clinical trials aim to investigate the supplement's potential in combination with standard medication to maximize patient benefits.

https://www.nutritioninsight.com/news/ingredients-by-nature-touts-the-power-of-citrus-flavonoids-in-prediabetes-and-healthy-aging.html

https://onlinelibrary.wiley.com/doi/full/10.1002/fsn3.3654



Zinc intake linked to lower asthma risk for overweight, obese kids

By Stephen Daniells
13-May-2024 –NutraIngredients Asia

Higher dietary zinc intakes may reduce the risk of asthma in overweight or obese children andadolescents, says a new study from China.

The findings of this study suggest that higher dietary zinc intakes may play a role in reducing the risk of asthma in overweight or obese children and adolescents. Zinc is crucial for various biological processes in the body, including immune function, growth, and development.

The study used data from the U.S. National Health and Nutrition Examination Survey and found that increasing zinc intake was associated with a decreased risk of asthma in overweight and obese individuals.

The researchers hypothesize that zinc may influence asthma risk by affecting the release of pro-inflammatory cytokines and protecting the lung epithelium from damage. The results of this study align with previous research showing a link between zinc and a protective effect against asthma, although the exact mechanisms of action are not fully understood. Overall, the study suggests that zinc supplementation or increased intake of zinc-rich foods may be a potential therapeutic target for alleviating asthma symptoms in overweight or obese individuals.

https://www.nutraingredients-asia.com/Article/2024/05/13/zinc-intake-linked-to-lower-asthma-risk-for-overweight-obese-kids

https://www.worldallergyorganizationjournal.org/article/S1939-4551(24)00031-0/fulltext

Ginseng, brahmi, coffee fruit extract could improve mood, working memory

By Tingmin Koe
07-May-2024 - NutraIngredients

A supplement formulated with American ginseng,Brahmi, and coffee fruit extract could improve mood and working memory, according to a 28-day trialfunded by direct-selling company USANA.

Findings from the trial conducted by researchers at the Neuro Health Lab at the Appleton Institute of Central Queensland University were published in Nutritional Neuroscience.A study published in Nutritional Neuroscience involved sixty healthy adults aged 35 to 65 who were randomly assigned to take CopaPrime+™ or a placebo.

CopaPrime+™, a product from USANA, contains 150mg of Bacopa monnieri, 50mg of American ginseng Panax quinquefolius, and 50mg of whole coffee fruit extract in each tablet.

In Nutritional Neuroscience, there was a report on a study by researchers from the Neuro Health Lab at the Appleton Institute of Central Queensland University that involved sixty healthy adults taking CopaPrime+™ or a placebo.

The intervention group who took CopaPrime+™ showed improvements in positive affect and prefrontal cortex activation compared to the placebo group.Positive affect increased significantly in the intervention group, while prefrontal cortex activation was greater during 2-back tasks.

The intervention group also showed non-significant improvements in delayed recall, with no significant differences in serum BDNF levels between the intervention and placebo groups.The researchers concluded that the supplement could have synergistic effects due to various factors, including the duration of supplementation and the doses of the ingredients consumed.

https://www.nutraingredients.com/Article/2024/05/07/ginseng-brahmi-coffee-fruit-extract-shown-to-improve-mood-working-memory

https://www.tandfonline.com/doi/full/10.1080/1028415X.2024.2325227

Probiotics shown to reduce fatty liver and increase Bifidobacterium in NAFLD patients – Taiwan study

By Tingmin Koe
08-May-2024 – NutraIngredients

The supplementation of the spore-forming probiotic Bacillus coagulans could reduce fatty liver content in patients suffering from non-alcoholic fatty liver disease (NAFLD), an eight-week RCT from Taiwan has shown.

Research conducted by Taipei Medical University, National Taiwan Ocean University, and TCI Co. Ltd has shown promising results regarding the benefits of Bacillus coagulans supplementation in improving gut health and reducing fatty liver content. The study involved 57 participants who were randomly assigned to take either Bacillus coagulans capsules or a placebo for eight weeks. The results indicated that individuals who took Bacillus coagulans experienced a significant decrease in fatty liver content, particularly those with a BMI of less than 30.

Furthermore, the study revealed that Bacillus coagulans supplementation led to an increase in beneficial gut bacteria, such as Bifidobacterium and Eubacterium. These bacteria play a crucial role in regulating liver inflammation, fat accumulation, and metabolic balance. The researchers highlighted the importance of gut microbiota modulation as a novel approach for treating non-alcoholic fatty liver disease (NAFLD). By targeting the gut microbiome, it may be possible to reduce liver damage and improve overall liver health.

Overall, this research sheds light on the potential of Bacillus coagulans supplementation as an effective strategy for managing NAFLD and promoting gut health.

https://www.nutraingredients.com/Article/2024/05/08/probiotics-could-reduce-fatty-liver-increase-bifidobacterium-in-nafld-patients

https://cdn.nutrition.org/article/S2475-2991(24)00009-X/fulltext

‘Moderate’ dose of caffeine intake found to enhance performance of female athletes – new study

By Audrey Yow
01-May-2024 - NutraIngredients

A ‘moderate’ dose of 6 mg/kg caffeine enhances the performance of female athletes for short-term high intensity exercises, according to a new study.

The findings from this study provide valuable insights into the optimal caffeine dosage for enhancing short-term maximal performance in young female athletes. The results suggest that a moderate dose of 6 mg/kg of caffeine is effective in improving various aspects of performance without the occurrence of adverse side effects commonly associated with higher caffeine doses. These findings are important for athletes and coaches looking to maximize performance during training and competition without risking the negative effects of excessive caffeine consumption.

Although the study had limitations, such as not measuring blood caffeine levels and not considering the potential influence of the menstrual cycle on performance and caffeine effects, the results still offer practical implications for the use of caffeine as an ergogenic aid in female athletes. The recommendation of a 6 mg/kg caffeine dosage as opposed to higher or lower doses provides a clear guideline for athletes to follow in optimizing their performance while minimizing the risk of adverse side effects.

Overall, this study contributes to the growing body of research on the effects of caffeine on athletic performance and highlights the importance of individualized dosing strategies based on specific athlete characteristics and performance goals.

https://www.nutraingredients.com/Article/2024/05/01/Dose-of-caffeine-may-improve-performance-of-female-athletes
Nutrients 2024, 16(5), 640; https://doi.org/10.3390/nu16050640

High dose EPA shown to reduce migraine frequency and severity – 12-week RCT

By Tingmin Koe
02-May-2024 - NutraIngredients

Taking 1,800mg of omega-3 eicosapentaenoic acid(EPA) daily has significantly reduced migraine frequency and severity among individuals suffering from episodic migraine, findings from a 12-week RCT conducted in Taiwan showed.

The study conducted by researchers from various institutions showed promising results for the use of EPA supplementation in reducing migraine frequency and severity, as well as improving anxiety and depression levels. The 12-week trial involving 70 participants found that those who took a daily dose of 1,800mg of EPA experienced a significant decrease in the number of migraine days, severity of headaches, and emotional burden compared to those in the placebo group. Additionally, the intervention group saw a reduction in the use of acute headache medication.

Interestingly, women seemed to benefit more from EPA supplementation in terms of migraine management compared to men. The researchers noted that the anti-inflammatory effects of omega-3 PUFAs, particularly EPA, may play a role in preventing migraines. While previous studies have not consistently shown improvements with EPA supplementation and migraine, the researchers suggested that differences in doses and formulations of omega-3 used could be a contributing factor. They also highlighted the need for future research to explore potential biomarkers associated with the observed improvements. Overall, this study provides valuable insights into the potential benefits of EPA supplementation in managing migraines and improving emotional well-being.

https://www.nutraingredients.com/Article/2024/05/02/daily-high-dose-epa-supplementation-could-reduce-migraine

https://www.sciencedirect.com/science/article/pii/S0889159124003003?via%3Dihub

Research identifies Mediterranean diet nutrients for slow and accelerated brain aging

24 May 2024 Nutrition Insight

The research conducted by the Center for Brain, Biology and Behavior at the University of Nebraska-Lincoln has shed light on the connection between nutrition and brain health.

By identifying a specific nutrient profile that can slow brain aging, researchers are paving the way for targeted nutritional interventions to promote healthy brain aging.

This study, which encompassed a large and comprehensive sample of cognitively healthy older adults, found that participants with a distinct nutrient profile experienced slower brain aging compared to their counterparts with accelerated cognitive decline.

The implications of this research are significant, as they underscore the importance of a well-rounded diet in supporting brain health throughout the aging process. As the healthy aging market continues to grow, with a particular focus on products designed to support brain health, the findings of this study offer valuable insights into the impact of nutrition on cognitive function.

Moving forward, further research and randomized controlled trials will be essential to confirm the effectiveness of the identified nutrient profile in promoting healthy brain aging.

By continuing to explore the mechanisms by which nutrition influences brain health and conducting long-term studies on the effects of dietary interventions, researchers can continue to expand our understanding of how diet can support cognitive function as individuals age.

https://www.nutritioninsight.com/news/research-identifies-mediterranean-diet-nutrients-for-slow-and-accelerated-brain-aging.html

https://www.nature.com/articles/s41514-024-00150-8

Ultra-processed food update: New research suggests diet quality mitigates higher mortality risk

13 May 2024 Nutrition Insight

The study on the relationship between ultra-processed foods (UPFs) and the risk of death highlights the importance of understanding the impact of different types of processed foods on long-term health.

While higher consumption of most UPFs was associated with a slightly higher risk of death, the study identified specific categories of UPFs that posed a greater risk, such as ready-to-eat meat, sugary drinks, dairy-based desserts, and highly processed breakfast foods. Interestingly, the study also found that a higher diet quality could mitigate these associated risks, emphasizing the importance of overall dietary patterns in promoting long-term health.

