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FOOD, NUTRITION & SAFETY MAGAZINE

BULLETIN JUL 2022

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EDITORIAL

There is a lot of research and development activity going on because of consumer interest in plant proteins and plant-based foods. Historically animal sources were mostly considered as proteins but there are legumes, both pulses and oilseed legumes that have very high levels of proteins. In fact, vegetarians all over the world and more particularly in India have been consuming pulses as the major source of dietary proteins. Even the meat and fish-eating Indians eat plenty of pulses like peas and chana to get plenty of proteins from them. Cereal grains also add enough proteins to diets.

Since there have been a lot of debate about sustainability of animal foods and also some health issues of animal proteins, developers have started working on various plant sources to prepare simulated products traditionally derived from animals. Soya milk has been used for a long time in China and Japan and soya meat extenders were used in latter half of 1900s in the US. There are certain advantages both health and social, of using plant foods so consumers have been demanding more such foods that mimic the animal foods. There are many difficulties in making them exactly look, taste and chew like original without adding various ingredients and processing them especially in case of meats.

Lately many such products started coming into market using various plant sources and proteins. Milk and cheese analogs prepared from soya, coconut, almonds and a variety of other ingredients are being marketed currently. There were obvious concerns about the misuse of marketing campaigns. The word “milk” may be misinterpreted by uninformed consumers who may not read the labels carefully. So milk producers prevailed upon regulators to prevent the use of word milk by plant based products.

There are many names, which are used for animal based dairy products including milk, cream, butter, cheese, curd, yogurt, and some local names like mawa, khoa, panneer, and many others. Some of these words have been used for plant-based products, which may not be a simulated product. Peanut butter and coconut milk have been used for long. Rise of veganism has given a boost to these products. People just want to use them without thinking whether nutritionally they would get the similar nutrients.

When it comes to meats, the complexity grows even more as there are various meats in market from all kinds of animals and birds. To add to this difficulty, there are various ways of manufacture.
People have been earlier making simulated meats from soya but now all kinds of plant proteins including beans, peas etc. are available to work on. Environmentalists have been predicting that if we don’t take action now, the only source of protein remaining would be insect proteins. There are some products already developed from crickets.

As we go along, there are microbial proteins, which also need to be considered as they can be produced in large quantities in a short time with much less cost. With the biotechnology techniques, we could also insert the genes of animal proteins into microbes and start making animal proteins without animals and these would be exactly like the proteins from real animals.

Finally there are also possibilities of producing the proteins and tissues in fermenters using animal cell culture techniques. So the possibilities are immense and diverse and at times mind-boggling. We sincerely hope that our regulators would be well prepared to understand these intricacies involved while making regulations for various above protein products and not hurt the feelings and/or interests of various groups.

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SHOULD WE ALL TURN OUR BACKS ON (ULTRA) PROCESSED FOODS?

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You might believe this if you read some of the media headlines or follow some popular social media influencers. Historically, processed foods were valued for their (microbiological) safety, affordability, and longer shelf life, so is it justified that the perception of processed, and especially the so-called ultra-processed foods, is changing so rapidly?

What are ultra-processed foods?

Let's start with a simple explanation of the term ultra-processed foods. The term was introduced by a Brazilian group of researchers who proposed a new classification of foods that was not based on the nutritional composition of foods but on the level of processing [1, 2]. This NOVA classification (not an acronym)defines foods based on the extent and purpose of processing into four groups; 1) unprocessed or minimally processed; 2) processed culinary ingredients; 3) processed, or; 4) ultra-processed (UPF) foods. Foods that contain additives such as colours, flavours, and non-sugar sweeteners or that contain ingredients that cannot be found in a normal kitchen cupboard are considered to be ultra-processed. Monteiro et al. also emphasize "common attributes of ultra-processed products are hyper-palatability, sophisticated and attractive packaging, multi-media and other aggressive marketing to children and adolescents, health claims, high profitability, and branding and ownership by transnational corporations"[3].

Many observational research studies have applied the NOVA classification and reported associations between UPF consumption and adverse health outcomes [4, 5, 6]. These associations made the headlines, but causality and the mechanism(s) that explain these associations are unclear [7, 8]. So, the story is not as simple as we may be led to believe.

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Limitations of the NOVA classification

There is no gold-standard for applying the NOVA categorisation

Despite its widespread use, the NOVA classification has some severe limitations [9, 10, 11, 12, 13]. A very important constraint is that it is difficult to consistently classify product into the NOVA groups, as demonstrated by Braesco et al [14]who invited over 150 French food and nutrition specialists to complete an online survey in which they assigned foods to NOVA groups. The authors concluded that "Although assignments were more consistent for some foods than others, overall consistency among evaluators was low, even when ingredient information was available..... This finding raises questions about how functional NOVA is in its current form. It should also spur reflection on the reliability of conclusions from epidemiological studies that use NOVA as well as on NOVA's ability to guide public health policy or provide useful information to consumers"[14].

UPF are a very diverse group of products

Relating the type and degree of food processing to health cannot be done independent of the nutritional composition of the final food product. The UPF category includes a wide variety of food products, such as whole grain breads, infant formula, fortified ready-to-eat breakfast cereals, dried soups, flavoured yogurt and teas. As well as less recommended products with potentially high levels of salt, sugar, and fat like crisps, cookies, and pizzas. Most junk foods (products high in calories, sugar, salt and/or fat) are classified as UPF, but not all UPF are junk food. Energy- and nutrient-dense foods exist across different levels of food processing [10, 15, 16].

Duan et al were the first to consider the heterogeneity of the UPF food category when investigating the association between UPF consumption and the incident of Type 2 diabetes in a Dutch cohort [17]. They found a discrepancy in associations between four distinct UPF consumption patterns and incident of type 2 diabetes. Only the two food patterns high in cold or warm savoury snacks were positively associated with the incident of Type 2 diabetes. The other two UPF food patterns were either not associated or inversely associated with the incident of Type 2 diabetes [17]. Similarly, another investigation showed that only sugar-sweetened beverages, desserts and processed meats were associated with all-cause mortality, not the other UPF food groups[18].These results exemplify why not all UPF should be clustered together.

Some UPF are important sources of micronutrients

Many UPF foods and beverages such as wholegrain/enriched bread and cereals or flavoured milk contribute significantly to daily micronutrient intakes [11, 19]. Avoidance of these products may not address obesity but could decrease intakes of important nutrients [11, 20, 21]. Processed foods are thus nutritionally important for many diets. They contribute to food security (access to food) and nutrition security (access to nutrients) [19]. However, some processed foods can also be high in nutrients to limit, such as sugar, salt and fat (HFSS) and these HFSS products should be consumed in moderation.

On the other hand, foods and beverages that are minimally processed are not by default healthy either. Think about home-made cookies, pies or pizza, which may also be high in calories, sugar, salt and/or fat, but not classified as UPF. In India, where salt intake is high (11 g/day),the main source (>80%) of salt in the diet is salt added during cooking or at the table [22].

Food processing at home versus in a factory

Foods are not only processed in a factory, but also at home. The main difference between processing foods at home or in a factory is the scale and the equipment used. Often the actual process is pretty similar. The scale and equipment used in factories makes the process more efficient and the product safer and more affordable.

Usually, the main concern regarding the ingredients used in food factories are the class of ingredients called additives. Food additives are food ingredients and are important to maintain and/or improve the safety and freshness (preservatives), taste (sweeteners), texture (emulsifiers, stabilizers, thickeners) and appearance (colours) of foods. Additives are also used at home and in restaurants. Examples are leavening agents to raise the dough, vanillin sugar to add flavour, gelling agents such as pectin and gelatine, or corn starch to thicken sauces. The difference is that at industrial level there is a larger toolkit with more diverse ingredients at hand to develop products. Not all ingredients listed on the package may sound familiar, but they all play an important role in the product. It is important to note that all food additives are safe. The safety of food additives is evaluated by international and local organizations such as Codex Alimentarius and the European Food Safety Authority.

Food additives are strongly regulated to ensure they are used in the right way and consumers are well informed. The level of many additives in food is regulated, and many additives are only permitted for certain foods.

The important role of ultra-processed foods in the food system

The current global food system is not fair and is inefficient. One billion people around the world are hungry while two billion are obese or overweight. In the meantime, one-third of the total food produced globally is wasted. The COVID-19 pandemic, wars and rapid climate changes have made the issue more serious and evident. Urgent changes are needed to be able to feed the world in a more sustainable and healthy way.

(Ultra) processed foods are part of the solution.

When talking about environment, many people might think that consuming fresh food is more sustainable than consuming processed packaged foods, but processing and packaging can be of big value. It helps to improve access by ensuring a continuous supply throughout the year, and to extend product shelf life, thereby reducing food loss and waste.

A recent study based on data from the United Kingdom showed that "on a per 100 kcal basis, ultra-processed and processed foods had, in general, a lower nutritional quality, lower greenhouse gas emissions, and were cheaper than minimally processed foods, regardless of their total fat, salt and/or sugar content. The most nutritious, environmentally friendly, and affordable foods were generally lower in total fat, salt, and sugar, irrespective of processing level" [23]. The researchers pointed out that "food processing may play a relevant role in food system sustainability and ensuring food security, primarily when agriculture cannot provide fresh food. Moreover, processing can often convert non-edible raw materials into edible, safe and nutritious foods and aid in preserving and increasing the shelf-life stability of products.." [23].

Food processing thus plays an essential role in mitigating nutrition insecurity and feeding the world sustainably [24, 25]. It remains, however, important to continue to improve (ultra) processed foods in terms of nutritional composition and environmental impact.
Calls to avoid processed and ultra-processed foods, rejects the need for processing for food and nutritional security [12]. And yet, from a public health perspective there is a call to limit the consumption of all UPF, irrespective of their nutritional composition.

Some national Food Based Dietary Guidelines have already incorporated the recommendation to limit the consumption of UPF (as defined by NOVA).

But how realistic is this recommendation, given that in some countries more than 50% of daily calories are derived from UPF? Not everyone has access to a variety of whole foods. We should also remember that not everyone has the knowledge, food preparation skills, time, or money to prepare and consume only minimally processed foods daily [19].

Food Based Dietary Guidelines that recommend against the consumption of all UPF will most likely confuse the population and hence not achieve its purpose.

Conclusions

To conclude, ultra-processed foods, as defined by NOVA, are a very heterogeneous group of foods and beverages, which differ greatly in their nutritional composition. The application of the NOVA classification has many limitations and more mechanistic insights are needed to explain the observed associations between UPF consumption and adverse health outcomes. Though continuous efforts are needed to further improve the nutritional composition and sustainability of UPF, processed foods, including UPF, play an important role in ensuring food security. They deliver on microbiological safety, affordability, extended shelf life, nutrient fortification, and convenience.

Elimination of all UPF from the diet, irrespective of their nutritional quality would be similar to 'throwing the baby out with the bath water'#. It will not help fix the broken food system, but it may only worsen the existing disparities in food insecurity.

#To discard the good along with the bad

NOT JUST AN ORDINARY CHOCOLATE

AUTHOR

Ms Dolly Soni,

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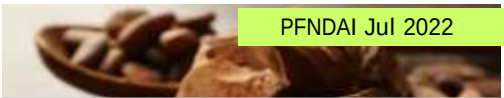
Chocolate is a most favourite and loved confectionery item worldwide. There is no need to describe the word chocolate, each and every individual knows what a chocolate is. People can ask the question that how is chocolate made and you will get a detailed procedure but try asking what is chocolate? For some it is an emotion; for some it is pleasure; and for some it is a mood booster. Chocolate is one of the world's favourite foods and the global chocolate industry is worth 100$ billion dollars.

The history of chocolate began in Mesoamerica. The Mexicans believed that cacao seeds were the gift of Quetzalcoatl, the god of wisdom. The seeds had so much value during that period that they were used as a form of currency (History of Chocolate). Chocolate there in Mesoamerica was the most loved food during that period and was mostly consumed by the Olmec (member of a prehistoric people inhabiting the coast of Veracruz and western Tabasco on the Gulf of Mexico (1200–400 BC). But Mayans were the first who started making chocolate a regular part of their lives. They used to make a drink called 'xocolatl' (xocolatl combines the Aztec words xoco, meaning "bitter," and atl, meaning "water")which was made by roasting the cacao seeds and grinding them into a paste and adding water, chillies etc. This drink was mostly consumed during the religious ceremonies.

According to CBI Ministry of Foreign Affairs the world's average chocolate consumption is estimated around 0.9 kilograms per capita per year. However, European countries show a higher than average consumption, the largest being Germany with an annual consumption of 11kg per capita followed by Switzerland with 9.7kg per capita.

What do you think, is chocolate made only for eating as a bar, candy, cakes, and syrup? Well, I don't think so. Craziest things have been done in the past by using chocolate. Salon du Chocolat is a yearly trade fair for the international chocolate industry, where chocolate fashion show is organised, and actual costumes are made with chocolates. As already mentioned above cacao beans were used as a currency in Mayan and Aztec civilizations. The famous 1960 movie 'Psycho' literally used chocolate syrup as blood in one of the scenes. Another movie called Willy Wonka and the Chocolate Factory used real chocolate syrup to make a chocolate river. Various chocolate statues are made which actually looks real. You won't believe an entire room was made up of chocolate at a shopping centre in Lithuania. This isn't it, a famous Argentine artist Leandro Erlich made a chocolate bed, wouldn't all chocolate lovers feel like sleeping on this bed? And those who love eating chocolate and are a fan of chess, there is actually a chess board made of chocolate, how wonderful it would be to eat the chessmen if one loss rather than keeping it aside. That is the reason why I mentioned that craziest things have done in the past using chocolate.

Well, there are some interesting facts as well, for instance, who doesn't love chocolate chip cookie? Do you know that it was accidentally invented, in another word it was a happy accident. It was invented back in 1930's when a lady was trying to prepare a batch of butter drop cookies but fortunately the chocolate chips in the batter stayed intact and the chocolate chip cookie was invented. Not only that, the lady sold this recipe to Nestle in exchange of a lifetime supply of chocolate. A great deal, right? Chocolates were so much in demand that during the revolutionary war soldiers were sometimes paid in chocolates. Ever wondered why Hershey's kisses got this name, the chocolate got this name because of the sound that the chocolate makes when coming out of the machine during the process and it sounded like a kiss.



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Even the chocolate Snickers got it name from the Mars family's beloved horse Snickers. Another interesting thing that we all are not aware of is that chocolate milk is actually an effective post workout recovery drink because of its carb ratio and high protein. According to BBC news, it was seen that 79% of the people were willing to share their personal details for chocolates. The chocolate bar which takes only few minutes for you to eat, takes a week time to become a single serving chocolate bar.In 1875 Daniel Peter from Switzerland created milk chocolate by mixing chocolate with condensed milk after eight trials (Reference).

Now that we know the history of chocolate, let's go deep down into it.

Whenever people hear the word chocolate, they get excited because it's not just a food product but also an emotion. It is a pleasure that people look for. It is even seen that it is a kind of comfort food; whenever people are stressed, sad or not feeling well, they crave for chocolate and after eating it they automatically feel perfectly alright. However, this is not completely proven.
Chocolate is a universal food product, can you imagine how a small piece of cocoa bean can help you make the yummiest desserts, syrup, candies, ice cream, coffee, milkshake, etc. There are several dishes made from chocolate, but this is not the end.