The findings of this study challenge the notion that all ultra-processed foods are inherently unhealthy and should be avoided. Rather, the focus should be on encouraging the consumption of a balanced diet that includes a variety of nutrient-rich foods. Dr. Aisling Daly emphasizes the importance of considering factors such as nutrient content, food safety, and affordability when evaluating the healthfulness of ultra-processed foods. Ultimately, demonizing all UPFs without considering the overall diet quality can lead to potentially harmful dietary practices. Instead, the focus should be on promoting a diet that is rich in fruits, vegetables, whole grains, and lean proteins, while limiting consumption of UPFs high in saturated fat, sugar, and salt.

https://www.nutritioninsight.com/news/ultra-processed-food-update-new-research-suggests-diet-quality-mitigates-higher-mortality-risk.html

https://www.bmj.com/content/385/bmj-2023-078476

Ashwagandha blend improves digestive health and mood, new research finds

07 May 2024
Food Ingredients First

The findings of the recent clinical study on Digexin are promising, showing significant improvements in alleviating functional constipation and enhancing overall gut health.

The blend of Withania somnifera root and Abelmoschus esculentus fruit extracts has been demonstrated to improve bowel function, reduce GI transit time, and positively impact mental health and quality of life. Participants experienced substantial improvements in just seven days of supplementation, with even more pronounced benefits seen with a daily dose of 500 mg.

The study also delved into the effects of Digexin on gut integrity, gut inflammation markers, and histamine intolerance, showcasing the supplement's diverse range of benefits. Not only did Digexin show efficacy in relieving constipation and improving GI function, it also had a positive impact on sleep quality, anxiety, and depression symptoms. With its adaptogenic properties and ability to support serotonin production in the gut, Digexin provides a holistic approach to gut health and mental well-being. As the research on the gut-brain axis continues to evolve, products like Digexin offer a promising avenue for improving overall health and quality of life.
https://www.foodingredientsfirst.com/news/nxt-usas-digexin-blend-improves-digestive-health-and-mood-new-research-finds.html

https://pubmed.ncbi.nlm.nih.gov/38691810/

Can melatonin help improve athletic performance?

Kirstin Knight Apr 24, 2024
VitaFoods Insights

Melatonin supplementation may indirectly improve sporting performance among elite athletes, research suggests.

The systematic review on melatonin's potential benefits for high-level athletes sheds light on the neurohormone's antioxidant and anti-inflammatory properties. By countering the effects of oxidative stress, inflammation, and tissue damage induced by high-intensity physical exercise, melatonin supplementation may help improve performance and restore biomarkers to their normal range.

Furthermore, the study found that melatonin had a high safety profile and showed positive effects on antioxidant status, inflammatory response, liver and muscle damage, as well as modulating various health biomarkers.

While the review highlighted promising findings on the potential benefits of melatonin in sports performance, the researchers acknowledge the need for further investigation into the direct effects of melatonin on athletic performance. They emphasize the importance of considering individual diet analyses in athletes, as certain foods can influence melatonin levels. Despite the need for more research on the molecular and physiological mechanisms of melatonin supplementation for sports performance, the indirect effects of melatonin on health biomarkers suggest a potential avenue for improving athletic outcomes in highly trained individuals. (https://www.vitafoodsinsights.com/sports-nutrition/can-melatonin-help-improve-athletic-performance)
Nutrients 2024, 16(7), 1011; https://doi.org/10.3390/nu16071011

A genetic propensity to higher circulating levels of lipids containing arachidonic acid, an omega-6 polyunsaturated fatty acid found in eggs, poultry, and seafood, has been found to be linked with a lower risk for bipolar disorder, according to a new study in *Biological Psychiatry*, published by Elsevier.

This new evidence paves the way for potential lifestyle or dietary interventions.
Bipolar disorder is a complex and challenging mental health condition that affects millions of people worldwide. The findings of this study shed light on the potential role of metabolites, specifically lipids like arachidonic acid, in the pathogenesis of bipolar disorder. By identifying key metabolites associated with the disorder, researchers hope to explore potential lifestyle and dietary interventions that could help manage symptoms and improve outcomes for individuals with bipolar disorder.

The link between arachidonic acid and bipolar disorder is particularly intriguing, as this fatty acid is essential for brain development and function. The study suggests that individuals with a genetic propensity for higher levels of arachidonic acid may have a lower risk of developing bipolar disorder. This opens up new possibilities for targeted interventions, such as supplementing with arachidonic acid or focusing on dietary sources rich in this essential nutrient to support optimal brain health and potentially reduce the risk of developing bipolar disorder. Further research and clinical trials are needed to explore these potential interventions and their impact on individuals with bipolar disorder.
Biological Psychiatry, 2024; DOI: 10.1016/j.biopsych.2024. 02.1005

The path to better sleep might be more straightforward than we all thought.

The idea that eating more fruits and vegetables could lead to better sleep might seem too good to be true, but the evidence is there. The recent study out of Finland suggests that a diet rich in produce could be the key to getting those recommended 7-9 hours of shut-eye each night.

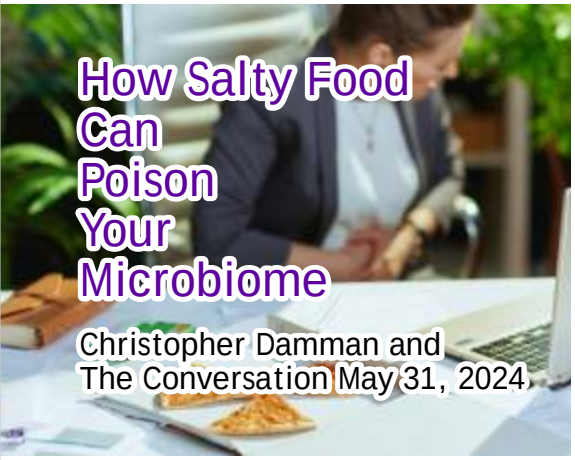
The researchers found that those who consumed more fruits and vegetables tended to fall within the optimal sleep duration range, while those who consumed less were more likely to experience either too little or too much sleep.

The potential reasons behind this link could be both behavioural and biological. Individuals who prioritize a healthy diet may also be more likely to engage in other healthy habits, like regular exercise, which can contribute to better sleep.

Additionally, certain fruits and vegetables, such as cherries and kiwi, contain melatonin, a hormone that regulates sleep patterns. The study also pointed to the importance of root, seeded, and leafy green vegetables in promoting healthy sleep habits.

Although more research is needed to fully understand the mechanisms at play, incorporating more fruits and vegetables into your diet is a simple and nutritious way to potentially improve your sleep quality and overall health.
https://www.inverse.com/health/sleep-veggies-and-fruit-study

https://www.frontiersin.org/articles/10.3389/fnut.2024.1319821/full#ref31



How Salty Food Can Poison Your Microbiome

Christopher Damman and The Conversation May 31, 2024

Salt has played a major role in shaping human history, from being used as currency in ancient Rome to being a key ingredient in the development of fermented foods.

However, in today's world, the excessive consumption of salt in highly processed diets has been linked to a variety of health issues, including high blood pressure, heart disease, and obesity. The evidence is clear that too much salt can be detrimental to our overall health.

One interesting aspect of salt's impact on health is its connection to the gut microbiome. Research has shown that high sodium diets can alter the composition of the gut microbiome, leading to metabolic disorders and weight gain. This highlights the complex relationship between salt consumption, the gut microbiome, and overall health.

By reducing our consumption of highly processed foods and focusing on a diet rich in unprocessed, plant-based foods, we can not only improve our overall health but also support a healthy gut microbiome. It is important to be mindful of our salt intake and strive for a balanced diet that supports both our bodies and our gut microbiome.

https://www.inverse.com/health/salty-foods-microbiomes

Father's diet before conception influences children's health

June 5, 2024 Science Daily

This groundbreaking study sheds light on the importance of paternal health and diet before conception in influencing the health of future generations.

The research conducted by Dr. Teperino and his team demonstrates the significant impact of a father's diet on the risk of obesity and metabolic diseases in their children. By studying mt-tsRNAs in sperm, the researchers found a direct link between paternal diet and gene expression in offspring, highlighting the importance of preventive health measures for men looking to become fathers.

The findings of this study have far-reaching implications for public health and wellness initiatives, emphasizing the need for targeted programs aimed at improving the overall health and diet of men planning to start a family. By promoting healthier lifestyle choices and nutrition in fathers-to-be, it is possible to reduce the risk of obesity and metabolic diseases in future generations. This research not only highlights the importance of paternal health in child development but also underscores the complex interplay between genes, environment, and epigenetics in shaping the health of offspring. As further research is conducted in this area, it is clear that fathers play a crucial role in the health and well-being of their children, even before conception.

Tomar et al. Epigenetic inheritance of diet-induced and sperm-borne mitochondrial RNAs. Nature, 2024; DOI: 10.1038/s41586-024-07472-3

Exercising during pregnancy normalizes eating behaviours in offspring from obese mice

June 4, 2024 Science Daily

Maternal obesity can have long-lasting effects on offspring's eating behaviours through the regulation of microRNA miR-505-5p in the hypothalamus.

This study sheds light on the molecular mechanisms

that link prenatal nutritional exposure to eating habits later in life. The findings suggest that offspring of obese mothers may have a predisposition to overeating and a preference for high-fat foods, which could contribute to the development of obesity and related metabolic disorders.

The study also highlights the potential benefits of maternal exercise during pregnancy in mitigating the impact of maternal obesity on offspring's eating behaviours. This suggests that lifestyle interventions during pregnancy may have a protective effect on the offspring's brain development and metabolic health. Understanding the underlying mechanisms of how maternal obesity influences offspring's eating behaviours can aid in the development of strategies to prevent obesity and related health issues in future generations.

Dearden et al. Maternal obesity increases hypothalamic miR-505-5p expression in mouse offspring leading to altered fatty acid sensing and increased intake of high-fat food. PLOS Biology, 2024; 22 (6): e3002641 DOI:10.1371/journal.pbio.3002641

Nutrition counselling reduces risk of repeat cardiovascular events, research finds

04 Jun 2024 Nutrition Insight

Heart disease is a leading cause of death in the US, and diet plays a crucial role in preventing and managing the condition.