There are so many different types of chocolate available worldwide made from cacao pods. The list is long, but I will try to cover most of them and take you through the journey of chocolate available worldwide. So, sit back with your favourite chocolate and here we go...

Milk Chocolate-

Milk chocolate was first originated in Switzerland. When we think of milk chocolate, we assume that it is made of milk and sugar, etc, but it's actually made from dark chocolate which contains less cocoa and more of sugar and with some other milk product. Though it is made from dark chocolate its taste is sweeter than that and the surface is also soft. The very first variation of milk chocolate was made using donkey's milk. According to CitySpidey, Sir Hans, the founder of the British museum was once travelling in Jamaica where he noticed that by giving mixture of cocoa, spices and water the children's who were malnourished got revive. However, the first milk chocolate was commercially available in the market was after 200 years which was introduced by the Swiss Daniel Peter.

White Chocolate-

Though the name is white chocolate, it's actually not a chocolate. Strange right? White chocolate doesn't contain cocoa solids. White chocolate is made from sugar and cocoa butter, which is a main ingredient of chocolate, it might also contain vanilla flavour. There is no trace of the origin of white chocolate, but it is found that the first white chocolate was produced by Nestle in Switzerland. This chocolate is not so much loved by most of the people, however there are some health benefits, like it helps in improving blood circulation, cardiovascular health etc. (Chocolate Museum & Café)

Dark Chocolate-

Now who doesn't know dark chocolate, made from the cocoa solids and cocoa butter without using milk is just amazing, people who are above 55 years of age love dark chocolate not just because of its taste but also because they are more interested in healthier and nutritious items (Profound Journey). Moreover, it has several health benefits if consumed in small amount and also use to make plenty of desserts. In general, the taste of dark chocolate is bitter and less sweet, also it depends on the amount of cocoa powder. As it contains various nutrients like iron, minerals, magnesium etc it effects your health positively. The health benefits of dark chocolate are that it is a good source of antioxidants, may reduce cardiovascular disease risk, could improve brain function, nutritious, lowers bad cholesterol etc, (Healthline)

Semisweet chocolate-

The name indicates that this kind of chocolate does not contain more than 50% of sugar, however there is no exact amount of sugar required to call it semisweet (Hotel Chocolat). Most of the chocolate chips are semi sweet chocolates which is used mostly in baking. It is made from dark chocolate using less sugar and it is mostly used in baking rather than eating raw. If you don't like dark chocolate and even milk chocolate you can try eating semisweet chocolate; it has a happy medium taste.

Bittersweet chocolate-

People often use the word bittersweet and semisweet interchangeably. 70% of cocoa powder is used for making bittersweet chocolate as higher the cocoa content more bitter will be the taste. However, there is a difference between bittersweet and semisweet chocolate in terms of flavour, colour, cocoa percentage, etc. Bittersweet chocolate is slightly sweeter and does not contain milk. And guess what though this type of chocolate is not so popular, but people do celebrate National Bittersweet Chocolate Day every year on 10th January every year.

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Unsweetened chocolate- This chocolate is in its rawest form. The unsweetened chocolate does not contain any sugar in it, it is made up of two ingredients- cocoa mass and cocoa butter. Since there is no sugar the taste of the chocolate is bitter. This is not a very popular chocolate so you might rarely find it in your supermarket. This type of chocolate is mostly used for cooking and baking as even the small amount of it will give a rich cocoa taste. Recipes like cookies, cakes and brownies are made by using unsweetened chocolate.

Sweet German chocolate-This chocolate was created in1852 by Walter Baker & Company employee, Samuel German and because the name is German chocolate. His idea behind making this chocolate was that it would be convenient for the bakers as the sugar is already added in it. This chocolate is similar to the semisweet chocolate but has a bit of higher sugar content. German chocolate is also known as German's sweet chocolate, the story of this chocolate is that a misprint in a newspaper that included the recipe for the first German Chocolate Cake left out the "s" on the name, and this is why the chocolate is often known as "German."

Couverture chocolate-The name couverture is derived from French verb couvrir, which means "to cover."This type of chocolate is used to make truffles, pastries, and other similar confectionery items. The one thing that make couverture chocolate different from other is that it contains a high content of coco butter. The higher amount of coco butter helps couverture chocolate to melt faster and gives the final product a glossier finish. The couverture chocolate is a high quality that is why it is expensive as well. Couverture chocolate is perfect for tempering and dipping, you can use it to coat any candy, fruit like strawberries, etc if you want to a coating with a deep chocolate flavour, glossiness, etc.

Ruby chocolate- This type of chocolate is a new form of chocolate and the biggest innovation in 80 years. It is pink in colour and often also called as Millennial Chocolate. It is made of Ruby cocoa bean, which are found in Ecuador, Brazil and Ivory Coast and doesn't taste sweet, bitter, or milky, the taste is somewhat like fresh berries. This is something new to all of us. It was first discovered by a scientist at Swiss chocolate-making company Barry Callebaut in 2017. After which Nestle announced their limited-edition Ruby KitKat chocolate in 2018 in Japan and South Korea. How this ruby chocolate is manufactured is still a secret. In the very popular Netflix show 'The Great British Baking Show' a baker named Priya O'Shea used ruby chocolate as she dipped her barfi biscuits bars in the ruby chocolate. And astonishingly none of the judges had tasted or heard about this chocolate.

Ok so I am going to stop here since most of the people who are reading this might have already started craving above mentioned chocolate or might have finished the one while reading this article. The world of chocolate is very deep and very interesting, there might be a possibility that several different innovations will sooner or later be seen in chocolate industry.

COMING EVENTS

International Conference on Nutrition & Health
Aug 17, 2022
Venue - Vadodara , Gujarat, India
Website : http://asar.org.in/Conference/31921/ICNH/

AgriTech India 2022
Aug 26 - 28, 2022
Venue: BIEC Bengaluru
WhatsApp: +91-9811152139
Email : AgriTechIndia@gmail.com
Website : https://sites.google.com/mediatoday.in/agritechindia

International Conference on Nutrition & Health
Aug 30, 2022
Venue: New Delhi, New Delhi, India
W : http://asar.org.in/Conference/32160/ICNH/

26th World Congress on Nutrition & Food Sciences
Sept 29-30, 2022
Theme: Nutrition & Food Sciences: Fundamentals of a Healthy Life
W : https://www.nutritionalconference.com/

SIAL 2022
Oct 15 - 19, 2022
Paris France
Contact: https://www.sialparis.com/

MINDFUL SNACKING: A BEHAVIOURAL APPROACH TO FOCUS ON EATING WITH INTENTION AND ATTENTION

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Over the last decades, extensive increase in food availability and convenience has led to significant changes in eating behaviours. This contributed to the increase in the number of eating episodes in addition to the three daily main meals, known as "snacking" (Hess et al, 2016). Indians have always been avid snackers and are snacking more during the recent pandemic times. About 7 out of 10 Indians indulge in snacking at least two times a day.

The lines between meals and snacks are blurring, with consumers wanting more of small frequent meals and snacking occasions. They are never satisfied picking between taste and nutrition, affordability and quality both during snack and meal-time. Snacking episodes are influenced not only by physiological needs, but also by sensory, affective, and social factors. From the on-the-go "second breakfast" to a mindful moment of indulgence in the late afternoons and evening, consumers decide what and how they want to eat. Indians are now understanding more about the balance between indulgence and eating wholesome (State of Snacking, Mondelez India, 2020).

Snacking is often perceived to be associated with uncontrolled eating, which leads to unhealthy eating patterns. Recent scientific evidence clarifies how mindful eating can be applied to snacking to develop appropriate behavioural interventions. Mindful snacking helps the consumers to understand how recognising the external and internal cues may help them manage their snacking more effectively, providing the ultimate satisfactory eating experience and reduced repeat consumptions. Indians also are increasingly engaging in Mindful snacking with about 80% of them practising Mindful Snacking in one way or the other (State of Snacking, Mondelez, 2020).

What is Mindfulness: As defined by Dr. Jon Kabat-Zinn (1990), mindfulness is paying attention to the present moment on purpose while being non-judgmental on thoughts and feelings. Today, there is convincing evidence that mindfulness interventions can reduce anxiety, stress, or depression and improve attention and affective outcomes (Forman et al, 2016; Godfrey et al, 2015; Hong et al, 2014). Mindfulness trains individuals to notice distressing thoughts, emotions and sensations. Recent reviews support the evidence for mindfulness in the management of psychological well-being and that Mindfulness-based approaches appear most effective in addressing binge eating, emotional eating and eating in response to external cues and may prevent weight gain (Higgs et al, 2011; Katterman et al, 2014; Khoury et al, 2013; Kristeller and Halet, 1999).

Snacking is part of everyday life. Currently, while there are recommendations about what foods and beverages should be consumed, little guidance is given on why and how to eat and drink. Many recent studies (O'Reilly et al, 2014; Ruffault, 2017, across the globe have shown positive benefits of mindfulness while eating. Extending the concept of mindfulness to eating, Alberts (2012) opines that *Mindful Eating* is about awareness. Mindful eating is a behavioural approach towards eating with intention and attention which focuses not only on What you eat but also on Why and How you eat. It is being conscious of What you want to eat, why do you want to eat it and how does eating it make you feel.

Mindful snacking even at home

Pandemic has changed our usual routines, including purchasing and eating habits. Many have turned to snacking as a moment to relax, slow down and enjoy some peaceful reflection. Mindful Snacking is now even more relevant to make those snacking moments count.

Mindful Snacking is a Process

Dr. Albers suggests, when we eat mindfully, we slow down, pay attention to the food we are eating and savour every bite. It is an approach to help us get the most out of the snacking experience. It helps reduce the episodes of binge eating, guilt feeling and builds a positive connect with the food. Mindful eating principles might help people focus not only on what snacks to choose but also on why and how they snack, so they can be more in tune with eating as a conscious behaviour. Mindful Eating encourages to modulate eating habits in a long run. This approach encourages paying attention to eating and being present in the moment and it can be taught in simple, easy and practical steps.

Mindful eating consists of making conscious food choices, developing an awareness of physical and psychological hunger and satiety cues, and eating healthfully in response to those cues.

1. Physical or psychological cues can be in terms of hunger, social eating, breaking the monotony from a stressful work schedule or simply craving for a specific taste or texture. Increased awareness enables individuals to eat in response to these physical cues of hunger and satiety. Mindful eating has been shown to slow down consumption of a meal and allows both registration of feelings of fullness and greater control over-eating. By increasing awareness of these cues, individuals are then able to tolerate their distress and not allow these non-physical cues make them eat more. By learning to bring the experience fully into awareness many types of distress that would have provoked an automatic reaction can be tolerated (Camilleri et al, 2017). Thus, distress tolerance is increased, and automaticity reduced. As defusion-reduced reactivity enhances tolerance to nonphysical emotional cues, the cultivation of mindfulness becomes self-reinforcing

2. Being aware of the present moment when one is eating by cutting out all the surrounding distractions such as electronics, discussions etc. (so that we are aware when we are finishing the entire bucket of popcorn or a pack of chips!!).

3. Paying close attention to the effect of the food on the senses, and noting the physical and emotional sensations in response to eating (feel the aroma and the smoothness of the pastry that you would want to dig into, or feel the texture of the ice cream or nut bar you eat for an evening or late night snack) (Gravel et al, 2014). Paying attention to

portions and food attributes slows the pace of eating and a slower pace of eating reduces overall consumption, as individuals feel full on a smaller quantity of food (Cornil & Chandon, 2017).

There is no universal definition of mindful eating, but these principles are consistent in the literature. Mindful eating deals with important aspects of eating including rejection of labelling diets as "good" or "bad", encouragement to honour hunger and allow satisfaction with food intakes.

Easy Steps to Experience Mindful Snacking

Mindful Snacking can be practiced anywhere, anytime and by anyone in three simple steps. Asking the three simple yet important questions every time we snack will help us better manage our snacking episodes.

WHY do I want to Snack? Focus on your body's internal cues and why you want to snack: Is it for energy need or hunger satisfaction.Is it for a pause in the day.Is the situation prompting to snack like a social gathering. Check the hunger level before snacking. Also important is to be aware of emotional and external cues that can trigger snacking. Determining why one wants to snack can help you choose what to eat to meet your needs in the moment.

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WHAT do I want for a snack?

Identify what is the need/feel/ask by the body cues. Is it sweet or savoury, smooth or crunchy, creamy or bland, hot or cold that one wants to eat?

Portion your snack and pay attention to the snacking moment: Once decided what to eat, take controlled portions of the snack and reduce distractions to help enjoy the snacking experience. Slow pace of eating and checking the level of satisfaction is also important. Finish the first bite before taking the next one. Paying attention to each bite or sip will enhance the overall experience and hence lesser chances of repeat consumption .

HOW can I savour my snack?

Use all the senses to savour snack foods: Focus on the smells, tastes, textures, shapes, and colours of foods to enjoy the snacking experience.Using the senses to the fullest help maximum connection of the body with the snack food. Noticing the mouthfeel, savouring the tastes, will enhance the snacking experience and increases the satisfaction levels.

Quick check: 6 Key Mindful Snacking behaviour

1. Know what you want, your emotional and functional needs: learn to respond to the body signals of hunger, craving or formality actions.

2. Be present in the moment: remove all distractions and try to connect with the food.

3. Be aware of portion and moderate it: Choose smaller portions first, try to satisfy the body cue and relish it in wholesome manner.

4. Enjoy and appreciate your snack with all your senses: try using all your senses to connect with the food. Touching to know the texture, seeing to ease the visual connect, smelling to sense the aromas and flavours and tasting to get the taste bud satisfaction. This makes the whole body engaged with the food enhancing the chances of overall satisfaction.

5. Be aware of your hunger, fullness, and satisfaction level: Concentrate on the food and the amounts eaten. Eat slowly to cherish every bite engaging all the senses. Check if the first portion is sufficient or more is needed.

6. Reflect on your whole eating experience: Reinforcing the eating experience enhances the levels of satisfaction and leading to a guilt free controlled snacking episode.

Benefits of Snacking Mindfully

Emerging science tells us that eating mindfully leads to:

• A positive relationship with food by making deliberate and conscious food choices.

• More pleasure and satisfaction from food by savouring with all the senses

• Better management of food portions and less likely to overeat and lose control by paying attention to hunger and feeling of fullness

• Less stress over food choices less restriction more permission; Less guilt, More Control

• Remove thoughts about good vs bad food

• Focusing on the present moment can help you discover a more satisfying and positive snacking experience.

• Overall improvement in quality of life mentally and physically

In conclusion, Mindful Snacking is a sustainable and long-term behaviour modification approach. It is

✓ Relevant: More and more people use mindfulness for well-being and to balance their lifestyle

✓ Universal: Mindful eating can be practiced by anyone, anywhere, and by all ages

✓ Effective: Research clearly shows multiple benefits of mindful eating and the evidence continues to build.

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MILLETS - ROLE OF THE FOOD INDUSTRY IN ENHANCING THE USE AND REACH OF TRADITIONAL SUPERFOODS

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Millets, popularly known as nutri-cereals, are perfect examples of rediscovered treasures from the past. These grains are being discussed at different levels & platforms of importance by Government, Industry including Research & Academia, for their tremendous benefits right from environment sustainability to nutrition to health.