Despite the significant benefits of dietary counselling after major heart events, a recent study found that fewer than a quarter of patients receive this essential education. Dr. Eric Brandt, director of preventive cardiology at the Frankel Cardiovascular Center, emphasized the positive impact of nutrition counselling, with some patients reducing their cholesterol levels by half within weeks.

The lack of dietary counselling post-heart events is attributed to limited time for physicians to address all aspects of a patient's condition and insufficient education in nutrition counselling. The study also highlighted disparities in counselling, with women, older adults, and patients with chronic kidney disease less likely to receive dietary advice. This underscores the need for increased access to medical nutrition therapy and support for healthy eating habits to prevent cardiovascular disease. The research also suggests that insurance coverage limitations may be a barrier to receiving nutrition counselling, highlighting the importance of policy changes to improve access to essential healthcare services.
https://www.nutritioninsight.com/news/nutrition-counseling-reduces-risk-of-repeat-cardiovascular-events-research-finds.html

Research shows beans and chickpeas consumption boost shortfall nutrient intake

07 Jun 2024 Nutrition Insight

The study conducted by researchers from Nutrition Research & Regulatory Affairs, the University of Minnesota, and Nutrition Research sheds light on the importance of incorporating beans and chickpeas into the daily diet.

By analysing data from the National Health and Examination Survey and modelling the inclusion of one or two servings of these pulse crops, the researchers found that doing so led to a greater intake of essential nutrients like potassium, dietary fibre, choline, magnesium, iron, and folate. This increase in intake of shortfall nutrients resulted in improved diet quality scores and a decreased risk of various chronic diseases such as cardiovascular disease, diabetes, and cancer.

The findings of this study underscore the significance of incorporating beans and chickpeas into the diet to ensure adequate intake of essential nutrients and improve overall diet quality. With the majority of adults falling short of meeting recommended intake levels for pulses, the addition of one or two servings of these nutrient-dense foods can make a significant impact on health outcomes. The research highlights the importance of dietary strategies that promote the consumption of pulse crops for improved public health and emphasizes the role these foods play in preventing chronic diseases and maintaining optimal health.
https://www.nutritioninsight.com/news/research-shows-beans-and-chickpeas-consumption-boost-shortfall-nutrient-intake.html

https://doi.org/10.1016/j.maturitas.2024.108012

FOOD SCIENCE & INDUSTRY NEWS

"Use-inspired research": UC Davis drives nutrition innovation with consumers in mind

06 May 2024 Nutrition Insight

The Innovation Institute for Food and Health at UC Davis is at the forefront of revolutionizing nutrition research by incorporating consumer preferences and attitudes into their work.

John Melo, CEO at PIPA and IIFH advisory board member, emphasizes the importance of starting with the consumer to ensure the success of innovative technologies. By understanding consumer perceptions and preferences, the institute aims to create products that not only meet nutritional needs but also appeal to consumers' tastes.

Melo highlights the power of AI in understanding consumer sentiment and formulating products that align with consumer preferences. He discusses the importance of reducing the friction to adoption and accelerating the development process to bring new products to market efficiently. By leveraging AI and consumer data, the institute can develop products that are not only nutritionally beneficial but also appealing to consumers' tastes, ultimately leading to successful commercialization. Through their work, the institute is paving the way for companies like Rivalz to develop better-for-you snacks that align with consumer preferences and deliver on both taste and nutrition.
https://www.nutritioninsight.com/news/use-inspired-research-uc-davis-drives-nutrition-innovation-with-consumers-in-mind.html

Forecasted global aging trend drives surge in supplement innovation

14 May 2024 Nutrition Insight

The active aging category is witnessing a surge in innovation as the global population of individuals over 60 continues to grow rapidly.

Manufacturers are focusing on creating multifunctional products that address the diverse needs of aging consumers, promoting physical, cognitive function, and overall well-being. With advancements in medical research and nutrition, the active aging market is booming as more individuals seek out solutions to stay healthy and active as they age.

Companies like Cargill, FrieslandCampina Ingredients, Kaneka, and Balchem are at the forefront of developing specialized nutrition products for the active aging demographic. From plant-based proteins to convenient formats and clean label claims, these companies are catering to the evolving needs of consumers who are not only looking to live longer but also to live well.

By formulating products that support bone and joint health, heart health, cognitive health, and skin health, these companies are pioneering the way for next-generation nutritional solutions in the active aging market. As consumers seek out proactive ways to support their well-being as they age, the industry is responding with innovative products that promote holistic wellness and longevity.
https://www.nutritioninsight.com/news/forecasted-global-aging-trend-drives-surge-in-supplement-innovation.html

Cocoa gel optimizes texture of whole-fruit chocolate, reveals Swiss study

23 May 2024 Nutrition Insight

The development of the sweetening gel from cacaofruit by Swiss researchers at ETH Zurich and their industry partners represents a significant step forward in the production of healthier and more sustainable chocolate.

By utilizing naturally occurring pectin from the cacao pod to create a sweetening agent, the researchers have been able to reduce the reliance on conventional refined sugar in chocolate production.

This approach not only results in a healthier product with a lower environmental impact, but also helps to reduce waste by utilizing the whole fruit, which is typically discarded after the beans are extracted. In addition to the health and environmental benefits, the sweetening gel has also led to improvements in the taste and texture of the chocolate. By utilizing the dietary fibre from the cacaofruit endocarp to trap water and create a gel matrix, the researchers were able to achieve optimal chocolate consistency while enhancing the nutritional profile of the product. With higher fibre content and reduced saturated fat compared to traditional chocolate, whole-fruit chocolate sweetened with cacao gel offers a healthier alternative for consumers. Furthermore, the unique tangy taste notes added by the sweetening gel could lead to new and exciting flavour profiles in the world of chocolate confectionery.
https://www.nutritioninsight.com/news/cocoa-gel-optimizes-texture-of-whole-fruit-chocolate-reveals-swiss-study.html

DolCas Biotech's innovative approach to incorporating their bio-curcumin ingredient Curcugen ingredient into functional chocolate offers a unique combination of indulgence and health benefits.

By pairing the antioxidant and anti-inflammatory properties of curcumin with the rich polyphenols and other nutrients found in dark chocolate, the company is able to create a delicious treat that supports gut mobility, mood health, and post-exercise recovery. Clinical studies support Curcugen's impact on gut mobility and mood health and improve post-exercise recovery time. The water-soluble, patent-pending turmeric extract is concentrated to a 50% standard of curcuminoids.This functional chocolate not only provides a clinically-supported dose of Curcugen but also offers a sensory experience that balances indulgence with wellness.

The showcase of curcumin-infused chocolate at Vitafoods Europe highlights the versatility and potential applications of this unique ingredient. Dr. Shavon Jackson-Michel emphasizes the ease of formulating with Curcugen due to its palatable nature, making it a suitable addition to a variety of food and beverage products. With its high bioavailability and natural turmeric composition, Curcugen offers a valuable option for consumers looking to enhance their overall well-being through everyday products like chocolate, gummies, nutrition bars, and more.

As the demand for functional and health-promoting foods continues to grow, bio-curcumin ingredient presents a promising solution for manufacturers seeking to create products that combine taste and nutritional benefits.
https://www.nutritioninsight.com/news/dolcas-biotech-features-functional-curcugen-chocolate-at-vitafoods-2024.html

The development of a sustainable and high-performance paper coating material by researchers at KAIST and Yonsei University marks a significant step towards reducing microplastic pollution and increasing the environmental sustainability of paper packaging.

By utilizing boric acid-crosslinked PVA, a biodegradable plastic, the researchers were able to enhance the barrier properties and strength of paper without compromising its eco-friendliness. The coated paper demonstrated superior performance compared to traditional plastic coatings, even in challenging humid conditions.

The team conducted biodegradation tests in simulated marine environments, showcasing the material's ability to decompose effectively. Microscopic examinations revealed marine bacteria actively breaking down the coating material, confirming its biodegradability. Moreover, biocompatibility tests showed low toxicity in human and mouse cells, further highlighting the potential of this innovative paper coating material.

With packaging accounting for a significant portion of global plastic consumption, the development of biodegradable packaging materials like this coating offers a promising solution to combat plastic pollution and create more sustainable packaging options for the future.
https://www.foodingredientsfirst.com/news/south-korean-universities-develop-paper-coating-material-to-reduce-microplastic-pollution.html

https://pubs.rsc.org/en/content/articlelanding/2024/gc/d4gc00618f

Scientists develop bioengineered enzyme to create natural vanillin from plants

22 May 2024 Food Ingredients First

This groundbreaking research has the potential to revolutionize the vanilla industry by providing a sustainable and cost-effective method for vanillin production.

By using an engineered enzyme to convert ferulic acid from plant waste into vanillin, the team of scientists at Tokyo University of Science has found a way to stabilize the supply of this valuable flavour compound. This method not only reduces the environmental impact of traditional vanilla extraction methods but also offers a more economically viable alternative to chemical synthesis of vanillin.

The development of a single enzyme that can catalyse the production of vanillin from ferulic acid in a coenzyme-independent manner is a significant advancement in the field of biocatalysis. This streamlined process eliminates the need for multiple enzymes and complex reaction conditions, making vanillin production more efficient and scalable. With the ability to produce vanillin on a gram scale per litre of reaction solution, this enzyme-based method offers a promising solution to the challenges faced by the vanilla industry, including price fluctuations and supply chain instability. This research represents a major step forward in the quest for sustainable and reliable sources of vanillin for food and beverage products.
https://www.foodingredientsfirst.com/news/scientists-develop-bioengineered-enzyme-to-create-natural-vanillin-from-plants.html

Sustainable seafood: Israeli start-up formulates 3D cultivated tuna to mimic “buttery” textures

22 May 2024 Food Ingredients First

Wanda Fish's innovative cell-based alternative to Bluefin tuna is not only a game-changer in the world of alternative protein but also in the fight against overfishing and the strain on capture fisheries.

By replicating the taste, texture, and nutritional benefits of the highly sought-after Bluefin tuna, the company is able to provide a sustainable and ethical option for consumers who want to enjoy seafood without harming the ocean or depleting wild fish populations.