Traditionally, these superfoods were part of Indian households and commonly eaten as “bajreki roti” in northern winters, while ragi balls (“mudde”) has been something very common in southern cuisines. As we wake up to a world where there are rising concerns related to health & nutrition, people have started going back to indigenous recipes and look for closer to natural, seasonal & nutritional foods closer to nature. Millet based products are definitely one of the credible answers to these consumer demands and will provide for healthful food choices for the next generations.

Importance of millets

Millets are small seeded grasses and can be classified into major and minor millets. Major millets comprise of, sorghum, pearl millet (bajra) and finger millet (ragi) while foxtail, little, kodo, proso and barnyard millet fall into the category of minor millets. Millets are very high in their nutrition content. Millets are rich in B vitamins, calcium, iron, potassium, magnesium, zinc. These are also gluten-free and have low-GI (Glycaemic index).Being gluten free, makes the millets suitable for people with gluten intolerances. Millets are also source of non-starch polysaccharides (fibres) which act as prebiotics in the gut. ates, with protein content varying from 6 to 11 percent and fat varying from 1.5 to 5 percent.

Being the largest producer in the world, millets are of significant importance to India. India produces approximately 17.3 million tonnes of millets. The world production of millets is 86.3 million metric tonnes. The major millets grown are Pearl and Sorghum millet accounting for more than 90% of the world millet production. Up to 1965-70, millets contributed to nearly one fifth of the Indian food basket.

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However, wheat and rice have dominated thereafter with millet contribution decreasing to around 6%. The area under production for millets also decreased by more than half over the same time period.

Role of industry

Current Market of millets

Millets market is slowly catching up, owing to the growing consciousness of people to lead a healthier life by incorporating nutritious products in their daily meals. It's current market value is more than $9 billion and is expected to grow over$12 billion by 2025.Though millets are nutritionally superior, their consumption has decreased gradually due to the non- availability of palatable, value added and easy to consume shelf stable products. Development of processing technologies along with research and development and requisite investments in millet projects could perhaps change the scenario for improved production and utilization of millets. While enhancing millet usage & creating awareness about its benefits is a national level initiative, Industry's role in re-establishing this cereal will also be very critical.

Technology Advancements & new products

Post-harvesting, almost all commodities require some kind of processing. The key objective of processing is to shape them into edible formats along with ensuring their safety & quality. Traditionally millets have been processed & consumed after using simpler, at home methods like decortication (pounding followed by winnowing or sifting), malting, fermentation, roasting and flaking. Most of the traditional processing techniques were laborious, monotonous and manual. Apart from ragi and jowar, other types of millets have tough seed coats and need more processing.

Industry along with research & academia support have introduced variety of Millet product technologies. These include different formats such as Ready-to-Cook and Ready-to-Eat millet-based products. Branded Millet-based products across different food categories have been launched by various companies, as nutritious & gluten free choices. Ragi bites, quinoa porridge, multi-millet muesli etc., are available as choices for breakfast cereals. Various flours for cooking and baking purpose have been made ranging from ragi, jowar, kodo to multimillet. Snacking options such as murukku, chikki, baked chips, biscuits, muffins and cakes have also been made. Millets are also being incorporated into health mixes, beverages and ready to cook category with dosa-idli batters, poha, upma etc.

Industries have also started venturing into millet based weaning foods with some age-old nutritious recipes. Millet based edible spoons & edible films are also being explored and worked upon, to give the use of millets a new direction. These millet products along with being unique and healthy also contribute to the sustainability of environment. Food industry is also contributing by investing in long term projects which focus on standardizing processing & operational capabilities, that can be scaled up to industry level to produce nutritious, affordable & palatable value-added food products.

Creating Awareness

In order to create market for any product, it is very critical that the awareness and behaviour change about the consumption is created in a transparent & truthful manner. Industry has been taking initiatives and doing marketing campaigns, participating in conferences, seminars, publishing newspaper articles and contributing through other related social media activities to reconnect people with this smart grain. While the journey has begun, more initiatives can be taken up such as millet food festivals, millet cooking competitions & workshops, celebrity endorsement of millet products etc.

Research & collaborations

Industry is also promoting research on millets and millet-based products through collaborations and technology support with governmental Institutes. Collaboration with local technical institutes have the potential to influence, provide opportunities and create a platform for students and scientists to explore the potential benefits and technological advances in new product developments in millets. In collaboration with various organisations communication strategies can be developed to increase consumption of millets amongst consumers by reaching to them with information on millet's environmental and nutritional advantages, health benefits, methods of cooking and various ways to incorporate into daily diets. Millets themed seminars, workshops and conferences can be hosted in order to provide a platform for innovative products to be displayed and latest findings to be discussed.

Investing at Farm level

Food industry is also contributing to millets growth & acceptability by investing at agricultural level. Besides their nutritional properties, these grains are very affordable. Photo-insensitive & resilient to climate change, millets have a low carbon and water footprint, can withstand high temperatures and grow on poor soils with little or no external inputs.

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Millet grows easily in dry climate, have smaller harvesting period and require minimal water quantity. Industry can collaborate for training and capacity building at different levels across the value chain such as farming, farm-gate processing, value addition, commercialization, etc.

Yet another way of contributing at supply side, is the process of Biofortification. This is also one of the most sustainable, secure and economically viable measures to eradicate malnutrition in mass populations. Biofortification is the process of increasing the nutritional value of food crops that can lead to improved bioavailability of micronutrients. Cereal grains such as rice and wheat have been the forefront players in the talks of staple biofortification, with successful studies, interventions and innovations. Biofortification of millets has not been explored and highlighted as much, and needs to be focused upon among other cereal grains. Owing to the drought and pest resistance, tolerance to higher temperatures, short growing seasons and good productivity, millets qualify as an ideal crop to be explored in the field of biofortification with nutrients of concern like zinc, vitamin A etc.

The Government of India has also been fostering focus on the importance of biofortification of millets. On the occasion of 75th Anniversary of the Food & Agriculture Organization (FAO), and the United Nations, the Prime Minister of India has dedicated 3 biofortified varieties of finger millet (rich in calcium, iron & zinc) and small millet (rich in iron & zinc) crops to the nation.
Going further, more efforts and promising initiatives should be made to increase awareness on the importance of millets and it's biofortification. Millet grains that are biofortified with superior nutrition should be made available in multitudes to overcome the burdens of hidden hunger.

National level initiatives

While Industry is making efforts to bring back the lost glory of these grains, the importance of nutrient rich millets is also being recognized by the Government. The year 2018 was celebrated as the National year of Millets to boost production and consumption of millets. Millets have been included under POSHAN Abhiyan by Ministry of Women & Child Development. Government of India had proposed to United Nations for declaring 2023 as International Year of Millets (IYOM). The proposal of India was supported by 72 countries and United Nation's General Assembly (UNGA) declared 2023 as International Year of Millets on 5th March, 2021. Now, Government of India has decided to celebrate IYOM,2023 to make it a peoples' movement so that the Indian millets, recipes, value added products are exported worldwide.

Very recently Government has also approved the Production Linked Incentive Scheme for Food Processing Industry for Millet-based products (PLISMBP) for implementation during 2022-23 to 2026-27 with an outlay of 800 crores. The scheme is being implemented by Ministry of Food Processing Industries (MoFPI). The goal is to help increase usage of millets in food products and promote its value addition by supporting manufacture of selected millet-based products and their sale in domestic and export markets. Such schemes eventually help in development of global leaders in food manufacturing, increase opportunities for off-farm employment, strengthen select Indian food brands for greater visibility and acceptance abroad, ensure fair prices for farm products and higher farmer incomes in line with India's natural resource endowment, and promote Indian food brands abroad. All these initiatives are also being actively supported by food industry.

Challenges

While there are tremendous opportunities with millets, Industry along with diverse stakeholders such as Research, Academia, Farmers and Start-ups face certain challenges which need to be addressed for further scaling up and expanding markets. For starters, kneading dough and rolling rotis is much easier with wheat than with millet flour. This is because of presence of gluten in wheat which makes the rotis soft & easy to make with it. Some of the other challenges include low yields, lack of end-product specific cultivars and their seed chains, inefficient primary processing machinery, the low shelf life of products, limited R&D on diversification of value addition, lack of awareness in public, lack of capacity building channels and consumption programs etc.

Over the decades, millets, which have been called poor man's food, are now taking the centre stage as healthy & nutritious alternative to other food products. The time is ripe for people from different sectors to step in and take this mission forward. Strategic efforts from different sectors from governmental to institutes to industry will definitely lead to better technologies, processing machinery and prodigious research, to bring to the plates of Indians as well as inclusion in various international cuisines the taste of nutritious millets and make them part of daily diet for sustainable way of living.

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NO EASY WAY TO UNDERSTAND WHY GLOBAL PRACTICE IS NOT PRACTICED

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India is perhaps the last major world economy to recognize supplements as food under FSSA 2006. The category distinguished by its marketing form of tablets, capsules, pills, liquids, has presented unanticipated challenges to existing regulatory preparedness.

When markets are constantly supplied with novel foods, innovative forms, technologically modified products, country competencies are tested for their ability to regulate appropriately. Understanding a market is essential before regulating it, otherwise serious consequences of market withdrawals, product reformulation, labelling changes follow. All of these raise the cost of doing business. Poor regulatory quality is a part of the total cost of poor quality (CoPQ) a business endures. While productivity CoPQ is attributed to business inefficiencies, regulatory CoPQ is not; the entire sector bears this cost. Not getting a regulation right the first time is a forewarning that these costs will follow and multiply.

India did not have to develop its supplement regulation ab initio, in a void or from nothing. The Act (2006)1 pointedly directed the Authority to consider "international standards and practices, where international standards or practices exist or are in the process of being formulated".

Setting first-time regulations begin with understanding what Codex or other countries have done Fig (1a, b). Several such regulations preceded the Indian regulation on health supplements; these were/are available for reference. The first manifestation that global arrangements are not being followed is when a regulation's "short title" attempts to address a whole lot of diverse foods, Health Supplement, Nutraceuticals, Food for Special Dietary Uses, Foods for Special Medical purpose, Functional Foods, and Novel foods. Despite a mandate under the Act, global practice was not followed and is being ignored.

Fig. 1a Supplement key features aligned.

FSSA 2006: Health supplements

- To supplement the diet by increasing the total dietary intake formulated in form of powders, granules, tablets, capsules, liquids, jelly or other dosage forms; and
- Not to be represented for use as conventional foods

CAC/GL 55-2005: Vitamin & Mineral Food Supplements

- concentrated forms ... alone or in combination,
- marketed as capsules, tablets, powders, solutions etc., designed to be taken in measured small-unit quantities
- but are not in a conventional food form and
- whose purpose is to supplement the normal diet.

Fig. 1b Supplement key features aligned

EU: EC 46/2002: Food Supplements

- Foodstuff ... to supplement the normal diet and
- Marketed in dose forms .... capsules, pastilles, tablets, pills and other similar forms, sachets of powder, ampoules of liquids, drop dispensing bottles, and .... other similar forms..... to be taken in measured small unit quantities.

ASEAN: Health Supplements

- Any product intended to supplement the diet, and presented in dosage forms ... to be taken in small unit doses, such as capsules, tablets, powder, liquids etc., and
- Shall not include any sterile preparations (injectables, eye drops)

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US DHSEA 1994: Dietary Supplements

- Means a product intended to supplement the diet
- Marketed in dosage form incl. capsule, powder, soft gel, tablet, liquid
- Labeled as" Dietary Supplement"
- Not represented as conventional food

Global governance is present even when government is absent…

Innovative products enter the marketplace all the time. Governments cannot engage with every entry. There are many failures and only those that reach significant market presence and trade volumes, is when governments begin to engage. Meanwhile, governance is already in play, even though government is absent. The first successful market in whichever geography it happens is the one that attracts regulatory attention. And the first authoritative agency- e.g., DHSEA 1994: [see box] - to regulate it sets precedence. Other countries follow and soon there is an acceptable global system operating.

With Codex recognition, it becomes the global reference point for consumers, food producers, national food control agencies, and international food trade. Such a system provides the building blocks of definition, scope, structure, textual arrangements, and the approach criteria for safety assessments or conditions of use. When markets are settled in trade and formalized by international regulations (e.g., Codex, US, EU), deviating without compelling reasons should be viewed as arbitrary.

The earliest US Dietary Supplement Health Education Act (DSHEA, 1994)2 was followed by the EU Food Supplement Directive (46/2002)3, Codex (GL 55/2005)4 and sometime later by ASEAN countries. Collectively, they represent global practice. Even the Act 2006, recognized this precedence by providing its harmonized definition for health supplements (Fig.1a, b). An attentive reading of Section 22 along with adequate market knowledge would have made this clear. A comparison is available in Compliance Guidance (ReCHaN)5. Global frameworks build institutional capabilities and expertise, which in turn consolidate their independence in decision making. Instructing institutions like FSSAI to consider international practice, governments ensure that they do not willfully stray outside such frameworks.

Every game has its own rulebook because they are different ...

The importance of global practice is better understood when one looks at operating systems indifferent settings. This keeps out bias and lessons can be learned and imbibed. Every game, cricket or football, has its own rulebook because they are different. Just because they all have a ball in play, rules do not become interchangeable. So too, each food category, Health Supplement, FSDU and FSMP, whose definition and purpose of use is different (Fig. 2, 3), should have its own dedicated 'rulebook'. Secondly, in whichever country the game is played, rules are never different. And the name of the game evokes instant recognition (stakeholders or spectators). The same precepts work when food categories are distinguished by name and title. The Authority could have taken the cue, when it rightly unpacked the PL 2011 and set up three separate regulations: packaging, advertisement and claims, labelling and display.

Fig.2 Foods for Special Dietary Uses (FSDU)

Food for special dietary use is a category of foods, which are specially processed or formulated to satisfy particular dietary requirements which exist because of a particular physical or physiological condition and/or specific diseases and disorders and which are presented as such. The composition of these foodstuffs must differ significantly from the composition of ordinary foods of comparable nature, if such ordinary foods exist.

Directions 2022 (3c)[8] ; Codex Stan 146-1985 [6] ; FSSA, 2006 : 22(1)(a) [1]

Fig.3 Foods for Special Medical Purpose (FSMP)

Foods for special medical purposes are a category of foods for special dietary uses which are specially processed or formulated and presented for the dietary management of patients and may be used only under medical supervision. They are intended for the exclusive or partial feeding of patients with limited or impaired capacity to take, digest, absorb or metabolize ordinary foodstuffs or certain nutrients contained therein, or who have other special medically-determined nutrient requirements, whose dietary management cannot be achieved only by modification of the normal diet, by other foods for special dietary uses, or by a combination of the two.

Codex Stan: 180-1991[3]; Direction 2022 3(d)[8]

Undoing global practice increases cost of compliance

Good quality regulations protect public health and ensures smooth functioning of markets. Business and trade expect markets to be corrected when necessary, but never interrupted, needlessly. Good regulatory quality is judged by the number of interruptions made after its entry into force. Every change, requiring a market withdrawal (excluding recall u/s 26), product reformulation, label change or license modification is attributable to a cost of poor regulatory quality. When regulation (Nutra 2016) said "mere combinations of vitamins and minerals formulated in tablets, capsules, pills etc (TCP) "shall not be covered", products had to be withdrawn from the market.

In 2021, the same regulation was amended to " combinations of vitamins and minerals in dosage forms ... including single vitamin and mineral " shall be covered" by these regulations. As the language suggests domain issues between food and drug were being settled in the marketplace at a cost to business. Businesses incur these costs to stay in compliance. If they are expected to endure costs arising from arbitrary decisions, then the risk of doing business here is higher than in stable environments.

Dismantling global

practice, bit by bit, from time to time ...

When India adopted the Codex GSFA, under its own regulation FSS (FPS & FA) 7th Amendment 2016 (abbr. FA2016)9, it aligned itself to global practice of allocating food additives. Without thinking it through, several decisions and changes were made.

• GSFA's Table 3, was absorbed and titled GMP Table under the general standard on food additives FA2016.Instead of retaining its original placement under FA2016,it was duplicated as Schedule VE under Nutra 2016regulations. In doing so two GMP Tables existed in separate regulations for the past five years.

• Different Panels amend regulations as they deem fit under a ubiquitous expression "from time to time", which raises questions of whether regulations have a shelf-life stability. VE (Nutra 2016) was amended with new additions; so now VE (Nutra 2016) = GMP (FA2016)) + Additions.

• Alignment no longer exists between the two GMP tables. The Food Authority quite rightly intends to discard VE(Nutra 2016) and refer only to the GMP Table (FA2016) but cannot do so because they are different.

Unwarranted interference with structural arrangements is fraught with entanglements. One wonders where the "additions" will be lodged finally.

Promoting consistency between international and domestic food standards...

The Act requires the Authority to "promote consistency between international technical standards and domestic food standards while ensuring that the level of protection adopted in the country is not reduced".

Aligning a global standard with a local one by adoption, essentially transfers its framework including its building blocks. Codex GSFA adopted under Indian regulation FA2016, clearly states that "the food category system is a tool (a building block) for assigning food additive use in these regulations". Secondly, "the food category system applies to all foodstuffs".

In short, additives are allocated by category.

• Codex GSFA, allocates additives for use in food supplements, under food category 13.6. Nutra 2016with a few exceptions adopted Codex 13.6under its Schedule VA; there is alignment between the two.

• However, in a major reversal Directive 2022 [6(1)(e)(ii)] dismantles the principle of allocating additives on category to delivery forms. If the supplement is marketed in TCP forms, additives listed under 13.6 (Codex GSFA) or Schedule VA (Nutra 2016), are not permitted for use. They are only available "for products other than tablets, capsules, pills, liquid format'. It is not easy to understand why the Authority adopts a global structure only to dismantle it later.

Conclusion

A case is not being made to point out inconsistencies because the issue being raised is of reform, not repair. The Authority, though responsive to business concerns, is in a continual state of repair due to historical inconsistencies. Some of these are inherited, others indicate inadequacy in the rulemaking system.It is not that regulatory reviews and overhaul are not being done, they are. But continuous repair wears down all stakeholders, including the Authority. For businesses to stay in compliance instead of referring to a single document, they need to go through a stack of directions and orders following a notification. Another serious premonition is that repair work may become the institutional process.

There is a compelling case of overhauling of the regulatory process. New capabilities are required of all stakeholders, without which reform will be elusive. Direction 2022 raised hopes of aligning India with international practice. This did not happen. When the Act is keen to "promote consistency between international and domestic food standards", global practice should be practiced.

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COCONUT SUGAR: THE WONDER SUGAR

AUTHOR
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Coconut Sugars

Coconut, is a palm tree native to India amongst other palm trees like palmyra, date, areca nut, oil palm, foxtail, arenga palm. The sap of these palm are sugary with enormous nutritive value. The sap of coconut is rich in sugars, proteins, minerals, vitamins, amino acids, phenolics with significant antioxidant potential.

Collection Process

Traditional processes of collecting coconut sap are available. The inflorescence is tapped at its maturity stage and a swelling at the base of the inflorescence is considered as a stage of tapping. The sap is collected in earthenware pot, even though the inner wall of pot is coated with lime to prevent microbial activity the sap becomes fermented due to exposure to ambient conditions.

Cocosap Chiller, designed for collecting sap is a double jacketed box made up of HDPE. The sap collection occurs at low temperature and thus the sap collected using this method is quite different from the neera collected using traditional method (Hebbar et al. 2022). Sap collected using cocosap chiller is golden brown in colour and free from contaminants. It is loaded with health promoting nutrients like polyphenols, antioxidants, vitamins, amino acids and minerals. It is a perfect substrate for production of prime natural value added products viz., coconut sugar, jaggery, concentrate, syrup, sweets etc.

The quality of coconut sugar is superior if it is processed from hygienic and unfermented sap. However, with poor quality neera, it requires crystallization with additives like gluten, starch, addition of sugars from C4 plants, coconut or palm oil. To prevent sap from overboiling, coconut quarters are added, oil is added to prevent formation of foam. Starch also removes moisture which keeps the sugar dry and prevents it from agglutination.

Processing Methods for Sugar Preparation

Coconut Sugar production consists of six stages: selection of tree and mature inflorescence for tapping, collection of coconut sap, heat evaporation, conversion of sap syrup into coconut sap sugar, sieving and drying, weighing and packaging.

A mature unopened inflorescence is selected for tapping. The inflorescence is bended downwards for one week to allow the flow of the sap. A cut is made in the coconut by slicing 6mm to cut the tissues and allow the surge of the sap. The liquid sap is collected in a plastic vessel. The collected sugar liquid has around 12-18% sugar content.

Palm Sap being rich in sugar content loses moisture upon heating and sugar gets crystallized. If the sap is unfermented and in its original form contains 14% sugar, it easily gets crystallized upon heating without addition of any chemicals. The sap is boiled at 1150C for 3-4 hours to remove water leaving behind coconut syrup and scum is removed. Sap with pH>6.7, is ideal for making sugars. The syrup is then transferred to food grade wok and stirred continuously to avoid burning. Stirring allows air to enter the sticky syrup which causes gradual cooling and results in granulation. The syrup is stirred until sugar granules are formed.

Sugar is allowed to cool off and pressed to break lumps. It is then sieved to have a uniform particle size. The sugar is collected in a big container and stored overnight. The sugar is packed using commercially available polyethylene plastic bags. While heating the sap, sugar undergoes two types of reactions, namely Maillard Reaction and caramelisation. The volatile compounds of coconut sugar viz., pyrazines, furans, ketones, fatty acids, organic acids (Sohn & Ho, 1995) are responsible for the sweet, toasty and nutty aroma. The quality of neera, boiling temperature and heating time determine the volatile compounds of palm sap. Sugar yield is considerably good if the quality of neera is superior.

Health Benefits of Coconut Sugar

Eating high glycemic index foods has a great effect on raising blood glucose levels and plays a major role in development of diabetes.
Based on a study of 10 healthy adults, the glycemic index of coconut sugar was compared against a standard glucose solution. The following graph was plotted based on the clinical study conducted. (Department of Science and Technology, Food and Nutrition Research Institute)

GI of Coconut sugar was calculated based on the formula =

$$\frac{\text{*IAUC of test food}}{\text{IAUC of control food}} \times 100$$

*Incremental Area Under the Curve

GI of Coconut sugar was depicted as 35, making coconut sugar a Low Glycemic Index Food. This is much lower than table sugar, which is around 60. The inulin fibre in it slows absorption but researchers are interested in further studies before concluding this fact.
The report however concludes that a long-term intervention study is required to validate the results obtained in this study, as the sample size of the study was low to form a conclusion.

Nutritional Profile of Coconut Sugars

Coconut products are complex in a way that they contain many different nutrients. This exhibits a lot of beneficial effects on health. As these are minimally refined sugars, they may retain more nutrients. It is also rich in antioxidants including ascorbic acid, which reduces the severity of allergic reactions and fights infections. Studies suggest that xylose sugar in coconut controls postprandial (post-meal) spikes in glucose and insulin levels by acting as a sucrose inhibitor. (Bae et al. 2011) The principal carbohydrates in coconut sugar are sucrose (70 – 79%), glucose, and fructose (3-9% each).

Shift of consumers choice towards coconut sugar

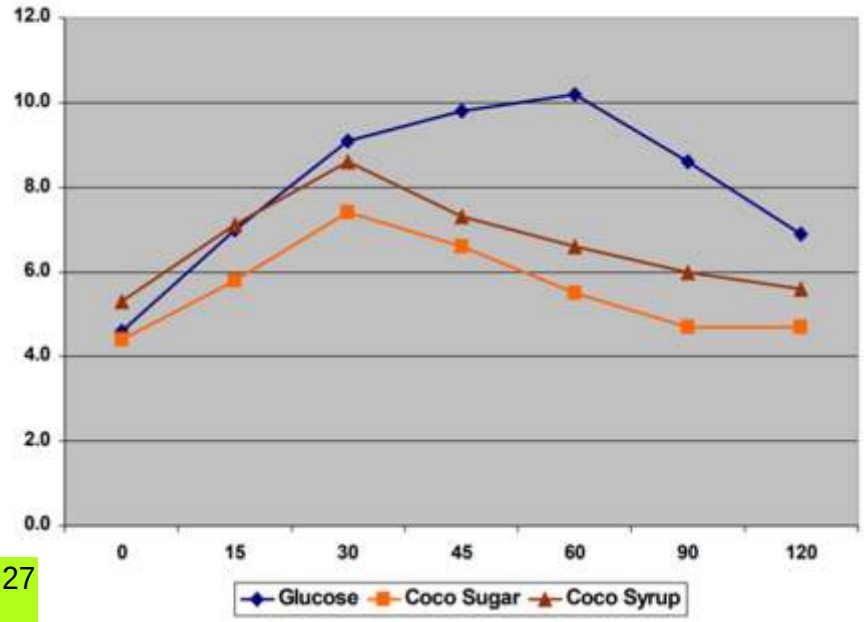
Coconut sugar has several health benefits and several biochemical qualities like vitamins and other nutritional composition of sap derived from inflorescence. Coconut sugar is a source of vitamin E, vitamin C, minerals such as potassium, iron, zinc and phosphorus and phytonutrients such as flavonoids, antioxidants, polyphenols and anthocyanidins. However, its high sugar content outweighs its potential benefits. Coconut sugar being high in calories, a person will have to ingest a ridiculous high amount of sugar to satisfy the needed absorption of these phytonutrients. Table sugar on the other hand, provides empty calories; hence consumers tend to choose a healthier natural sugar alternative. Coconut sap contains significant amount of inulin, which produces short chain fatty acids such as propionate, acetate and butyrate. Conversion of inulin into short chain fatty acids implies that coconut sugar is a promising functional food.

Sweetening power of coconut sugar is equivalent to sucrose and hence used as an alternative sweetener in bakery, confectionery items, etc.

Coconut sugar has low GI, which reduces the risk of chronic diseases such as Type 2 diabetes. However, it is important to understand that GI of a food varies greatly between individuals and even between different batches of coconut sugar.

Another form of sweetener in which coconut sugar could be consumed is coconut jaggery. Jaggery is an unrefined sweetener from coconut palm.

GLUCOSE RESPONSE OF COCO SUGAR/SYSRUP AGAINST A STANDARD GLUCOSE SOLUTION



REDA Food Ingredients

Explore The Possibilities

REDA Food Ingredients is one of the main pillars of REDA Group. With a growing number of industry experts, **we strive to ensure solutions that serve multiple markets in a personalized and efficient way.**

With a diverse portfolio of products, always backed by first-rate professionals, we pride ourselves on being the **partner of choice for food solutions across the region.**





Taste the Difference

With characteristic values such as loyalty and the guarantee of the best professionals and products, we ensure a range of flavors with a growing focus on health and sustainability, always meeting the needs of our partners.

Get to know some of our products because our taste is unique!

Sweeteners

PRODUCT	SUPPLIER
SteviaExtract	Daepyung
Erythritol	Cargill
Isomalt	Cargill
Maltitol	Cargill
Sucralose	Kanbo
Aspartame	Niutang
Polydextrose	Baolingbao

Taste Enhancer

PRODUCT	SUPPLIER
Yeast Extract	Biorigin

Other Products

PRODUCT	SUPPLIER
Dairy Starter Culture	Proquiga
Rennet, Nisin	Proquiga
Pullulan	Kangnaxin
Silicon Dioxide	Madhu Silica
Yeast Beta Glucan	Biorigin

Let's talk!

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Micronutrients in jaggery have antitoxic and anti-carcinogenic properties. It contains the natural sources of minerals and vitamins and is one of the most healthy sugars. It is prepared by the concentration of unfermented coconut sap. Sap contains around 80% water, which needs to be removed by evaporation. The sap is filtered using sand filters to remove the impurities and a small quantity of alum is added to induce precipitation of lime and magnesium producing jaggery with a finer colour profile. A thick mass is obtained after evaporation, which leads to crystallization on further heating and forms a solid mass on cooling. The final product is dark in colour, which is due to the caramelization of sugar.

Value added products

Many value added products from coconut sugar are prepared using Kalparasa (coconut sap) and/or coconut sugar.

Coconut Sugar is used to prepare many value added products such as chocolates, sweet soy sauce, food coating, ice cream and Bengali sweets.

Joint ventures between research institutions like ICAR- CPCRI and CAMPCO have been used to prepare dark chocolate using well fermented dried cocoa beans, and sugar with cocoa butter. Dark chocolate with coconut sugar was optimized as 45% cocoa liquor, 30% coconut sugar and 25% cocoa butter. It is rich in polyphenols, flavonoids, antioxidants and minerals. (Kalpa 2020)

ICAR-CPCRI standardized and commercialized a frozen delicacy exclusively made of coconut ingredients such as coconut milk, coconut sugar, tender coconut water and pulp. It is appropriate for those with lactose intolerance. It has low GI and high vitamins and mineral content.

Coconut chips made using osmotically dehydrated white kernels using Kalparasa as an osmotic medium instead of refined sugar which resulted in higher ash percent, phenolics and antioxidant activity as compared to chips prepared using sugar solution alone. Kalparasa contains more phenolics, antioxidants and other nutrients compared to sugar solution, these nutrients were retained in the chips during osmotic dehydration.

Kalpanutri Bar can be prepared by concentrating Kalparasa (80%) to a thick consistency of 75-80° Brix and incorporating protein rich ingredients such as roasted peanuts and green gram along with cocoa powder and further moulding into bar. The product is of low glycemic index and does not have any artificial ingredients.

Coconut Peda prepared using low fat coconut milk, after concentrating to form khoa, is mixed with coconut sugar and when the mix separates easily from the walls of khoa kettle, it is moulded into a peda. Comparison of coconut milk peda prepared using coconut sugar revealed acceptability of coconut sugar over white sugar.

Still there is a lack of awareness regarding the health benefits of coconut sugar. The production cost of coconut sugar is high compared to cane sugar, however people are willing to pay high price due to its low GI and nutritive value. Tapping of coconut in most states of India is under excise and requires license, lack of common facility centres and support for packaging and marketing are major limitations in the production and supply of coconut sugar in India as compared to other coconut growing areas. Adoption of automation practices like IOT, wireless communications, machine learning and artificial intelligence may substitute for human labour and reduce production cost.