The company's focus on creating a product that closely mimics the buttery texture and flavour of Bluefin toro sashimi showcases their commitment to providing a high-quality alternative that meets the demands of consumers who are seeking a more environmentally friendly option. Through a combination of innovative technologies, including a unique plant-based matrix and cultivated fish fat, Wanda Fish has successfully developed a product that not only looks and tastes like the real thing but also contains essential nutrients like omega-3 fatty acids.

With plans to expand their line of cultivated fish products in the future, Wanda Fish is poised to make a significant impact on the alternative protein industry and pave the way for a more sustainable future for seafood consumption.
https://www.foodingredientsfirst.com/news/sustainable-seafood-israeli-start-up-formulates-3d-cultivated-tuna-to-mimic-buttery-textures.html

Hero ingredients drive health and well-being claims while attracting consumer attention

22 May 2024 Food Ingredients First

The health food industry is seeing a shift towards natural, plant-based, and functional ingredients that offer nutritional benefits and contribute to overall well-being.

Brands that incorporate hero ingredients such as

yeast and collagen are gaining popularity among consumers who prioritize transparency, sustainability, and proven scientific claims. Brands like Biospringer by Lesaffre and Bioiberica are at the forefront, offering innovative solutions for food and product formulation that align with consumer demands for healthier, more functional options.

As consumers become more knowledgeable about the ingredients in their products and how they benefit their health, there is a growing demand for clear and transparent labelling. For instance, in the collagen category, consumers are seeking specifics about the type of collagen included in products to ensure they are getting the benefits they are looking for. Additionally, the trend towards holistic wellness is driving the development of ingredient combinations that address multiple health needs, offering enhanced benefits and convenience for consumers seeking a more comprehensive approach to their health goals.

Overall, incorporating hero ingredients into food products not only enhances nutritional profiles and taste but also differentiates brands in a competitive market focused on healthier product offerings.
https://www.foodingredientsfirst.com/news/hero-ingredients-drive-health-and-well-being-claims-while-attracting-consumer-attention.html

As consumer preferences continue to shift towards healthier and more sustainable food choices, the sugar confectionery industry is adapting to meet these demands.

Companies are recognizing the growing trend towards plant-based and healthier options in the sugar confectionery sector. With more consumers seeking plant-based alternatives and associating them with healthier ingredients, there is a clear opportunity for brands to capitalize on this shift in consumer behaviour. However, it is essential for companies to not only deliver on health and sustainability claims but also to ensure that their products meet sensory expectations. Sensory satisfaction plays a crucial role in the success of indulgent applications like sugar confectionery, with taste, sweetness, and texture all needing to be perfectly balanced to appeal to consumers. By understanding varying preferences across demographics, regions, and consumer profiles, companies can tailor their formulations and ingredients to meet the specific needs and desires of their target audience. By staying ahead of consumer trends and adapting to changing preferences, companies in the sugar confectionery industry can drive growth and success in an increasingly competitive market.
https://www.foodingredientsfirst.com/news/sensory-success-cargill-targets-taste-and-flavor-to-unlock-sugar-confectionery-opportunities.html

Woodfree's collaboration with Bangor University's Biocomposites Centre marks an important step in the company's mission to revolutionize the paper and packaging industry with eco-friendly alternatives.

By harnessing the potential of coconut husks, a previously overlooked by-product of coconut production, Woodfree is not only creating a sustainable source of raw materials but also addressing environmental and social issues in regions where coconut is grown. The innovative approach of extracting cellulose fibres from coconut husks, known as 'Eco-Pulp,' showcases the potential for transforming waste into valuable resources. Through the support of an Innovate UK Transformative Technologies grant, Woodfree is pioneering the development and commercialization of this new material. The collaboration with Bangor University's Biocomposites Centre has been instrumental in scaling up the project and ensuring its feasibility for market adoption. With a strong

emphasis on research and development, Woodfree and the Biocomposites Centre are working towards producing prototype packaging solutions that demonstrate the versatility and practicality of using coconut husk fibres. By combining scientific expertise with entrepreneurial vision, Woodfree is not only creating sustainable packaging solutions but also contributing to the growth of the bio-based materials industry in the UK.
https://www.foodingredientsfirst.com/news/welsh-industry-university-partnership-develops-coconut-husk-based-packaging-material.html

Mileutis poised to reduce dairy farms' reliance on antibiotics with "residue-free" substitute

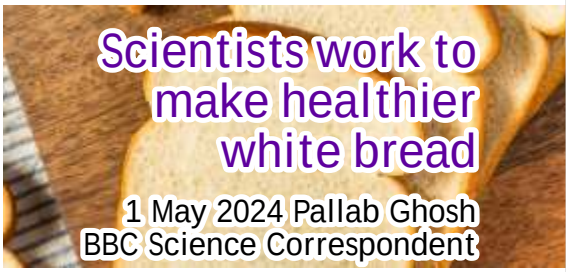
29 May 2024 Food Ingredients First

Israeli biopharmaceutical company Mileutis' innovative approach to reducing the dairy industry's reliance on antibiotics through their products Imilac and Milac has the potential to revolutionize the way dairy farming is done.

By partnering with Yotvata Dairy, a major player in the Israeli dairy industry, Mileutis aims to improve milk quality, increase productivity, and promote animal welfare while reducing greenhouse gas emissions and the carbon footprint of milk production. This collaboration not only benefits the dairy farmers and animals but also contributes to a more sustainable and environmentally friendly dairy industry.

The development of antibiotic substitutes such as Imilac and Milac is crucial in addressing the global issue of antimicrobial resistance. By significantly reducing antibiotic usage in dairy farms, Mileutis is helping to combat the emergence of resistant bacteria, viruses, and parasites. The positive opinion from the European Medicines Agency on the safety of Mileutis' products and platform further validates their effectiveness and potential impact on the dairy industry.

With a projected annual revenue of over US$1 billion globally, Mileutis is poised to make a significant contribution to improving the welfare of dairy cows, enhancing milk quality, and ensuring economic access to nutritious food for a growing population.
https://www.foodingredientsfirst.com/news/mileutis-poised-to-reduce-dairy-farms-reliance-on-antibiotics-with-residue-free-substitute.html



Scientists work to make healthier white bread

1 May 2024 Pallab Ghosh BBC Science Correspondent

Scientists are embarking on an ambitious project to develop a new type of bread that combines the health benefits of wholemeal bread with the taste and texture of white bread.

The goal is to create a product that will appeal to lovers of white bread while providing a more nutritious option for consumers. By adding small amounts of peas, beans, cereals, bran, and wheat germ to the bread mix, researchers hope to increase the vitamin, mineral, and fibre content of the final product.

The project, which is still in its early stages, is being led by Dr. Catherine Howarth of Aberystwyth University. The team is working to carefully balance the nutritional value of the bread with its taste and texture, using a combination of grains such as quinoa, teff, sorghum, and millet to enhance its overall health benefits. The ultimate goal is to produce a product that will be indistinguishable from traditional white bread, in order to encourage more people to incorporate whole grains into their diet. With the potential to improve public health and reduce the risk of chronic diseases such as heart disease, stroke, and diabetes, this research could have a significant impact on the food industry and the way consumers view their bread choices.
https://www.bbc.com/news/articles/c87z06r175no

Biofortifying rice to combat vitamin B1 deficiency

Kirstin Knight Apr 29, 2024 VitaFoods Insights

Researchers have developed a rice line that has enhanced vitamin B1 content – a significant advance in the fight against thiamine deficiency, they say.

This successful biofortification strategy could have far-reaching implications for public health, especially in regions where rice is the main dietary staple.

By increasing the vitamin B1 content in the endosperm of rice grains, researchers have found a way to combat deficiencies that can lead to serious neurological and cardiovascular diseases. With the potential to provide a significant portion of daily vitamin B1 requirements in just one serving of rice, this innovation could help to improve the health outcomes of millions of people around the world.

The findings of this study demonstrate the power of biofortification to address nutritional deficiencies in a sustainable and effective way. By harnessing the natural processes of plants, researchers have managed to increase the level of a crucial nutrient without compromising agronomic yield or requiring additional supplements. This promising research could pave the way for similar strategies to enhance the nutritional content of other crops, ultimately contributing to improved public health outcomes globally.
https://www.vitafoodsinsights.com/innovative-technologies-formats/biofortifying-rice-combat-vitamin-b1-deficiency

Consumers are increasingly looking for products that not only taste good but also provide functional benefits that support their overall health and wellness goals.

This shift towards personalized nutrition and targeted ingredients is driving innovation in the food industry, with suppliers focusing on creating multifunctional ingredients that offer more than just basic nutrition. From heart-healthy beta-glucans to immune-boosting postbiotics, the offerings at industry expos like IFT FIRST Expo showcase a wide range of ingredients that cater to specific health concerns and provide added functional benefits.
As consumers continue to prioritize their health and well-being, the demand for better-for-you ingredients that offer more than just traditional nutrition is only set to increase. Companies that are able to innovate and provide products that not only taste great but also provide functional benefits will be well-positioned to meet the evolving needs of today's health-conscious consumers. With a focus on personalized wellness goals and targeted ingredient solutions, the future of the food industry is shaping up to be one that combines taste, functionality, and overall health benefits in every bite.
https://www.ift.org/news-and-publications/food-technology-magazine/issues/2023/september/features/top-4-ingredient-trends-from-ifts-food-expo

Krill oil is derived from tiny, shrimp-like crustaceans called Antarctic krill, which is an abundant species with a high reproductive rate.

Krill oil is gaining momentum in the omega-3 supplementation market for several reasons. Its potential to support heart health, better absorption compared to fish oils, and diverse nutritional profile are just a few factors contributing to its rising popularity.

Moreover, the sustainability and ethical claims associated with krill oil make it an attractive option for consumers who are conscious of their environmental impact.
The emergence of plant-based "krill" oils, such as Vegikrill, further highlights the growing demand for sustainable and environmentally-friendly omega-3 supplements.

With innovative ingredients like AlmegaPL(r) offering enhanced absorption levels and the inclusion of astaxanthin for added health benefits, plant-based alternatives to traditional krill oil are proving to be a viable and eco-conscious option for consumers.

As the market continues to evolve, it will be interesting to see how the demand for krill oil and its plant-based counterparts shape the future of the omega-3 supplementation industry.

https://www.vitafoodsinsights.com/omega-3/could-krill-oil-become-omega-3-supplement-choice

Functional waters rise as consumers seek enhanced wellness

Rachel French, May 2, 2024, Food & Beverage Insider

Consumers are becoming more aware of the importance of clean drinking water for their overall health and wellness.

The challenges facing the water supply, such as aging infrastructure and contamination, have led to the development of various solutions to ensure access to high-quality drinking water. Bottled water sourced from protected ground water sources and purified water with multi-barrier filtration systems are just a couple of examples of effective hydration solutions. The growing trend of water as a wellness resource, beyond just quenching thirst. The company focuses on providing equitable and sustainable access to high-quality drinking water worldwide. With a strong emphasis on water hydration solutions, Primo generates the majority of its revenue from water delivery, exchange, and refill businesses. The rise of popular on-the-go drinking vessels and the recognition of water's health benefits are contributing to the increasing demand for premium water products. Functional waters, designed to meet specific health needs such as gut health, pH balance, and immunity, are also seeing greater innovation to cater to the evolving preferences of consumers.
https://www.foodbeverageinsider.com/food-beverage-operations/functional-waters-rise-as-consumers-seek-enhanced-wellness

Coconut oil as an alternative to butter and shortening in bread making

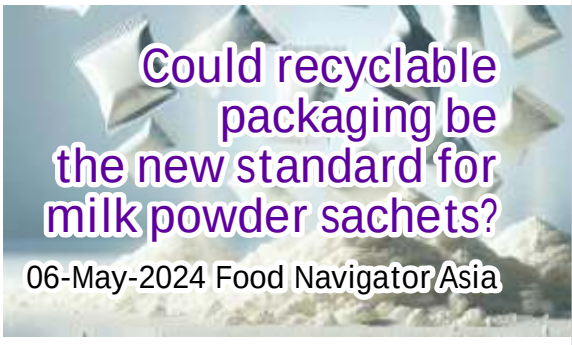
Kaho Nemoto, Fumiyuki Kobayashi, Sachiko Odake, J Food Sci 14 January 2024

Study found that bread prepared with coconut oil had a longer shelf life compared to bread made with butter and shortening.

This is because coconut oil hindered the hardening of bread samples over time, resulting in a softer and fresher texture for a longer period. The addition of coconut oil also influenced the baking colour, crust density, and dough expansion of the bread, providing a unique and flavourful experience for consumers.

Overall, this study demonstrates that coconut oil can be a viable alternative to butter and shortening in bread making, offering similar characteristics and potentially even some advantages. By using coconut oil, bakers can create vegan-friendly bread with a reduced environmental impact, making it an attractive option for those looking for sustainable and plant-based alternatives.
With further research and experimentation, coconut oil could become a staple ingredient in bread making, providing both health and environmental benefits.

https://doi.org/10.1111/1750-3841.16925



Could recyclable packaging be the new standard for milk powder sachets?

06-May-2024 Food Navigator Asia

Packaging plays a crucial role in our food system, ensuring that products reach consumers in the best condition possible.

For Fonterra, a leading dairy nutrition company in the Asia Pacific region, packaging is essential in safeguarding and preserving dairy products throughout long supply chains. However, the challenge arises when it comes to recycling the packaging once it has served its purpose.

With the APAC region facing significant waste management challenges, Fonterra has taken steps towards designing packaging for a circular economy to address the issue of plastic pollution. Recognizing the importance of sustainability, Fonterra's Research and Development Centre in New Zealand has been working on developing recycle-ready packaging materials for its consumer milk powder sachets. By moving away from complex high-barrier structures made of multiple materials to mono-material packaging options, Fonterra is setting a new standard for packaging materials in the industry.

Through rigorous testing and experimentation, Fonterra has ensured that the new packaging materials do not compromise the quality or shelf life of their products. This innovative approach to sustainable packaging is a significant step towards reducing plastic pollution and creating a more sustainable future for the dairy industry in the Asia Pacific region.

https://www.foodnavigator-asia.com/Headlines/Promotional-features/Fonterra-s-sustainable-recyclable-packaging-for-milk-powder-sachets

Snack brands target women's unique needs across life stages with functional products

Rachel French, May 10, 2024

The snacks category is seeing an influx of functional products targeting the distinctive needs of women, from hormone health to immunity to skin health.

Snack industry is seeing a shift towards addressing women's unique health concerns through functional ingredients tailored to different life stages. From fertility to menopause to skin health, snacks are being formulated with specific benefits in mind to cater to the needs of women. This trend reflects a growing consumer interest in hormone health, with a particular surge in menopause support products. Brands are incorporating ingredients like maca, oolong tea, horny goat weed, elderberry, collagen, and more to address various health concerns for women. This includes libido support, immunity, skin and nail health, hydration, and weight management. The popularity of sweet snacks like chocolate, bars, and gummies in this category shows that consumers are looking for tasty and convenient ways to incorporate these functional ingredients into their diets. As consumer preferences continue to evolve, snack companies will likely continue to innovate and expand their offerings to meet the diverse needs of women throughout their lives.

https://www.foodbeverageinsider.com/food-ingredients/snack-brands-target-women-s-unique-needs-across-life-stages-with-functional-products

New dehydration technologies revolutionize food preservation, enhance flavour, nutrient retention

Rachel French & Scott Miller
May 7, 2024

These new dehydration technologies offer a significant advancement in the preservation of food quality, flavour and nutrients.

By using innovative methods that do not involve overheating, freezing or exposing foods to air, BranchOut Food and True Essence Foods are able to retain more flavour compounds and nutrients in their dried food ingredients. This results in a more flavourful and nutritious end product that is far superior to traditional dehydrated foods.The applications for these new dehydration technologies are vast, ranging from fruit powders and snacks to military ration meals. BranchOut Food's Gentle Dry technology is already being tested by the U.S. Army for use in their MRE ration meals, demonstrating the potential for widespread adoption in the food industry. Likewise, True Essence Foods' Flavour Symmetry technology offers a sustainable and efficient way to improve the flavour of dehydrated foods, while also providing a valuable source of water for industrial use. Overall, these advanced dehydration technologies have the potential to revolutionize the way dried food ingredients are produced and utilized in various food applications.
https://www.foodbeverageinsider.com/food-beverage-operations/new-dehydration-technologies-revolutionize-food-preservation-enhance-flavor-nutrient-retention

Startup harnesses 'nutritional immunity' to disrupt food preservatives market

May 29, 2024 Elaine Watson
AGFUndernews

Israeli startup Bountica is seeking to disrupt the food preservation space with tasteless proteins (brand name: 'ProServatives') it claims are effective against a broad range of food pathogens and spoilage organisms thanks to a mechanism called 'nutritional immunity.'

Bountica's innovative approach to utilizing precision fermentation to produce anti-microbial proteins for food and beverage applications has the potential to revolutionize the industry. With the increasing consumer demand for clean label products and the growing scrutiny on the use of synthetic preservatives, Bountica offers a natural and effective solution that addresses these concerns. By leveraging proteins that mimic the body's own defence mechanism of nutritional immunity, Bountica's products effectively combat pathogens while offering heat stability and a wide pH range, making them versatile for a variety of food applications.

The collaboration with Puratos and investment from Sparkalis further validate the potential of Bountica's technology in the market. With a focus on replacing synthetic preservatives in bakery products, hummus, and non-alcoholic beverages, Bountica's proteins have the potential to extend shelf life without compromising taste or adding unnecessary ingredients. As the company continues to optimize its production process and explore new applications for its anti-microbial proteins, Bountica is poised to make a significant impact on the food and beverage industry by providing a natural and effective alternative to traditional preservatives.
https://agfundernews.com/bountica-harnesses-nutritional-immunity-to-disrupt-food-preservatives-market

Mapping Food System Innovation

Dale Buss March 5, 2024
Food Technology Magazine

India's hot spot for regenerative agriculture is a prime example of how innovation can address the constraints of traditional farming practices.

By introducing farmers to sustainable methods and providing them with access to technology and markets, companies like Araku and Sri BioAesthetics are helping to improve soil health and increase farmers' profits. The work of organizations like the Naandi Foundation and the Amity Institute of Microbial Technology is also crucial in transforming India's agricultural landscape and creating a more efficient and sustainable food system.

The success of India's regenerative agriculture hot spot underscores the potential for innovation to drive positive change in the global food industry. By focusing on convenience, constraints, clustering, and capital, other regions can also establish themselves as centres for food system innovation. As the world's population continues to grow, the need for new products, technologies, and methods will only increase. By creating a supportive environment for entrepreneurs and researchers, countries can work towards meeting the nutritional needs of a growing population while also addressing challenges like climate change and food waste.
https://www.ift.org/news-and-publications/food-technology-magazine/issues/2024/march/features/mapping-food--system-innovation

Researchers "silence sugars" in genetically engineered potato to cut browning and extend shelf life

06 Jun 2024 Food Ingredients First

Scientists in the US have made a significant breakthrough in developing a genetically engineered potato variety that addresses the off-colour browning and caramelization issues in the crop.

By suppressing a gene responsible for producing the vacuolar acid invertase enzyme in the potato, researchers have successfully extended the cold storage times of the crop, leading to healthier, higher-quality potato chips. This innovation, based on Kalkaska potatoes, offers a promising solution to the storage challenges faced by the snack industry.
The new variety, named Kal91.3 potato, has potential implications for the US snacks market and the potato industry as a whole. With Michigan being the leading producer of potatoes for chips in the nation, the enhanced potato could help stabilize the supply chain by enabling longer storage periods at cooler temperatures. By reducing the need for fertilizers and pesticides during storage, the novel potato variety also offers an environmentally friendly alternative for potato growers. With the USDA granting an exemption to the Kal91.3 potato from biotechnology

regulations, this development sets a new precedent for genetically engineered vegetables developed by land-grant universities.

https://www.foodingredientsfirst.com/news/researchers-silence-sugars-in-genetically-engineered-potato-to-cut-browning-and-enhance-shelf-life.html

Non-alcoholic cocktail brand captures authentic alcohol taste with natural flavours, not de-alcoholisation

Rachel French, May 21, 2024
Food Beverage Insider

A trendy, booze-free cocktail brand skips the de-alcoholisation process to make its drinks, drawing on natural flavours and a unique innovation process instead. Commitment to creating sophisticated non-alcoholic beverages has not gone unnoticed, with their products gaining popularity in New Zealand and beyond.