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Kalpa39-2-Apr-Jun2020 (icar.gov.in)

Kalparasa based nutribars | Coconut peda | Kalparasa based coconut chips | Kalpa bean to bite chocolate

REGULATORY ROUND UP

By
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Dear Readers

Please find below FSSAI and Legal Metrology notifications, advisories, orders, etc since the last round up

Final Gazette notification on Vegan Foods. The regulation defines the conditions for a food to be claimed as a Vegan Food. The regulation also requires that the manufacturers must submit an application to the Authority with details in prescribed format (which would be notified later) for necessary approval. Vegan manufacturers need to focus on additives like Glycerol Mono Stearate which could be derived from plant and animal origin.

Final notification on the requirements of non-alcoholic counter part of alcoholic beverages. Non alcoholic beverages are those which contain less than 0.5% absolute alcohol. They shall comply with all the requirements except that of alcohol content.

Draft notification FSS (Health Supplements, Nutraceuticals) Regulation 2022 is published for comments. The draft lists the requirements of Health Supplements, Nutraceuticals, Food for Special Dietary Uses, Food for Special Medical Purpose and Pre and Probiotic Foods. Comments are sought. However, a regulation titled FSS (Nutra) Regulation, 2022 was operationalized this March. Had a quick glance at both the documents and appear they to be the same. It is not clear as to why a draft form of an operationalized regulation is published. What will be the status of products manufactured under the operationalized regulation if in contradiction with the final Gazette of the above notification.

Latest list of FSSAI approved testing laboratories with the NABL validity and the type of tests/analysis they are accredited for.

Amendments to FSS (Licensing and Registration) , 2011 issued in 2018 has been re-operationalized once again.

The re-operationalized amendment is with regard to Good Manufacturing Practices in different food sectors.

Draft standard notified on Fortified Rice Kernel in May 2022 has been operationalized and can be implemented. Here again, comments are sought on draft from stakeholders but at the same time operationalized. The comments received from the stakeholders could lead to changes in draft and what if the changes are in contradiction to the operationalized regulation.

Draft standards issued on Corn (Maize) oil in May 2022 has been operationalized.

During import, Food Authority permits certain India specific label declarations like Veg/Non Veg logo, License Number and Logo, Importer address on arrival of the shipment at the Indian port.

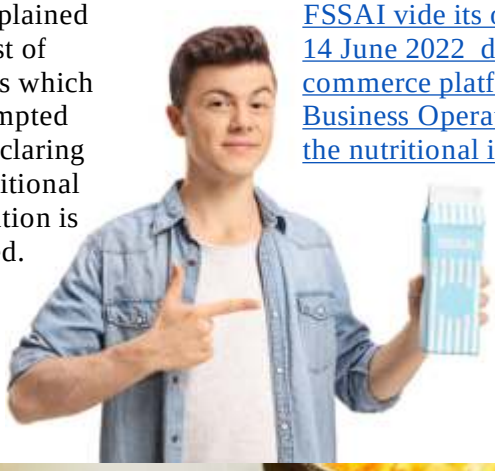
To this list, FSSAI adds now the declaration of percentage RDA per serve of Energy, Fat, Added Sugars, Fat, Saturated Fat, Transfat, Sodium, Use By/Expiry Date and Best Before Date.

An order on the import standard on Clove Stem with regard to volatile oil content has been published.

Labelling and Display Regulation 2020 has been amended and the salient points are as follows.

• " Minimally Processed" has been explained
• The list of products which are exempted from declaring the nutritional information is amended. Now the list includes single ingredient product.
• Products covered under Infant Nutrition regulation are exempted from declaring the percentage RDA per serve of macro nutrients
• The nutrients declared on the lable should be within a range of +/- 20 % of the declared value during the shelf life of the product
• In case of Non Retail containers, it is now mandatory to declare the storage instruction. Nutritional information is not mandatory even In the accompanying documents.

The mandatory declaration of Milk Logo on the labels of Milk and Milk products has been deferred to 31 December 2022.



FSSAI vide its order dated 14 June 2022 directs all E commerce platform Food Business Operators to get the nutritional information of the products displayed wherever applicable.

RESEARCH IN HEALTH & NUTRITION

Good news for coffee lovers: Daily coffee may benefit the heart

Drinking two to three cups a day was associated with greatest heart benefits

Science Daily March 24, 2022

"Because coffee can quicken heart rate, some people worry that drinking it could trigger or worsen certain heart issues. This is where general medical advice to stop drinking coffee may come from. But our data suggest that daily coffee intake shouldn't be discouraged, but rather included as a part of a healthy diet for people with and without heart disease," said Peter M. Kistler, MD, professor and head of arrhythmia research at the Alfred Hospital and Baker Heart Institute in Melbourne, Australia, and the study's senior author. "We found coffee drinking had either a neutral effect -- meaning that it did no harm -- or was associated with benefits to heart health."

Kistler and his team used data from the UK BioBank, a large-scale prospective database with health information from over half a million people who were followed for at least 10 years. Researchers looked at varying levels of coffee consumption ranging from up to a cup to more than six cups a day and the relationship with heart rhythm problems (arrhythmias); cardiovascular disease, including coronary artery disease, heart failure and stroke; and total and heart-related deaths among people both with and without cardiovascular disease. Patients were grouped by how much coffee they reported drinking each day: 0, <1, 1, 2-3, 4-5, >5 cups/day.

Coffee drinking was assessed from questionnaires completed upon entry into the registry. Overall, they either found no effect or, in many cases, significant reductions in cardiovascular risk after controlling for exercise, alcohol, smoking, diabetes and high blood pressure that could also play a role in heart health and longevity.

For the first study, having two to three cups of coffee a day was associated with the greatest benefit, translating to a 10%-15% lower risk of developing coronary heart disease, heart failure, a heart rhythm problem, or dying for any reason. The risk of stroke or heart-related death was lowest among people who drank one cup of coffee a day.

The second study, coffee intake at two to three cups a day was associated with lower odds of dying compared with having no coffee. Importantly, consuming any amount of coffee was not associated with a higher risk of heart rhythm problems, including atrial fibrillation (AFib) or atrial flutter, which Kistler said is often what clinicians are concerned about.

Although two to three cups of coffee a day seemed to be the most favourable overall, Kistler said that people shouldn't increase their coffee intake, particularly if it makes them feel anxious or uncomfortable.

So how might coffee beans benefit the heart? People often equate coffee with caffeine, but coffee beans actually have over 100 biologically active compounds. These substances can help reduce oxidative stress and inflammation, improve insulin sensitivity, boost metabolism, inhibit the gut's absorption of fat and block receptors known to be involved with abnormal heart rhythms, Kistler said.

In a third study, researchers looked at whether there were any differences in the relationship between coffee and cardiovascular disease depending on whether someone drank instant or ground coffee or caffeinated or decaf. They found, once again, two to three cups a day to be associated with the lowest risk of arrhythmias, blockages in the heart's arteries, stroke or heart failure regardless of whether they had ground or instant coffee. Lower rates of death were seen across all coffee types. Decaf coffee did not have favourable effects against incident arrhythmia but did reduce cardiovascular disease, with the exception of heart failure.

Kistler said the findings suggest caffeinated coffee is preferable across the board, and there are no cardiovascular benefits to choosing decaf over caffeinated coffees.

There are several important limitations to these studies. Researchers were unable to control for dietary factors that may play a role in cardiovascular disease, nor were they able to adjust for any creamers, milk or sugar consumed. Participants were predominantly white. This should be considered when interpreting the study findings, though Kistler noted that research suggests people's dietary habits don't change much in adulthood or over time. Kistler said the results should be validated in randomized trials.

Appetite genes control how children grow

Science Daily March 24, 2022

Have you ever wondered why it is so different how quickly and how much small babies put on weight during the first years of life?

Now researchers at the University of Bergen in Norway have found that this is largely controlled by our genes. The findings provide insight into the mechanisms that control appetite and energy metabolism early in life and can help us find better treatment for obesity in adolescence and adulthood.

After birth, we grow fast. The length increases by about 50% and the weight doubles during infancy. Then the growth slows down and goes into a stable phase in childhood until a growth spurt in puberty. But what drives this dynamic growth?

Researchers at the Center for Diabetes Research, University of Bergen, Norway have now found the explanation. They studied the genes of 30,000 children and their parents from the Norwegian Mother, Father and Child Cohort of Norway. Many millions of genetic variants from each individual was examined and linked to growth data from a series of measurements of height and weight from birth to eight years of age.

The findings have attracted a great deal of attention.
"It turned out that genes linked to extreme obesity, appetite and the body's energy consumption are responsible for the growth regulation," Professor Pål R. Njølstad says.

"This is dynamic in that specific genes have an effect only on some of the different phases of growth. We believe that this is probably one of the reasons why parents have always noted that some children are born with a naturally higher appetite than others and have significantly more fat mass in infancy. It seems that these dynamic effects are especially important in the first years of life, and that they do not increase the risk of later obesity," Njølstad says.

Some of the genes are linked to drugs that are being tested to slow weight gain in extreme obesity. The findings may thus be important for the treatment of normal obesity.

Origins of diabetes may be different in men and women

Development of the disease depends on location and features of fat tissue in each sex

Science Daily March 23, 2022

Over the past four decades, global cases of Type 2 diabetes mellitus have skyrocketed. According to the World Health Organization, the number of people estimated to have the disease jumped from 108 million in 1980 to 422 million in 2014, with the fastest growth observed in low- and middle-income countries.

Although the disease is common, there is still much research left to be done to fully understand it. For instance, while diabetes is linked to obesity, researchers still do not know the exact reasons why obesity causes diabetes. In a new paper published in the journal Obesity Reviews, Concordia researchers Kerri Delaney and Sylvia Santosa look at how fat tissue from different parts of the body may lead to diabetes onset in men and women. They reviewed almost 200 hundred scientific papers looking for a deeper understanding of how fat operates at the surface and tissue level, and the mechanisms by which that tissue contributes to diabetes onset.

"There are many different theories about how diabetes develops, and the one that we explore posits that different regions of fat tissue contributes to disease risk differently," says Kerri Delaney,

a PhD candidate at Concordia's PERFORM Centre and the paper's lead author. "So the big question is, how do the different depots uniquely contribute to its development, and is this contribution different in men and women?"

From surface to cell level

Men and women store fat in different places. Diabetes, like many other diseases, is closely associated with abdominal fat. Women tend to store that fat just under the skin. This is known as subcutaneous fat. In men, abdominal fat is stored around the organs. This is visceral fat. Fat appears to exhibit different features in men and women. They grow differently, are dispersed differently and interact with the inflammatory and immune system differently. For example, in men fat tissue expands because the fat cells grow in size; in women, fat cells multiply and increase in number. This changes with the loss of the protective hormone estrogen that disappears with menopause and may explain why men are more susceptible to diabetes earlier in life than women.

Working from the hypothesis that diabetes risk is driven by expansions of visceral fat in men and of subcutaneous fat in women, the researchers then looked through the papers to see what was happening in the cell-level microenvironments. Though more research is needed, there were overall differences observed in the immune cell, hormone, and cell signalling level in men and women that seem to support different origins in diabetes between the sexes.

Delaney and Santosa hope that by identifying how diabetes risks are different in men and women, clinical approaches to treatment of the disease can be better defined between the sexes. "Currently, the treatment of diabetes is similar for men and women," says Santosa, an associate professor in the department of Health, Kinesiology and Applied Physiology. "If we understood the differences between them better, we could consider these mechanisms in recommending treatments to men and women based on how diabetes medications work."

Upping whole grain intake could slash healthcare costs by billions

21 Mar 2022
Nutrition Insight

A small increase in whole grain consumption could save billions of dollars across the globe by preventing heart disease, diabetes and bowel cancer.

The findings are part of a study bringing together research from Australia, the US and Finland. “Increasing whole grain intake by as little as a slice of bread or a bowl of breakfast cereal daily has the potential to save billions of dollars annually,” the researchers note. “Unlike many other strategies to reduce diet-related disease, the swap to whole grain is unlikely to increase costs at the checkout for consumers,” says Dr. Sara Grafenauer, contributing researcher to the paper.

The research was a collaboration between the Grains & Legumes Nutrition Council (GLNC), the University of Eastern Finland and the Bell Institute of Health and Nutrition in the US. It compared published figures for the potential healthcare cost savings in their three respective countries. To reap the rewards, whole grains must be prioritized in dietary guidelines worldwide and acknowledged in front-of-pack labeling schemes such as the Health Star Rating, the GLNC notes.

Counting the impact

In Australia, the annual healthcare costs savings were found to range from AU$37.2 million (US$27.5 million) for bowel cancer and AU$405.1 million (US$299.1 million) for total cancer. Where cardiovascular disease is concerned, the savings to the healthcare system amounted to AU$717.4 million (US$529.6 million) and AU$750.7 million (US$554.1 million) for diabetes prevention.

“Despite differences in the population size and the medical management of these key diseases in the US, Australia and Finland, the outcome held true that for even very small increases in whole grain consumption, we can reduce disease, and this results in significant savings,” Grafenauer notes. In the US, cost savings were modelled at US$21.9 billion for cardiovascular disease and US$14 billion for coronary heart disease prevention with increasing whole grain intake.

Researchers from the University in Eastern Finland last year revealed that one serving of whole grain foods could reduce Type 2 diabetes cases, which could save between €300 million (US$349 million) and almost €1 billion (US$1.2 billion) over the next ten years in treatment cost savings.

Accumulating research

In 2021, GLNC research revealed that if all Australian adults consumed three servings of whole grain foods daily, the Australian economy could save AU$1.47 billion (US$1.1 billion) in combined direct and indirect healthcare and lost productivity costs for cardiovascular disease and Type 2 diabetes.

In a bid to attract consumers to whole grain food options, the GLNC spearheaded a certified trademarked whole grain logo on items containing between 25% to 100% whole grain ingredients. Since the COVID-19 pandemic, one in five US consumers say they are eating more whole grains, and half have increased their intake in the last five years, according to a survey carried out by Oldways Whole Grains Council.

By Andria Kades

Personalized diets crucial to eating disorder recovery in athletes

15 Mar 2022 Nutrition Insight

Tailoring the diet plan of an athlete in recovery for an eating disorder (ED) is essential to supporting their nutritional rehabilitation. However, the role of supplements is little understood and comes with challenges to treatment, according to a US review. Rachael Flatt, former Olympic figure skater and head author of the paper, speaks to NutritionInsight on the role of personalized nutrition for recovery.

"Nutritional rehabilitation is unique to each person depending on their dietary, nutritional and caloric needs as well as the type and severity of the ED," Flatt explains. "For elite-level athletes who keep training while recovering from an ED, they may have higher caloric needs than a layperson simply because of the calorie expenditures that occur during intense and hours-long training sessions." She notes, however, that training during treatment is not always recommended depending on the severity of symptoms.

Personalized nutritional rehabilitation

Flatt's article notes the main evidence-based ED treatment in adults is cognitive behavioural therapy, with a key focus on establishing regular meal patterns. Flatt says this generally consists of three meals and at least two snacks a day, and that these plans must be personalized to each individual patient.

"This is why dieticians are such a key part of the treatment team. For example, our teams try to tailor each patient's meal plans based on their age, current BMI, labs, growth curves, weight trajectories and caloric and nutrient needs, among other variables, on top of their personal preferences and re-introducing challenging foods."

She shares that patients often have "off-limits" foods or binge foods, which are generally "unhealthy" foods like sweets. During recovery, patients are gradually supported in creating a more balanced approach to eating, to change their relationship to food altogether.

"One other important note is that for individuals with a low BMI who are receiving inpatient or residential care, they are typically on high-calorie meal plans that are carefully tailored and monitored based on their medical history and current panels to prevent refeeding syndrome."

Elite athletes have to be careful with supplements

Supplements can be used to help with the weight regain process in high levels of care, Flatt continues. This is often the case when a patient is having difficulty eating all their planned meals and snacks. But not much research exists on the topic, she notes. "I poked around the research and couldn't find much about overlaps between those two groups, so it's definitely an opportunity for future research." However, Flatt flags there is also the potential for abuse.

"This is something that we see often when patients start using supplements and diet pills to replace meals altogether in service of losing weight." According to Flatt, supplements pose a particular challenge to the diets of elite athletes.

While regulated supplements are not inherently harmful when taken according to recommended guidelines and under the care of a professional, athletes have to make sure whatever they take are cleared by whichever association they are part of, or avoid taking them altogether.

Recovery entails long-term maintenance work to retain key skills learned during treatment, Flatt adds. "Specific to sports, having a supportive environment and team that prioritizes athletes' physical and mental health over results is incredibly helpful to maintain treatment gains and balanced eating habits throughout recovery."

By Olivia Nelson

Plant-based diet may help delay cognitive deterioration among Black adults, study finds

07 Mar 2022 Nutrition Insight

Consuming a plant-based diet can significantly delay the pace of cognitive deterioration among older Black adults in the US. The same dietary pattern had less impact on cognitive impairment in older white adults.

This is the conclusion of an American Heart Association preliminary study that unveiled overall cognitive deterioration reduced by 28.4% among Black people who had the healthiest diets. According to the American Heart Association, healthy dietary adjustments have been shown to prevent cognitive decline in previous studies. However, there has been little research on the impact on Black adults, who have about double the risk of dementia as white adults.

"It's not that the diet doesn't work on white people. It just had a greater impact on African Americans," says Xiaoran Liu, lead researcher and assistant professor at Rush University Medical Center's Institute for Healthy Aging in Chicago. "Science is coming out to support the importance of a healthy plant-based diet," adds Maya Vadiveloo, assistant professor of nutrition at the University of Rhode Island. "It doesn't mean we can't have any animal-sourced foods or low-fat dairy, but people should focus on eating more legumes and whole grains. These plant-based foods are essential for our overall health."

Analyzing different dietary patterns

During the decade-long study, researchers examined the nutrition and cognitive function of 4,753 Black and white adults with an average age of 74. The researchers used tests to assess overall cognition, perceptual speed and episodic memory, which is the capacity to recall personal experiences associated with a specific time and location. The data revealed that the healthiest plant-based diet for Black adults delayed the loss in all three areas more than for white adults. The participants were divided into three groups based on their scores from self-reported dietary patterns. The first group consisted of a healthy plant-based diet rich in fruits, vegetables, nuts, whole grains, legumes, vegetable oils, tea and coffee. The second group were the participants who ate a less-healthy plant-based diet rich in fruit juices, refined grains, potatoes, sugar-sweetened beverages and sweets. The third group ate a diet rich in animal fats, dairy, eggs, meats, fish or seafood.

Plant-based diets and cognitive decline

Compared to their Black contemporaries who ate a less healthy plant-based diet, overall cognitive deterioration reduced by 28.4% among Black people in the highest bracket of the healthiest eating group. Overall cognitive deterioration was not slowed in either Black or white adults in the other two dietary categories.

For Black people, the effect of diet on perceptual speed and episodic memory was considerably more striking. Those who ate the healthiest plant-based diet had a 49.3% slower reduction in perceptual speed and a 44.2% slower decline in episodic memory than those who ate a more animal-based diet.

By Nicole Kerr

Vitamin D supplements may be cost-effective sleep aid, researcher proposes

04 Mar 2022 Nutrition Insight

Vitamin D supplementation (VDS) holds promise as a way to improve sleep quality, according to a systematic review. However, the author warns that VDS' effect on sleep quantity and disorders needs to be further investigated.

"The positive effects of VDS could be considered in clinical practice, especially in the context of beneficial skeletal and pleiotropic extra-skeletal effects of vitamin D, as well as the relatively limited cost of VDS," says Myriam Abboud of Zayed University, UAE.

The paper, now published in Nutrients, takes into account 19 studies. There were four pre-post studies, which all showed a "significant" improvement in sleep quality with VDS.
Similarly, the results of the meta-analysis revealed a statistically significant decrease in the Pittsburgh Sleep Quality Index with VDS compared with placebo, with moderate certainty.
However, the results regarding the effect of VDS on sleep-related impairment, difficulty and disorders, as well as sleepiness and restless legs syndrome, were not unanimous.

How does it work?

Although the exact physiological mechanisms between vitamin D and sleep regulation have not yet been fully uncovered, several direct and indirect mechanisms have been suggested. One potential mechanism is the extensive presence of vitamin D receptors in many parts of the brain, specifically areas that affect sleep, the paper details. Another theory involves the expression enzymes involved in vitamin D activation and degradation in areas in the brain known to be involved in sleep regulation.

The paper also proposes that there is a link stemming from vitamin D being regulated by sunlight exposure, which in turn, affects the circadian rhythm. "Furthermore, the production of melatonin is regulated by vitamin D. Thus, impaired vitamin D levels could decrease melatonin levels, potentially leading to sleep disorders," writes Abboud. Finally, vitamin D plays a role in down regulating inflammatory markers that are involved in sleep regulation. When people are deficient, such inflammatory markers would be raised, negatively affecting sleep.

Edited by Katherine Durrell

Intake of oral nutritional supplement increases bodyweight, BMI in elderly at risk of under-nutrition – Meiji study

By Tingmin Koe
01-Mar-2022-
Food Navigator Asia

The supplementation of an oral nutritional supplement has shown to increase body weight and body mass index in elderly at risk of under-nutrition.

This is according to a 12-week clinical study conducted by Meiji and Kamakura Rehabilitation St. Therese Hospital in Japan. Findings of the study titled "The effects of oral nutritional supplements on nutritional status and body composition in elderly persons" were published in Japanese in The Journal of the Japan Home Nutrition Management Society.

The purpose of this study was to evaluate the effects of oral nutritional supplements (ONS) on nutritional status and body composition in elderly persons. Eighteen elderly aged 65 and above and were at risk of malnutrition were assigned to the intervention or the control group. They were required to consume the ONS – a RTD product known as Meiji Mei Balance – twice per day. The125ml product contains 7.5g of proteins, 2.5g of dietary fibre, and 200kcal of calories.

The study endpoints included the changes in body weight, body mass index (BMI), body composition, and grip strength.

The participants were also required to take part in a mini nutritional assessment survey. Results showed that the effects of the ONS on body weight and BMI were more pronounced in older elderly. In elderly aged 65 and above, there was an increase in body weight by two kg by week 12 of the study, while there was only less than 0.5kg increase seen in the placebo group. As for BMI, the intervention group had an increase of 0.8kg/m but the increase was minimal for the placebo group at less than 0.2kg/m .

A stratified analysis further showed that elderly aged 75 and above who were on the ONS supplementation had a significantly higher increase in body weight, BMI, muscle mass, and skeletal muscle mass as compared to the control group. For instance, the body weight of the intervention group had increased by almost 1.5kg, while that of the placebo had decreased by about 0.2kg at the end of the study.

Meiji said that the effects of ONS on improving BMI and skeletal muscle mass were increasingly distinct with age, hence suggesting that the intake of ONS could help to improve malnutrition in elderly persons. On the other hand, the company said earlier that it planned to increase the sales of its nutrition products and those the benefit elderly health by 10 per cent or more between year 2021 and 2024.

Prebiotic immunity: New Zealand to recruit 300 babies for study on gut microbiota diversity

By Tingmin Koe 28-Feb-2022- Food Navigator Asia

A trial involving 300 babies in Auckland will find out if a prebiotic food could alter their gut microbiota diversity for better immune health.

The prebiotic used in the trial is from 1) kūmara (sweet potato)powder – which is rich in dietary fibre and resistant starch and 2)resistant starch from green bananas.

The trial is funded by New Zealand's High-Value Nutrition National Science Challenge (NZHVN). Lead researcher, Professor Clare Wall from the University of Auckland's Faculty of Medical and Health Sciences, said that the complementary feeding period was a great opportunity to introduce foods that optimise a baby's health. "Babies are born with hardly any gut bacteria. Their gut microbiome develops during their first months of life, influenced by their mode of birth delivery, milk feeding and environment.

"Few studies have looked at how the introduction of solids along with continued milk feeding impacts this development, and the complementary feeding period is a great opportunity to introduce foods that optimise a baby's health," said Prof Wall. She told NutraIngredients-Asia that one of the primary outcomes of the trial, was the prevalence of respiratory tract infections at four months post randomisation.

Prebiotics are a special type of dietary fibre that act as a fertiliser for healthy gut bacteria and are present in high-fibre foods such as vegetables, fruit, and whole grains. There are supplements combining both prebiotics and probiotics – known as synbiotics. In this trial however, the intention is to take a 'food first' approach and to find out gut microbiota changes not via the addition of probiotics.

Dubbed the SUN (Seeding throUgh feediNg: nourishing the infant) study, the trial also involves researchers from Ag Research, Plant & Food, Malaghan Institute, Riddet Institute (Massey University), and the University of Otago. The babies will be randomised into three groups from around six months of age. The three groups will receive the following:

1. Intervention group 1: A standard kūmara powder
2. Intervention group 2: A kūmara powder with added resistant starch (prebiotic) from green bananas,
3. Control group: A standard diet with no additional kūmara powder

Prebiotic from green banana is added to one of the intervention groups to increase the resistant starch content. By doing so, the researchers hope to identify the effects of resistant starch above and beyond what is already available in kumara. Kūmara is chosen for use in the study as it is an appropriate and common complementary food introduced to babies. If randomised to have the kūmara powder, parents will be asked to mix the powder into a paste with water and gradually increase their baby's intake to about one teaspoon of powder a day. The height and weight, sleep patterns, food intake details, blood, poo and breast milk (if the babies are on breastfeeding) samples will be collected from the babies as part of the study. Results are expected to be out in late 2023.

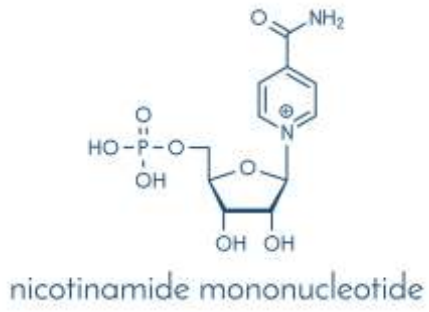
"If we do find evidence that the kūmara-based prebiotic helps healthy bacteria proliferate in the gut, protecting babies from infection, this clearly has implications for parents, public health and food producers. It could offer away of enhancing the health of babies on a wide scale simply through food ," said Prof Wall.

This study follows a pilot feasibility study involving 40 babies, which Prof Wall said had shown significant shift in microbiota diversity related to different food components, although the study was not powered to measure clinical outcomes.

NMN lessens drowsiness, improves lower limb function in older adults: Japan RCT

By Maria Fortune 02-Mar-2022-
NutrIngredients
Asia

Nicotinamide mononucleotide (NMN) intake improves lower limb function and reduces drowsiness in adults agreed 65 and above, according to an RCT funded by Mitsubishi Corporation Life Sciences Ltd.



nicotinamide mononucleotide

The 12-week double-blind, placebo-controlled trial, conducted by researchers from the University of Tsukuba and Japan Society for the Promotion of Sciences, involved108 adults aged 65 and older who were independently mobile, did not suffer from dementia, and had no need for long-term care service.

To compare the effect of NMN intake at different times, they were each supplemented with 250 mg of NMN daily, either between waking up and noon, or between 6 PM and bedtime. Based on this, they were divided into four groups: two taking NMN either in the morning or evening, and two taking a placebo in the same periods. A questionnaire was used to determine participants' level of fatigue, while their limb function was evaluated with a series of physical performance tests.

The researchers found that NMN intake in the afternoon was the most effective in enhancing lower limb function, and effective in reducing drowsiness in those experiencing fatigue. They stated that this study was "the first to demonstrate the effects of the time-dependent intake of NMN on older adults", and lined up with previous observations that fatigue typically "occurs more frequently in the afternoon when most daily activities end in a day".

The participants who ingested NMN in the evening "showed significant improvement in sleep quality with a significant reduction in drowsiness, which may further improve physical performance", though the researchers noted that it was "necessary to further verify the effect of NMN intake on sleep, as evaluated by objective measures in the future".

At the same time, the researchers acknowledged the study's limitations — namely, a daily diet containing NMN was not controlled, and a survey on daily nutrient intake was not conducted. As such, the study could not determine if the participants' daily diet affected the effectiveness of their NMN intake. However, the amount of NMN in daily food such as fruits, vegetables, meat and seafood is "less than 1.8 mg per 100 g of food consumed".

A placebo effect on drowsiness and sleep disturbance scores was also observed in the study. The research paper stated that though both researchers and participants were kept double blind until the end of the experiment, "participants might have perceived the placebo as NMN, which could be the reason for the observed placebo effects and the non-significant interaction between the four groups".

The researchers concluded that in future studies, it would be "necessary to conduct a survey on nutrient intake in daily life and additional analyses to examine the double effect". They also mentioned NMN supplements to combat ageing had been launched on the market of late, but still maintained the opinion that "the effectiveness and safety of NMN should be clarified through further human clinical studies".

& FOOD SCIENCE INDUSTRY NEWS

Scientists develop coated probiotics that could be effectively delivered into the human gut

Science Daily March 25, 2022

Scientists at Nanyang Technological University, Singapore (NTU Singapore) have developed probiotics with a unique edible coating that ensures the beneficial bacteria successfully reach the intestine once they are ingested.

Probiotics are defined by the World Health Organisation as live microorganisms, which when administered in adequate amounts, confer a health benefit on the host. They have been shown to help prevent infections of the urinary and digestive tracts, and to maintain a healthy gut flora, which is linked to reducing the risk of obesity and promoting overall well-being.

However, several modes of delivering probiotics, including supplements and dairy products, have not been effective in ensuring they survive conditions in the human stomach to be delivered in quantities that would be sufficient to benefit one's health. Many studies show that the bulk of probiotics delivered in commercial supplements and yogurts die off within the first 30 minutes of exposure to the acidic environment of the stomach.

In the NTU-study, the probiotics, gut-friendly Lacticaseibacillus bacteria, are spray-coated with alginate, a carbohydrate derived from brown algae, protecting them from the harsh acidic conditions in the stomach.