Their dedication to normalizing sober living and providing a social alternative to alcohol has struck a chord with consumers looking for a more balanced lifestyle. By offering high-quality, alcohol-free options that replicate the taste, feel, and experience of traditional cocktails, Free AF is contributing to a cultural shift towards moderation and mindfulness when it comes to alcohol consumption.

By revolutionizing the non-alcoholic beverage industry and challenging the traditional methods of creating booze-free drinks, Free AF is paving the way for a new era of sophisticated, adult-oriented alcohol alternatives. Their innovative approach to flavour development and commitment to creating conversation around sobriety has set them apart from other brands, making them a key player in the movement towards healthier drinking habits. With their focus on quality, taste, and social impact, Free AF is not just providing an alternative to alcohol, but reshaping the way we view and consume non-alcoholic beverages.
https://www.foodbeverageinsider.com/beverage-development/nonalcoholic-cocktail-brand-captures-authentic-alcohol-taste-with-natural-flavors-not-de-alcoholization

Improved refrigeration could save nearly half of the 1.3 billion tons of food wasted each year globally

Science Daily May 28, 2024

The University of Michigan study highlights the significant potential for reducing food waste and associated greenhouse gas emissions through the implementation of fully refrigerated food supply chains worldwide.

By optimizing cold chains, up to 620 million metric tons of food waste could be eliminated, resulting in a 41% reduction in climate-warming greenhouse gases globally. Regions such as Sub-Saharan Africa and South and Southeast Asia stand to benefit the most from these improvements, with potential reductions in both food losses and emissions.

The researchers also emphasize the importance of considering localized "farm-to-table" food supply chains as an alternative to global refrigerated systems. In many cases, these localized systems may yield comparable food savings to optimized cold chains. The study sheds light on the significant impact of meat-related food losses on greenhouse gas emissions, as meat production is particularly greenhouse gas-intensive. By focusing on reducing meat losses specifically, organizations can make a substantial contribution to lowering overall food loss-related emissions. Ultimately, investment decisions will need to prioritize specific objectives, whether they be ending hunger or addressing climate change, in order to maximize the desired outcomes and impacts of cold chain upgrades.

Friedman-Heiman& Miller. The impact of refrigeration on food losses and associated greenhouse gas emissions throughout the supply chain. Environmental Research Letters, 2024; 19 (6): 064038 http://dx.doi.org/10.1088/1748-9326/ad4c7b

REGULATORY NEWS

EFSA finds "no safety concern" in naringenin food flavouring with respect to genotoxicity

30 May 2024 Nutrition Insight

The approval of naringenin extract as a flavouring substance by the European Food Safety Authority (EFSA) marks a significant milestone for the food industry, particularly for Spain-based HealthTech Bioactives (HTBA).

This bioactive polyphenol, derived from citrus fruits, has been determined to be safe for use as a taste modifier in various food and beverage products. The EFSA's positive opinion paves the way for HTBA's European customers to incorporate naringenin into their formulations to enhance taste profiles and gain consumer acceptance.

In addition to its potential to modulate taste, naringenin offers a range of benefits for food and beverage formulators. Beyond improving sweetness profiles by balancing the taste of high-intensity sweeteners and sugar, this natural flavouring substance can also mask off notes from sweeteners and enhance mouthfeel in low-sugar products. Furthermore, taste modifiers like naringenin play a crucial role in promoting healthier food options by reducing unhealthy ingredients and fortifying products with essential nutrients. As the demand for clean label and natural solutions continues to grow, the approval of naringenin by the EFSA underscores the importance of innovation in creating healthier food and drink options for consumers.

https://www.nutritioninsight.com/news/efsa-greenlights-naringenin-food-flavoring-in-fb-after-finding-no-concerns-over-genotoxicity.html

https://www.efsa.europa.eu/en/efsajournal/pub/8747

Nutri-Score creator accuses Italian government of "gastro-populism" in food sovereignty dispute

08 May 2024 Food Ingredients First

The debate over the adoption of the Nutri-Score system in Italy highlights the conflict between public health interests and economic concerns.

While supporters argue that the system provides much-needed transparency on the nutritional quality of food and empowers consumers to make healthier choices, opponents, particularly within the Italian government and agri-food sector, claim that it unfairly penalizes traditional Italian products and undermines the country's national identity.

Professor Hercberg strongly refutes these claims, emphasizing that the Nutri-Score system is based on scientific evidence and aims to improve public health by providing clear information on food products. He argues that the system does not target specific countries or products but rather evaluates the nutritional composition of food objectively. While he acknowledges the importance of cultural aspects and culinary traditions, he stresses that the Nutri-Score itself should not be altered to accommodate individual preferences.

As the Italian government moves forward with proposed constitutional amendments to block the introduction of the Nutri-Score system in the country, the debate continues to highlight the tension between promoting public health and protecting economic interests. Ultimately, finding a balance between these competing concerns will be crucial in shaping future food policies and ensuring that consumers have access to accurate and meaningful information about the foods they consume.

https://www.foodingredientsfirst.com/news/nutri-score-creator-accuses-italian-government-of-gastro-populism-in-food-sovereignty-dispute.html

South Korea stimulates cultivated meat growth with regulation-free special zone

02 May 2024 Food Ingredients First

South Korea's decision to establish a regulation-free special zone dedicated to advancing research and development in the field of cultivated meat reflects the country's commitment to fostering innovation in the food tech industry.

By providing favourable regulatory exemptions and creating a supportive environment for cellular agriculture-focused projects, the South Korean government is facilitating faster progress in this emerging sector. The launch of the KRW 19.9 billion RFSZ in Gyeongsangbuk-do, which will accommodate ten cell-cultivated food companies, marks a significant step towards accelerating the commercialization of high-quality cell-cultivated foods.

The participating companies in the RFSZ, such as Tissen Bio Farm, are utilizing cutting-edge technologies and innovative methods to produce cultivated meat products that meet consumer demand for taste, texture, and affordability. With a strong emphasis on collaboration and information sharing within the value chain, these companies are poised to drive the growth of the cultivated meat industry in South Korea and beyond. As the global landscape for cell-based meats continues to evolve, South Korea's proactive approach to regulation and support for cultivated meat research positions the country as a key player in the future of sustainable food production. Elsewhere, Israel and Singapore have given the green light for commercial cell-based meat for human consumption, while the United States Department of Agriculture and the Food and Drug Administration have granted approval to two companies, Upside Foods and GOOD Meat, to commercially distribute lab-grown chicken within the US.

https://www.foodingredientsfirst.com/news/south-korea-stimulates-cultivated-meat-growth-with-regulation-free-special-zone.html

Mislabelling and food fraud tackled with patented AI technology

28 May 2024 Food Ingredients First

Food fraud is a significant issue that affects the global food industry, costing billions of dollars each year and compromising consumer trust and safety.

Roei Ganzarski, CEO of Alitheon, has developed patented AI technology to combat this problem by providing a means to track and trace products through the supply chain. This technology allows for greater transparency and accuracy in product labelling and packaging, helping consumers verify the authenticity of the products they purchase.
By digitally "fingerprinting" goods, Alitheon's AI technology enables consumers to easily check the origin, expiration date, and claims of a product using their smartphones. This level of transparency and traceability is becoming increasingly important to consumers who are looking to make informed choices about the food they consume. Ganzarski believes that AI technology will play a significant role in the future of the food and beverage industry, helping to combat fraud and provide consumers with the information they need to make educated decisions about the products they buy. Ultimately, this technology has the potential to revolutionize the way food and beverage products are labelled and packaged, providing a safeguard against fraud and counterfeits while ensuring consumer safety and trust.
https://www.foodingredientsfirst.com/news/alitheon-tackles-mislabeling-and-food-fraud-with-patented-ai-technology.html

Indian regulator clamps down on e-commerce sites selling "health drinks"

By Tingmin Koe 14-May-2024 – NutraIngredients Asia

The Food Safety and Standards Authority of India (FSSAI) is clamping down on e-commerce websites selling "health drinks", as there are currently no regulations set in place for such products.

The confusion over the categorisation of popular health drinks like Bourn Vita and

Horlicks has caused a stir in the food industry in India. The Food Safety and Standards Authority of India (FSSAI) has cracked down on e-commerce platforms selling these products under the incorrect labels of health or energy drinks. The regulator pointed out that these products should actually be classified under dairy based beverage mix, cereal based beverage mix, or malt-based beverage categories. The lack of specific standards for health drinks in the FSS Act led to the mislabelling of these products, which has now been rectified by the FSSAI.

Former FSSAI director, Pradip Chakraborty, explained that some popular brands have been wrongly categorised as health or energy drinks due to the lack of specific guidelines before the FSS Act came into effect in 2011. The e-commerce companies continued to market these products as health or energy drinks despite being advised by authorities to correct the labelling. This misleading information has led to complaints from consumers and prompted the FSSAI to take action to ensure transparency in the food industry. Brands like Horlicks and Bourn Vita are now being urged to correctly label their products to avoid misleading consumers and adhere to food safety regulations.
https://www.nutraingredients-asia.com/Article/2024/05/14/fssai-clamps-down-on-e-commerce-sites-selling-health-drinks

Tracing rice fortification: India orders firms to adopt traceability application to prevent adulteration

By Pearly Neo
25-Mar-2024 – Food Navigator Asia

The Food Safety and Standards Authority of India (FSSAI) has ordered all manufacturing firms of fortified rice to integrate a new national traceability application into their operations in order to prevent adulteration of the final product.