Through experiments simulating a journey along the human digestive tract, only the probiotics with the NTU-developed coating survived. The bacteria are released only when they reach the small intestine, as the coating breaks down by reacting with phosphate ions, which are present in higher amounts in the small intestine.

The NTU probiotics coating technology is customisable and can be used to create powder-like coated probiotics, which are about 10μm (0.0004 inch) in diameter. The method uses protective sugars alongside alginate, so that the bacteria are not killed during the manufacturing process. In addition, the use of calcium ions allows the coating from degrading in liquids, or in a moist environment, giving it a longer shelf-life.

The method also utilises the technique of spray-drying to produce the coated probiotics. Spray-drying is a cost-effective and high-throughput method of production, which is already commonly used by the food and pharmaceutical industries. It would allow the NTU-developed coated probiotics to be produced affordably and in large quantities.

To make the coated probiotics, the scientists cultivated Lacticaseibacillus bacteria, before washing them in a salt solution. After which, the bacteria were packed together in a concentration that reflected the United Nations recommended dosage of probiotics. Finally, the probiotics were spray-dried and coated in alginate. The whole process takes about an hour.

If refrigerated, the coated probiotic bacteria could survive for over eight weeks. The NTU-developed also did not degrade at all, and was able to protect probiotics against gastric acid, during an eight-week testing period. In comparison, probiotic drinks have a shelf life of up to seven weeks when refrigerated, but the probiotics they contain start to die off after being left at room temperature after a few hours, say the scientists.

An Artistic Scientist Finds His Niche

Jenny Splitter February 1, 2022 Food Technology Magazine

When Atanu Biswas was growing up in Calcutta, his parents made his future options clear. "In the United States, you hear 'be what you want to be,'" he says. But in India, opportunities are scarcer. You get a different message, he explains.

"Be what you want to be," just as long as "you become a doctor, or engineer, or scientist." Biswas dreamt of majoring in art or music, but he abided by his parents' wishes, eventually coming to the United States to earn a PhD in chemistry from the University of Notre Dame in 1985. Yet through his research, he's managed to put his scientific degree to creative use: taking foods and leftover crops and experimenting with ways to turn them into sustainable alternatives to plastic. While sustainability is a complicated goal to reach, it's one that Biswas is happy to be working toward.

After completing his postdoctoral research, Biswas spent the first decade and a half of his professional life working with synthetic polymers. Polymers are substances made of incredibly large molecules consisting of repeating sets of simpler chemical units. In more practical terms, polymers can be manipulated in ways that are very useful to the food industry, with many commercial applications. Some bend or stretch; others form extremely durable epoxies.

Working Toward More Sustainable Polymers

Yet synthetic polymers like polystyrene and polyethylene have a downside: their damaging effect on the environment. "These are plastics derived from petroleum," explains Biswas. "It would be nice to have something which can disintegrate in nature," he thought.

Over the years, with high oil prices impacting the cost of traditional plastics, and certain crops like soy, corn, and sugarcane being relatively cheap to grow, there came to be an increased demand for replacing synthetic polymers with biopolymers, or polymers made from natural materials grown in abundance, like soy.

In 2004, the U.S. Department of Agriculture (USDA) offered Biswas a new opportunity to experiment with natural materials. "My job is to dabble with all these biopolymers," Biswas says of his work as a chemist with the USDA's Agricultural Research Service in Peoria, Ill.

It's a complex area of research, however, as not all biobased materials degrade in landfill. Some do biodegrade, while others need to be industrially composted in order to break down. "Ideally, you like to just put it in [the] landfill, and it disappears. But 'ideally' hasn't been reached yet," he says. Still, that's the goal: "We are continuously trying to improve."

A key part of Biswas' research involves using microwave reactors, the energy from which he applies to a wide range of natural materials so they can replace harsher or less biodegradable options. Microwave reactors have played a large role in Biswas' research over the past 15 years. He uses microwave energy to rapidly alter the structure of raw materials so they can be used in commercial applications in place of synthetic polymers.

Modifying and manipulating natural materials in this way is part of a broader movement in chemistry known as "green chemistry," says Pradip Bhowmik, a chemistry professor at the University of Las Vegas who has collaborated with Biswas. "Our landfills are completely filled with plastic," says Bhowmik, and Biswas' work with biobased materials could help offer an alternative to plastics that can't biodegrade or be recycled. "This whole new approach is working to address environmental pollution," Bhowmik continues. In 2015, Biswas was awarded the Science Without Borders prize of $150,000 to study biobased packaging with the Enterprise for Agricultural Research in Brazil, working with sugarcane, starches, and cashew nuts. By adding gelatin to a polysaccharide from cashew gum, the starch can become sturdy enough to use as food packaging. Yet the research has its obstacles. Biobased polymers need to be durable enough to hold up through the supply chain, says Biswas, and that durability doesn't always lend itself to biodegradability. "This is a big challenge," he says.

Using the microwave reactors, he also developed a method for making carboxy-methyl-cellulose from cellulose, an agricultural byproduct. Some eyeglass companies are now using this carboxymethylcellulose to make eyewear. Biswas has also used microwave reactors to transform natural ingredients into sealants, medicine tablets, and packaging. Using microwave reactors can in some cases yield environmental benefits.

"The actual production is much cleaner," says Biswas. Sometimes there's a pronounced effect from the reactor that's unexplainable, something called "the microwave effect," which Biswas uses to his advantage. "When you heat, you have a lot of byproducts and you have to purify, but with the microwave you don't have to purify to get a very clean product," he explains. It's also far more efficient, speeding up the reaction time to hours or minutes instead of days.

Microwave Extraction

In another set of experiments, findings from which were published in the June 2019 issue of LWT – Food Science and Technology, Biswas and his team tested ways to extract dietary fiber from overripe bananas, leaving excess sugar behind. His team used natural solvents rather than harsher ingredients like ethanol, resulting in a cleaner process. Biswas has also used microwave extraction methods to pull out healthful phytochemicals from beans and pulses. Sometimes Biswas employs technology to analyze foods and crops, not just change their structure.

In a collaboration with Clifford Hall, a food science professor at South Dakota State University, the team set out to discover the ideal environment for storing pulses like peas, kidney beans, and chickpeas, crops that are essential sources of nutrition in many countries. Hall says Biswas used nuclear magnetic resonance scans to help the team zero in on the right temperature and humidity to best preserve phytochemicals, amino acids, and protein levels in pulses stored for months or years at a time.

"We can do a lot of the functionality tests, but he's there to really go a little bit deeper into the chemistry of the changes," explains Hall. Despite his contributions to food science, Biswas never completely abandoned his dream to create art.
Over the years, his original photography and graphic design has accompanied many of his scientific publications and projects. In late November, he was plotting out a photo shoot to feature some of the pulses he studied with Hall. "The pulses are very colorful," he says with excitement. "They have different shapes and sizes." It's clear art is still a source of inspiration: "I enjoy art," he says with a smile.

Rampant nutrition misinformation undermines food as medicine movement, flags report

31 Mar 2022 Nutrition Insight

An abundance of misleading nutrition information is breeding distrust in the food as medicine approach.

This is according to a comprehensive report by the Center for Food As Medicine and the Hunter College NYC Food Policy Center. At least 60% of US consumers turn to the internet as a source of medical information, reveals the analysis, where "baseless trends and sensationalist news create opportunities for misinformation to proliferate, providing information that may sometimes be dangerous."

The 335-page US-focused academic narrative is hailed as the "first-ever" academic narrative of the food as medicine movement, containing 2,500 citations. The document aims to bridge the gap between traditional medicine and the use of food as medicine in the prevention and treatment of disease in modern society.

Along with challenges to accomplishing this, the report makes 10 key recommendations to policymakers, healthcare professionals and academics to contribute to a healthier, more equitable healthcare system.

Roots of the food gap

Widely spread inaccurate information regarding nutrition may begin with too little dietary focus from top medical and governmental authorities. Despite the "overwhelming evidence" demonstrating the impact of food and diet on health, many medical schools across the country do not require that students take basic nutrition courses, the report points out.

"Without diet-related training, healthcare providers may lack confidence and knowledge when speaking to patients about using food as a treatment to manage disease." Moreover, The American Dietary Guidelines have long been influenced by large food corporations and interest groups.

"They do not always reflect the state of the science regarding the relationship between diet and health. These guidelines are incredibly important because they influence the nutritional standards of meals and foods provided across the country," the report highlights. Lastly, marketing and health claims printed on packaged food available at the store can confuse consumers' understanding of the impact of food and diet on disease, the authors assert.

Filling the void

Skeptics of the modern healthcare system have expressed frustration that their desire to learn about alternative treatment options, including dietary intervention, was largely ignored by traditional healthcare providers, including physicians. In the absence of support from the medical system, the internet provides a plethora of both information and misinformation for consumers.

Separate research published in the peer-reviewed PLOS One journal found that in the US, women, young users, users with a university education and non-smokers are the most likely demographics to use the internet and mobile applications for health-related purposes.
The survey also found internet users most frequently search for pharmacies, symptoms of medical conditions and pain. Also, they are most interested in information on how to live a healthy life, alternative medicine, mental health and women's health.

False credibility

As consumers wade through nutrition information, many health-related blogs and websites use experts with advanced health degrees to win trust with the readers. However, this type of information may still be corroborated or make inaccurate claims, since websites, blogs and social media are not governed by any regulatory agency to ensure accurate information. "Nutrition misinformation can be disseminated with false intent to sell products or promote a personal philosophy or that of a special-interest group," the authors write.

In parallel, research by the Institute of Medicine indicates that approximately half the adults in the US lack the ability to make informed decisions regarding their health, a phenomenon that has been called a "health literacy epidemic."

Suggestions to improve

The report's authors suggest that action should be taken from the top to incorporate evidence-based health foods into the public's diet. These ten recommendations aim to bring more credibility and science to US nutritional authorities and regulation.
1. Increase governmental funding for food as medicine research.

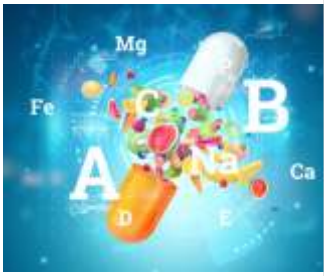
2. Aggregate and coordinate current food as medicine programs operating in the US.

3. Create, curate and update disease-specific food as medicine research and resources.

4. Develop a robust infrastructure of experts who can monitor and navigate existing research and translate it to physicians, healthcare providers, caregivers and patients.

5. Mandate education about nutrition and the role of diet in the prevention and treatment of disease within educational curricula for physicians and health care providers.

6. Hospitals must advance food as medicine and integrate dietary evidence for the prevention and treatment of disease into institutional practice.



7. Enhance and advance public awareness of the role of food in relation to the prevention and treatment of disease.

8. Increase community access to culturally appropriate, unprocessed, fresh fruits and vegetables.

9. Increase federal funding for the development and expansion of a wide variety of food as medicine programs, including medically tailored meals, produce prescriptions and nutrition incentives.

10. Expand and improve federal, state and local policies that promote food and diet in the prevention and treatment of disease.

By Missy Green

REGULATORY NEWS

Registered Dietitian calls for accurate labelling and regulations concerning probiotics

15 Mar 2022 Nutrition Insight

A member expert from Institute of Food Technologists (IFT) is arguing that probiotic labelling is "based on little regulatory science" and so policies must change more quickly to keep up with ongoing research.

"Probiotics are not allowed as ingredients in most countries, although foods with probiotic properties are allowed. The dietary supplement market is full of products that say they are probiotics. Still, this claim is not regulated by the Food and Drug Administration (FDA)," Joanne Slavin, registered dietitian nutritionist and member expert at IFT, tells NutritionInsight.

"Each country has a different system to distribute food aid and give dietary guidance. Each country also has a regulatory agency that sets up the rules for fortification and addition of compounds to the food supply."

More science-based labelling needed

The FDA aims to ensure that ingredient claims are accurate and not misleading. This is especially difficult for fermented foods, which contain live bacteria that could be classified as probiotics, Slavin details.

Fermented foods improve the quality of life for many people as gut fermentation can have possible health effects. Dietary fibre, for example, is necessary and has been shown to have health advantages and be prebiotic.

"Therefore, by that logic, a company can say that their products contain fermented ingredients and possibly living bacteria, but I'm not sure how they can claim probiotics, says Slavin. "There is a lot of interest in increasing probiotic support and with that interest comes additional regulation. However, claiming that probiotics are 'essential' in the diet would be difficult."

Tricky regulation with emerging postbiotics

There is a growing interest in postbiotics – which are the byproducts of colon fermentation – than prebiotics, probiotics or microbes. Postbiotics become complex and hard to regulate, Slavin explains.

"Defining probiotics as live microbes in foods – and then figuring out how to measure, label and regulate them – could be a future path for them. Therefore, although we know bacteria in the gut can have health benefits, it's challenging to research. On the other hand, food-based probiotics have a long history of usage in humans.

The long-term impact of gut microbiome on health

According to the Slavin, the gut microbiota plays various roles in overall health and well-being and is highly responsive to dietary intake.

"For studying the microbiome, we don't have a biomarker that is linked to a health or disease outcome to model from, but it is an interesting idea and is ripe for analysis. However, since probiotics are not allowed to label content or physiological effect, it would be a challenge to agree on an outcome," she explains.

Understanding the microbiome of people in at-risk areas – such as low-income areas or food deserts – a growing field of research among food scientists, allows food professionals to better support nutrition in those areas by providing the food needed to address deficiencies and support long-term health.

"My lab group has been involved in fibre, probiotics, prebiotics and now postbiotics. Dietary fibre has the most information, and most of the information has been collected with prebiotic fibre."
"Recent models have used cholesterol levels and measured that against health care savings."

Regulation moves for probiotics

The FDA has granted Generally Recognized As Safe (GRAS) status and dietary status to some probiotic ingredients. Specialty Enzymes & Probiotics, a probiotics producer, obtained a "No Objections Letter" from the FDA for its SEBtilis and Sebiotic ingredient GRAS application. A spore-forming, shelf-stable probiotic, SEBtilis (Bacillus subtilis), creates a protective endospore around itself that allows it to survive the journey to the gut, where it thrives.

Meanwhile, Sebiotic has been demonstrated to improve digestive and abdominal health by promoting microbial balance and intestinal homeostasis. The FDA granted two of DSM's probiotic strains – Lactobacillus rhamnosus 19070-2 and Lactobacillus reuteri 12246-CU – new dietary ingredient status.
By Nicole Kerr, with additional reporting by Andria Kades

UK rejects titanium dioxide ban: FSA disagrees with EU food safety watchdog, allowing artificial whitening colour

14 Mar 2022 Nutrition Insight

The UK's Food Standards Agency (FSA) has dismissed the research findings of the European Food Safety Authority (EFSA), which flag titanium dioxide's toxicity as a whitening food colorant – declining to ban the artificial additive.

New governing rules in mainland Europe are currently in action for producers to reformulate their F&B products during a four-month window of phasing out titanium dioxide, which is labelled as E171 in the EU.

This follows EFSA's decision deeming titanium dioxide as "not safe" in 2021, which prompted the European Commission's decision to completely ban it this year. Nevertheless, titanium dioxide is still permitted for use in pharmaceutical applications. Following its assessment of the evidence, the FSA refrained from validating the safety concerns surrounding the contested additive. Notably, Food Standards Scotland (FSS) has aligned with this conclusion.