The implementation of the Fortified Rice Traceability (FoRTrace) Application by FSSAI is a significant step towards ensuring the efficacy of fortified rice in addressing malnutrition in India. By digitizing and centralizing the monitoring of rice fortification, the application enables greater transparency and accountability among rice producers, making it easier to track the sourcing and blending of essential nutrients. This not only helps in preventing adulteration and false claims about the fortification content of rice but also ensures the quality and safety of fortified rice distributed through public food distribution systems.

Furthermore, the focus on increasing the number of accredited laboratories for testing micronutrients in fortified rice samples demonstrates FSSAI's commitment to upholding stringent quality standards. By swiftly identifying and removing failed samples from the supply chain, FSSAI aims to safeguard the nutritional integrity of fortified rice consumed by the public. With these measures in place, India is taking proactive steps towards combatting malnutrition and promoting public health through fortified food staples, contributing to the overall well-being of its population.

https://www.foodnavigator-asia.com/Article/2024/03/25/India-orders-firms-to-adopt-traceability-application-to-prevent-rice-adulteration

Nationwide potential: New Indian food safety system could cover 'entire country'

By Audrey Yow 02-May-2024 – Food Navigator Asia

A food safety system trialled in north-east India in response to child deaths linked to food and waterborne diseases found that 3-4% of all samples tested contained enteric pathogens, with researchers now hopeful the scheme has the potential to be rolled-out nationwide.

The establishment of FoodNet in the Northeastern Region of India by the Indian Council of Medical Research has proven to be a crucial step towards developing a robust food safety policy to combat foodborne diseases and outbreaks. With close to real-time reporting of data, the surveillance network has facilitated the identification of major food and waterborne pathogens,

as well as the investigation of antimicrobial susceptibility patterns, enabling the development of effective treatment strategies. Additionally, the network has played a vital role in updating food safety management protocols, policy reforms, and enhancing public health outbreak response in the region.
The proactive approach taken by the researchers in BMC Public Health highlights the importance of generating reliable data through surveillance networks like FoodNet to address the neglected issue of foodborne diseases. Given the prevalence of disease outbreaks and deaths, particularly among children, in the Northeastern Region of India, the urgent need for a comprehensive food safety policy is evident. By expanding the network to cover other states and ultimately the entire country, the researchers aim to provide comprehensive coverage and effectively reduce the burden of foodborne diseases and outbreaks in India.
https://www.foodnavigator-asia.com/Article/2024/05/02/new-indian-food-safety-system-could-cover-entire-country

https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-024-18007-w

'Key shortfalls' need to be addressed to protect children from high fat, salt, and sugar food marketing in India

By Audrey Yow 03-Apr-2024 – Food Navigator Asia

New analysis of India's regulatory framework for advertising foods that are high in fat, salt and sugar (HFSS) need to be overhauled to better protect children, academics have argued.

Researchers highlighted the urgent need for a comprehensive regulatory framework in India to protect children from the harmful effects of HFSS food marketing. They emphasized the importance of expanding the scope of existing policies to cover all forms of advertising children are exposed to, not just those that are explicitly 'directed' at them. Additionally, the researchers stressed the need for clear food classification criteria to define unhealthy foods, as well as restrictions on HFSS advertisements during peak child viewership times on television.

Moving forward, the researchers recommended further research to identify additional policies at the sub-national level and to assess the effectiveness of existing regulations in safeguarding children against HFSS advertising. They emphasized the crucial role that robust regulation and legal measures will play in mitigating the negative impacts of unhealthy food marketing on children in India. By addressing these key shortfalls in the regulatory environment, India can take important steps towards protecting the health and well-being of its younger generations.
https://www.foodnavigator-asia.com/Article/2024/04/03/protect-children-from-high-fat-salt-sugar-marketing-in-india

https://www.thelancet.com/journals/lansea/article/PIIS2772-3682(23)00175-0/fulltext

Turkey opens its market to Ahiflower oil as evidence builds

By Nikki Hancocks 01-May-2024 - NutraIngredients

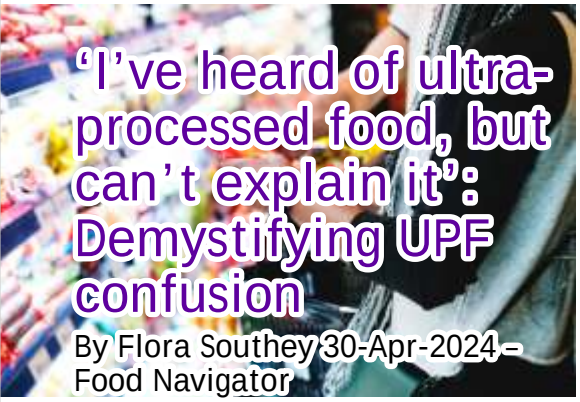
Ahiflower oil, a sustainable omega-rich fish oil alternative, has been approved for use in Turkey as anew human clinical trial has examined its mechanism of action to boost EPA levels.

The addition of Ahiflower oil to the federal positive plants list in Turkey has opened up new opportunities for the use of this plant-derived alternative to fish oil in supplements and functional foods in the country. This decision comes at a time when concerns about the global supply of fish oil are rising, making it crucial for brands and consumers to explore sustainable alternatives like Ahiflower. With its high levels of non-GM omega-3 essential fatty acids, including SDA which has a more efficient conversion rate to EPA compared to ALA,

Ahiflower oil offers a promising solution for addressing the need for healthy sources of omega-3s.

A recent randomized crossover trial published in Frontiers in Nutrition has highlighted the unique mechanism of action of Ahiflower oil in increasing circulating omega-3 levels in humans. The study demonstrated that consuming Ahiflower oil led to a significant increase in EPA levels, while DHA levels remained unaffected. The findings also showed that SDA, present in high levels in Ahiflower oil, was a more efficient modulator of EPA and DHA oxylipin levels compared to ALA. Overall, the study provides substantial evidence for the potential of Ahiflower oil to improve EPA status in healthy individuals, offering a plant-derived alternative with promising anti-inflammatory effects.
https://www.nutraingredients.com/Article/2024/05/01/Turkey-opens-its-market-to-Ahiflower-oil-as-evidence-builds

https://www.frontiersin.org/journals/nutrition/articles/10.3389/fnut.2024.1359958/full



'I've heard of ultra-processed food, but can't explain it': Demystifying UPF confusion

By Flora Southey 30-Apr-2024 – Food Navigator

What 'ultra-processed food' means to one consumer may not be what it means to another.

As consumer awareness of ultra-processed foods continues to grow, it is clear that there is still a significant lack of understanding surrounding the term. With varying perceptions and definitions of what constitutes ultra-processed food, it is important for companies and researchers to provide clear and consistent information to consumers. The fact that a majority of consumers express concern about ultra-processed foods highlights the need for more education and transparency in the food industry.

Research conducted by Vypr and other agencies reveals that consumers do pay attention to the number of ingredients in a product when making purchasing decisions, indicating that ingredient lists can play a significant role in consumer perceptions of product healthiness. However, factors such as price and packaging can also influence consumer behaviour, making it important for companies to consider multiple factors in their product development and marketing strategies. Overall, a more nuanced and tailored approach to understanding consumer attitudes towards ultra-processed foods is necessary in order to effectively address public concerns and promote healthier eating habits.
https://www.foodnavigator.com/Article/2024/04/30/Ultra-processed-food-consumer-confusion-persists

FSSAI approves proposal to display nutritional information labelling of total sugar, salt and saturated fat in bold letters and bigger font size

11 Apr 2024 Food Ingredients First

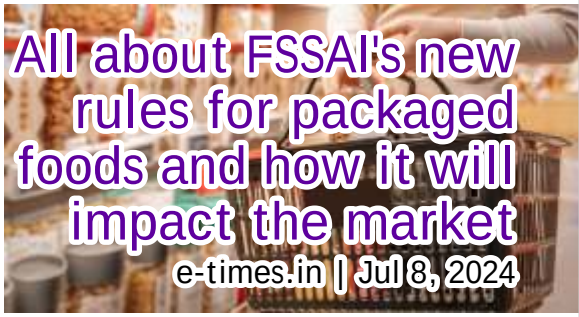
The Ministry of Health and Family Welfare, along with the Food Safety and Standards Authority of India (FSSAI), has taken a significant step towards improving public health by approving a proposal to display nutritional information in bold letters and increased font size on packaged food items.

This amendment aims to empower consumers to make healthier choices by providing clearer information about the total sugar, salt, and saturated fat content in the products they are consuming. By enhancing the visibility of this critical nutritional information, consumers will be better equipped to understand the value of the food they are consuming and make informed decisions for their well-being.

In addition to empowering consumers, the amendment also serves a larger public health goal of combating the rise of Non-Communicable Diseases (NCDs) by promoting healthier eating habits. By prioritizing clear and distinguishable labelling requirements, the government is taking proactive steps to address the growing concern of NCDs and promote overall well-being. The decision to put the draft notification in the public domain for feedback demonstrates a commitment to

transparency and inclusivity in the policymaking process, ensuring that stakeholders have a voice in shaping regulations that impact public health.

Through collaborations with various stakeholders and the implementation of stringent advisories against false and misleading claims by Food Business Operators, the government is working towards a healthier and more informed society.
https://pib.gov.in/PressReleasePage.aspx?PRID=2031260



The new rules proposed by FSSAI for packaged foods are a step in the right direction towards promoting transparency and empowering consumers to make informed choices about their food purchases.

By requiring manufacturers to display levels of saturated fat, salt, and sugar in bold letters and large fonts, consumers will have a clearer understanding of the nutritional value of the food items they are buying. This will not only help consumers make healthier choices but also potentially nudge companies to reformulate their products to lower the amount of unhealthy ingredients.

The impact of these new rules on the market can be significant, as it may lead to a shift in consumer preferences towards healthier options. Companies that already provide nutritional information on their packaging may have an advantage in meeting these new requirements. Additionally, the move towards a front-of-pack nutrition labelling system and star rating to indicate the nutritional value of items could further steer consumers towards healthier choices.