"These independent committees will continue to consider the issue throughout the year," Adam Hardgrave, head of food additives, flavourings and food contact materials at the Food Standards Agency, tells NutritionInsight. "The

current timeline is for the risk assessment to conclude in the first quarter of 2023, although this may change as the work progresses if more data is required for the committees to come to a conclusion."

While the decision to withhold action means there will not be any change in the food protocol in England and Wales, the EU's ban of titanium dioxide will be carried out in Northern Ireland due to the Northern Ireland Protocol.
By Benjamin Ferrer

Impending EFSA opinion on health claims to bring unified nutrient profiling, flags Kerry

07 Mar 2022 Nutrition Insight

After 15 years in the pipeline, this month is expected to see the European Food Safety Authority (EFSA) issue its final opinion on nutrition and health claims (NHC) regulation. However, this could pose a host of challenges for industry as companies grapple with product labels and reformulation, Kerry tells NutritionInsight.

"Having a unified system across EU Member States will make reading and understanding nutrition and health claims on food much easier for the average consumer. It will ensure more consistent messaging and direct consumers to foods which will have a more positive impact on health," says Sarah Burke, senior regulatory manager at Kerry.

The legislation attempts to bring unified nutrient profiling across the EU to guide NHC on foods. It aims to ensure claims are not made on foods deemed "unhealthy" and sets limits for nutrients such as fats, sugars and salt as a condition for the product to bear the claim.

Painstaking process

The initial NHC regulation was published in 2006 in a bid to protect consumers from misleading claims in the EU. However, a number of gaps remain. For instance, the European Commission and Member States could not agree on a unified nutrient profile system, delaying implementation.

Complications arose from some food products included in national healthy eating guidelines that would effectively be excluded based on the nutrients to be considered for profiling, Burke underscores. Cheese, for instance, has high saturated fat content but is recognized as a source of calcium.

"Furthermore, traditional foods in some countries could be excluded from bearing claims. For example, olive oil, a traditional food in many Mediterranean countries, would not be allowed to bear claims because of its high fat content even though it's very high in unsaturated fatty acids compared to a lot of other vegetable oils," she adds.

While it is not currently foreseen to propose a nutrient profile model, EFSA's opinion will inform the European Commission's dialogue on creating new legislation on nutrient profiles. This will inform discussions between the European Commission, Member States and stakeholders, including the food industry.

Following this dialogue, it has been suggested that the legislation establishing nutrient profiles in the EU should be adopted by the end of 2022.

Tackling hurdles

Similar issues have also arisen with the EU-wide Nutri-Score labelling, with Spain's ministry of consumer affairs calling for olive oil to be left out of the front-of-pack labelling system. It argues that the current algorithm does not reflect the oil's nutrition benefits. An Iberian pork association also calling for Nutri-Score to make an exception for jamón ibérico.

As part of the "Farm to Fork" initiative, the Commission made a request to EFSA for scientific advice on the development of harmonized mandatory front-of-pack nutrition labelling and the setting of nutrient profiles for restricting nutrition and health claims on foods.

Looking ahead, even if a unified system is implemented, industry will have to adapt and react to a host of considerations.
"Managing changes to product labels is always challenging for industry, dealing with demand planning, managing stocks and the cost of redesign are but a few," Burke notes.

Additionally, companies that import and export to countries outside the EU, such as the UK, could also be further challenged as labelling requirements may differ from EU Member States, she adds.

Opportunities all-round?

Despite the challenges, the NHC regulation offers opportunities to both consumers and industry alike, Burke underscores.
"The creation of nutrient profiles and potential knock-on effects on nutrition and health claims gives industry the opportunity to innovate and reformulate, to meet consumer demands for healthier, more sustainable products," she says.

"The development of nutrient profiles will further strengthen the regulation on nutrition and health claims and restrict claims that could be considered misleading, for example, prohibiting claims on foods that are considered 'unhealthy.'"

Anticipating EFSA's opinion

According to Burke, EFSA published a draft opinion in November 2021, advising on the development of nutrient profiles, aiming to inform nutrient profiling modelling.

It takes into account the nutrients called out in the legislation, such as fats, salt and sugars. It also considers nutrients that are inadequate in specific population groups, such as iron, calcium, vitamin D, folate, iodine and potassium.

"This is a very positive development. From a public health nutrition point of view, issues exist around nutrient deficiency in Europe as well as overconsumption leading to overweight and obesity," Burke notes.

The UK, in particular, is concerned after obesity-related hospital admissions in the UK surpassed more than one million admissions, sparking calls for the nutrition industry to step up.
"We need to encourage consumption of foods that provide nutrients such as iron, calcium, folate, in the context of a healthy balanced diet."

A study previously flagged that cultural and linguistic differences across EU Member States make it difficult to harmonize on-pack health claims communication in the F&B arena.

By Andria Kades

'Unparalleled growth and innovation': Indian hemp industry ready for lift-off as regulatory landscape improves

By Pearly Neo 12-Jan-2022- Food Navigator Asia

India's hemp industry is predicting a wave of product innovation, from protein bars to flavoured powders and snacks, in the wake of recent regulatory advances that will see hemp seed, oil and flour products classed as food for the first time.

Although hemp-based food products have been present in the market in India for several years, all products were previously regulated under the Ministry of Ayurveda, Yoga, Naturopathy, Unani, Siddha, Sowa-Rigpa and Homoeopathy (AYUSH) in the country as the local food authority Food Safety and Standards Authority of India (FSSAI) had not set any standards for hemp locally.

This situation took a positive turn late last year when FSSAI finally issued a gazette notification to include regulations governing hemp seeds and seed products under the Food Safety and Standards (Food Products Standards and Food Additives) Fifth Amendment Regulations, 2021, marking the first time hemp products have been recognised as food in the country.

"[Hemp] seeds, hemp seed oil and hemp seed flour shall be sold as food or used as an ingredient in a food for sale subject to conforming to [FSSAI-defined] standards, [including adhering to specified] THC and cannabidiol (CBD)limits," said FSSAI via the notification.

"The food for sale that consists of hemp seed or seed products shall not be labelled or otherwise presented for sale in a form which expressly or by implication suggests that the product has a psychoactive effect [and] labels shall not include nutrient content claims about CBD, health claims about CBD or an image or representation of any part of the Cannabis plant (including the leaf of that plant) other than the seed.

"The words 'cannabis', 'marijuana' or words of similar meaning may not be used on the label, [although] the word 'Hemp' may be included."

The local hemp industry received this news with a warm welcome, calling this decision a 'rewarding' and 'significant' one.

"This is a significant step towards recognizing the hemp plant and the nutritional benefits of the hemp seed – With this regulation in place, FSSAI has come out with guidelines that will help the Indian hemp industry flourish and also be at par for exports to other countries," one of India's largest hemp firms Health Horizons ' Founder and CEO Rohit Shah told FoodNavigator-Asia.

"This move will push the billion-dollar hemp opportunity in India much faster – moving forward we expect to see a10x growth for the industry fuelled by the regulatory progress."

Shah explained that the main difference between being regulated under AYUSH as an ayurvedic product and under FSSAI as a food product lies in the ease of doing business with its target market and being recognised as a food item for regular consumption.

"There's nothing bigger than these regulations for the industry, as FSSAI's recognition of hemp seeds as food means that trade and business becomes super easy for us [within the food sector and to be recognised as food products],"said Shah.

"This also paves the way for more value-added products made from hemp such as protein bars or flavoured powders to enter the market as food items, [and we believe] that many such products are on the way catering to the Indian habit of regular snacking.

When we spoke to Shah earlier in 2021, Health Horizons had just launched what it claimed to be the country's first second-generation hemp products – a protein bar and a chocolate powder, and also he also stated that the hemp industry would see 'no industry left untouched'.

"I still believe that every product is going to have a hemp variant now [that the regulations allow for it]," he said. "Hemp butter, hemp pastas, hemp chocolates, toothpaste with hemp seed oil, hemp breads and more – Consumers will soon not just have the option to buy these in stores, but likely also to order hemp-based foods in to-go restaurants soon."

Shah believes that the shift towards plant-based diets is one of the major consumer trends in India that will drive the hemp market forward, as will rising health consciousness.

"Indian consumers are becoming more conscious with their eating habits, particularly since COVID-19 hit where we have seen a massive shift towards plant-based diets," he said.

"This development in combination with a shift in mindset by young Indian consumers to increasingly question and research products before they buy or use also means that they are more likely to buy something healthy which ignites their taste buds rather than junk food to consume. "As such, the hemp industry is going to grow at an unparalleled scale over the next decade, and the new regulation means better industry organisation which will drive this even further."

For a cleaner India: Food safety authority tightens proposals for recycled plastic packaging after pushback

By Pearly Neo 14-Mar-2022- Food Navigator Asia

The Food Safety and Standards Authority India (FSSAI) has issued new, stricter standards to govern the use of recycled plastic for food packaging after facing pushback from a group of concerned scientific experts.

Previously all use of recycled plastics to package, store, carry or dispense any food items was prohibited in India under its Plastic Waste Management Rules. But in September last year, FSSAI released draft plastic waste management guidelines proposing to allow the use of recycled plastic for ready-to-eat or drink products. According to FSSAI CEO Arun Singhal, this revision was designed as a positive move towards more efficient management of the country's massive plastic waste, reported by a 2021 Minderoo Foundation report to stand at some 5.58 million tonnes annually.

"We are in the process of setting standards for recycled plastics, [and] as soon as that is done I think all of us can move towards reducing the plastic load of food industry in the country," he said.

However, it wasn't long before scientific experts burst FSSAI's bubble of optimism, with a group of multi-industry experts from the Centre for Science and Environment, the Recycle India Foundation, the Institute of Chemical Technology (ICT) and even the Delhi High Court participating in a high-level forum voicing concerns regarding the new changes held by legal platform Law Wiser.

"[Amongst our main concerns] include the possibility that the majority of the recycling industry in India uses recycling machines of inferior quality which could possible make plastic more toxic, [as this would be dangerous to human health if brought into contact with food or drink," said the experts. "Specific standards for plastic recycling have also not yet been set in India, so it will be difficult to understand the recycled plastic's composition, and continuous recycling [could backfire] if quality degrades too far or more toxins are produced."

The experts also highlighted that in countries where this is allowed such as the United States, manufacturers hold the responsibility to ensure that the recycled plastic is safe for usage – but in India, it is also not clear where the responsibility for this lies as of yet. In response to these concerns, as of January 2022 FSSAI has issued a new update to the draft amendment, mandating that all recycled plastics used need to adhere to national standards, and included a new five-page Annexure with details on these standards.

"[The relevant sub-regulation shall be substituted to show that] products made of recycled plastics including carry bags may be used for packaging, storing, carrying or dispensing of food products as and when standards and guidelines are framed by [FSSAI]," said FSSAI Advisor (Science and Standards Division) Bhaskar Narayan who signed off on the new directive.

"Such packaging materials shall also comply with any other national standards or regulations as applicable. Accordingly, the approved guidelines for recycling of post-consumer PET for food contact applications and acceptance criteria for recycled PET resin for food contact applications [as listed in Annexure 1] is also made effective for implementation]."

The standards in Annexure 1 as laid out by FSSAI specify the specific materials and recycling processes by which recycled plastic materials can be designated as 'Food-Grade Recycled PET (FG rPET)', resin that has undergone a validated decontamination process and has reached suitable purity to directly hold foods and beverages.

"A conventional recycling process, i.e. a mechanical operation where PET flakes are [processed but contaminants are not removed], should not be used to make food contact materials," said FSSAI.

"Only processes that can decontaminate such as the Super-Clean Recycling Process (that uses high heat or vacuum), Melt-in Recycling Process (combination of high heat and vacuum), (Paste-in Recycling Process (chemical distillation, vacuum degassing, etc.) or Enhanced Chemical Recycling Process (chemical reaction or purification) can be used to make FG rPET.

"[Testing of the recycled plastic will also be necessary], such as the Challenge Test, the Extraction Test and the Migration Test to ensure that the recycled plastic content is safe and any potential substances migrating into food or beverages are within migration limits." It also specified that all recycling process operators and FG rPET manufacturers will need to apply and register with FSSAI moving forward, and will be required to submit supply chain communication and other supporting documents for review.

Soy decrees: Japan enforces stricter labelling rules for beverages to cut fraudulent claims and ensure fair trade

By Pearly Neo 01-Mar-2022- Food Navigator Asia

Japan has announced stricter labelling regulations for soybean milk and other soy-related beverages with the aim of preventing fraudulent or exaggerated claims and ensure fair competition between brands in the very competitive local market.

Soybean milk is a very popular beverage in Japan due to the presence of a large lactose intolerant population - with some researchers estimating this to be as high as 90% - as well as the gradual rise in demand for plant-based beverage options.

According to Global Data, the soymilk and drinks market in Japan was valued at over JPY160bn (US$1.4bn) as of 2020, and domestic soymilk production is well above 400 million litres yearly. Competition is fierce as there are many soymilk manufacturers in the market, and public concerns have been on the rise in recent years regarding exaggerated or fraudulent claims being made on product labels. In response to this issue, the Japan Fair Trade Commission (JFTC) and Consumer Affairs Agency (CAA) recently issued stricter labelling rules for soymilks and beverages, covering both liquid and powdered forms of these.

"These new labelling rules will be enforced under the Fair Competition Code to prevent unreasonable marketing to and attraction of consumers [by the product brands], so as to ensure consumers are able to make thoroughly voluntary and rational choices when purchasing soy beverages," said both agencies via a joint statement. "In addition, these regulations are expected to ensure fair and equal competition between businesses [based on] the actual characteristics and benefits of the products."

One major change under the new regulations is the compulsory labelling of all additives in descending order by weight, including those used for fortification - which means that if a product is said to be fortified with, say, Vitamin D but only a minute amount is used, this will appear very far down the list of additives. Similarly, the list of ingredients will now need to list down the amount of each raw material used by weight, which will highlight whether the product contains high soybeans and/or fruit juice content or conversely high salt or sugar content. This will go down to ingredients such as 'soybean', 'defatted soybean', soybean oil', 'salt', 'sugar', 'syrup' and so on.

The place of origin of the raw material with the highest weight will also need to be indicated, and the country of origin of imported products must also be displayed. "From now on it will also be mandatory to include the amount and calories that the following four components contribute to the product: Protein, Fat, Carbohydrates and Sodium. [Previously] these four were not specified in the rules, but are now compulsory," said the agencies. "These regulations will take effect and be enforced immediately in 2022." One of the main issues the soy milk industry in Japan faces is with various manufacturers claiming their products to be 'pure', 'raw' or 'unprocessed' despite being reconstituted from powder or having large amounts of sugar added.

"[Manufacturers are reminded that] this sort of misleading labelling is considered improper misrepresentation and is[not] permitted under the regulations," said the agencies. "There are also issues surrounding the use of terms claiming the products are of the highest possible grade such as 'best', 'representative', first', 'highest', 'super', 'best', 'only available from our company' and so on which are not based on objective facts; or the brand causing consumers to misunderstand [the significance] of a particular award or fraudulently claiming to have received said award. All of these are also not permitted by law and violators can be punished accordingly."