Overall, these regulations have the potential to create a more health-conscious community and reduce the prevalence of non-communicable diseases in the long run.
https://timesofindia.indiatimes.com/life-style/food-news/all-about-fssais-new-rules-for-packaged-foods-and-how-it-will-impact-the-market/articleshowprint/111574793.cms?val=3728

India's central food regulator, the Food Safety and Standards Authority of India (FSSAI), has made a policy decision to issue instant registrations and licenses to food businesses in India. The instant registration or license will be valid for one year and may be renewed in a regular course.

Food businesses in India are required to obtain either a registration or license in order to operate legally. The type of registration or license needed depends on factors such as the scale and nature of the business, as well as the number of States in which the business will operate.

The process of obtaining a registration or license can take anywhere from seven days to two months, depending on the complexity of the application and whether any improvements are needed before approval can be granted.

The introduction of the Tatkal (Instant) System of Food License by the FSSAI is a positive step towards facilitating ease of doing business for food operators. This system allows for instant registration or licensing without the need for inspection, though businesses will still be subject to future inspections and compliance requirements.

While the Tatkal facility is currently available only to certain categories of food businesses, such as importers, wholesalers, and retailers, it is expected to be expanded to include partnerships and registered firms in more States in the future.

It is important for food businesses to carefully evaluate their eligibility and application before applying, as providing incorrect information can result in penalties.

https://arogyalegal.com/2024/article/indias-food-regulator-introduces-instant-license-and-registration-for-food-businesses-with-some-exceptions/

From cheese to whisky: India returns 1,500 imported foods amid safety woes

Nandini Singh Business Standard New Delhi Jul 12 2024

India imports food from over 100 countries, regulated under the Food Safety and Standards Act of 2006, ensuring uniform standards for both domestic and imported products

The strict import regulations enforced by India's Food Safety and Standards Authority have highlighted the importance of ensuring the safety of imported food. With over 1,500 rejected consignments in the past two years, India is taking measures to maintain its rigorous quality and safety standards. The rejection of items from developed economies known for their stringent regulations underscores the need for comprehensive testing and monitoring of all food products entering the country.
Pawan Agarwal, CEO of Food Future Foundation, emphasized the challenges faced in ensuring the safety of imported food, including traceability and managing high-risk imports susceptible to contamination. Agarwal stressed the importance of restricting food imports to a limited number of ports to facilitate more effective testing, as well as the need for a robust testing protocol to ensure compliance with Indian standards. By closely monitoring international food alerts and implementing stringent verification processes, India aims to safeguard the health of its citizens and maintain high standards for all food products consumed within its borders.
https://www.business-standard.com/industry/news/from-cheese-to-whisky-india-returns-1-500-imported-foods-amid-safety-woes-124071200208_1.html

Dining with danger:

Sweekruthi K 21 July 2024, Deccan Herald

Food safety violations aplenty in eateries amidst gaps in regulation and monitoring, the hygiene of India's restaurants and cloud kitchens is shrouded in uncertainty.

Bengaluru, known for its vibrant food scene, is facing a growing concern over food safety and hygiene standards. Cases of contamination and food poisoning are becoming more common, with reports of pests, contaminants, and even bacteria found in meals delivered by popular restaurants. The lack of proper regulation and enforcement is leading to a public health crisis, with millions of cases of foodborne illnesses reported every year across India.
The rise of cloud kitchens and delivery-based options, especially in the wake of the pandemic, has further complicated the issue of food safety. With the increasing popularity of these setups, there is a growing need for robust regulations and oversight to ensure that consumers are not at risk. However, the existing system is riddled with loopholes, corruption, and lack of manpower, making it difficult to monitor and enforce food safety standards effectively. While efforts are being made to improve compliance and inspection processes, more coordinated action involving multiple stakeholders is necessary to address the root causes of food contamination and ensure the safety of consumers.
https://www.deccanherald.com/health/dining-with-danger-food-safety-violations-aplenty-in-eateries-3114303

FSSAI orders food companies to remove "100% fruit juice" claims from re-constituted products

07 Jun 2024 Food Ingredients First

The move by the FSSAI to crack down on misleading advertising claims in the food and beverage industry is a significant step towards ensuring transparency and consumer protection.

By requiring FBOs to accurately label their products and remove false claims of "100% fruit juices," the regulatory body is working to create a more honest and informed marketplace for consumers. This directive not only helps prevent deceptive marketing practices but also promotes healthier choices by restricting the use of excessive sweetening agents in packaged juices.With the deadline set for September 1, 2024, FBOs have been given ample time to adjust their packaging and advertising strategies to comply with the new regulations.

By requiring products to be labelled accurately and transparently, the FSSAI is taking a proactive approach to safeguarding public health and ensuring that consumers are able to make informed choices about the food and beverages they consume. Compliance with these regulations is crucial to upholding food safety standards and protecting the well-being of individuals across the country.
https://www.foodingredientsfirst.com/news/fssai-orders-food-companies-to-remove-100-fruit-juice-claims-from-reconstituted-products.html

Bisphenol battle: Indonesia formalises new regulations mandating BPA leaching warnings on water bottles

By Pearly Neo05-Jun-2024 – Food Navigator Asia

The recent regulations introduced by the Indonesian Food and Drug Agency (BPOM) regarding BPA in bottled water packaging represent a significant step towards protecting public health and raising awareness about potential risks associated with the chemical.

With the inclusion of warning labels and storage instructions on bottles made with polycarbonate, consumers will now have the necessary information to make informed choices about their drinking water.

While these new regulations are a positive development, it is clear that more needs to be done in order to address the broader issue of BPA exposure in food and beverage packaging. The long-term effects of BPA on human health are still not fully understood, and continued efforts are required to minimize its presence in products consumed by the public. By implementing stricter guidelines and increasing transparency in labelling practices, the Indonesian government is taking proactive steps to ensure the safety of its citizens.

As discussions surrounding BPA regulations continue to evolve on a global scale, it is important for governments and regulatory bodies to prioritize public health and safety. By working towards reducing the potential risks associated with harmful chemicals in food packaging, we can create a safer and healthier environment for consumers around the world.

https://www.foodnavigator-asia.com/Article/2024/06/05/indonesia-formalises-new-regulations-mandating-bpa-leaching-warnings-on-water-bottles

Poppi faces class action lawsuit over health claims around prebiotic labelling

By Deniz Ataman
05-Jun-2024 –Food Navigator USA

The outcome of this class action lawsuit against Poppi could set a precedent for the entire prebiotics industry, forcing companies to standardize marketing practices and ensure that their claims are backed up by scientific evidence.

Consumers are increasingly interested in products that offer gut health benefits, and this case highlights the importance of transparency and accuracy in marketing these benefits. The lawsuit also raises questions about the amount of prebiotic fibre necessary to actually provide health benefits, and whether current formulations are truly effective.

As functional beverages continue to grow in popularity, it is crucial for companies to consider the impact of their ingredients on consumer health. The potential health risks associated with high sugar content in some prebiotic sodas, as highlighted in this lawsuit, emphasize the need for responsible formulation and marketing practices. By reevaluating dosages and exploring innovative prebiotic ingredient alternatives that offer efficacy at lower doses, beverage companies can better meet consumer demand for healthier options. This case serves as a reminder for the industry to prioritize consumer health and well-being in product development and marketing strategies.

https://www.foodnavigator-usa.com/Article/2024/06/05/Poppi-faces-class-action-lawsuit-over-health-claims-around-prebiotic-labeling

Dietary signals: Traffic light food labelling encourages healthier choices among Japanese students – RCT

By Audrey Yow
03-Jun-2024 –Food Navigator Asia

Traffic light food labelling encouraged healthier food choices among Japanese college students, and now has the potential to be used nationwide, say researchers.

The results of the randomised controlled trial conducted by Japanese researchers on the influence of Traffic Light Food (TLF) labels on college students clearly demonstrated the positive impact of such labels on encouraging healthy dietary choices. The study revealed that participants who were shown food images with TLF labels made significantly healthier dietary choices compared to those who were not shown the labels. The use of TLF labels led to an increase in the consumption of meals labelled blue, which corresponded to the healthier range according to nutritional standards. The researchers also found that participants in the intervention group were more aware of the nutritional balance of their overall diet and were conscious of various nutritional components when making dietary choices.

The findings of this study are important as they suggest that the implementation of FOP nutrition labels, such as TLF labels, can be an effective tool in preventing lifestyle-related diseases and promoting healthier eating habits. The researchers recommended that policymakers consider the use of TLF labels in Japan to improve public health strategies and potentially inform global nutritional labelling practices. Overall, the study highlights the potential benefits of incorporating clear and easily understandable nutrition labels on food packaging to help consumers make informed and healthier food choices.
https://www.foodnavigator-asia.com/Article/2024/06/03/traffic-light-food-labelling-encourages-healthier-diet-choices-among-japanese

https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-024-17815-4

FDA, industry race to implement tech-enabled traceability for faster outbreak response

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The FDA is making significant strides in prioritizing tech-enabled traceability to streamline investigations into foodborne illness outbreaks.

By engaging with industry stakeholders to develop and implement software tools, the FDA aims to improve food safety and outbreak response. Despite challenges such as the cost of technology and complex supply chains, the advancement of tools like predictive analytics and data sharing systems can lead to more efficient traceback investigations and ultimately prevent future outbreaks.

With the implementation of FSMA 204 in January 2026, companies are feeling the pressure to incorporate traceability requirements into their systems. However, the FDA is working closely with the industry to provide guidance and support through listening sessions and tech demos. Collaboration is emphasized as a critical component for success, as multidisciplinary teams need to come together to address operational, organizational, and technological challenges. By leveraging innovative solutions and fostering international partnerships, the FDA is paving the way for a more efficient and effective food traceability system that can ultimately protect public health.

https://www.foodbeverageinsider.com/technology/fda-industry-race-to-implement-tech-enabled-traceability-for-faster-outbreak-response