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NUTRITION AND CARDIOVASCULAR DISEASES

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**Regulatory Frameworks as
Enablers for Innovation**

**Nutrition Awareness Activity at
PSGR Krishnammal College for Women,
Peelamedu Coimbatore on Friday 23rd Dec 2018**

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EDITORIAL

Sports are becoming not only very popular and competitive in India organised sports supplies industry is growing rapidly as India is increasingly improving its presence in international sports in recent years and sports persons are using scientific knowledge in training and competing.

Sports nutrition is also becoming a very important industry and is growing steadily. According to one estimate, it is currently around Rs 5000 crores and growing in double digits every year. One must remember that sports nutrition products are not just consumed by sportspersons but also by common people who are very active and also occasionally participate in sports. There are many who have realised the importance of physical activity in keeping fit and healthy and quite a few go for long and brisk walks or even jog and many go to gyms for keeping fit by lifting weights or using other equipments. There are also many who go to sports clubs to play tennis, badminton, basketball, football and of course cricket.

All these amateurs also know a lot about sports nutrition and want to know more. Many gyms have employed in-house trainers who impart advice to them about what supplements they should consume. Many times they are not qualified and/or knowledgeable about these things although some gyms do employ nutritionists.

There are many products which have appeared in the market and quite a few imported brands. Beverages were the first to appear and are still quite popular called sports or energy drinks. They are replacing soft beverages including fruit juices that were consumed earlier. These contain proteins, carbohydrates, vitamins and minerals with some botanicals. There are also bars and gels. Beverages are still quite popular

as they not only supply the nutrients but also much needed water for hydration.

The nutrients are needed not only for replenishing water lost during perspiration but energy needed to perform the physical activity and also for maintaining the muscles in their good working condition ensuring repair of wear and tear or damage. It is also needs to realise that different physical activities and sports have different nutritional needs so one product should not work for all the purposes during training and actual performance. Some need bursts of energy for a rapid dash of 100 metres while some long distance and prolonged sports need continuous energy release along with other nutrients providing sustained support.

As sports become very competitive with very high stakes, there are products providing edge over the others. Some may actually provide benefit but there are also some which may contain banned substances which provide advantage the illegal way. Such products are found in grey market and tout advantages which at times are difficult to believe. Our regulators and enforcers must ensure that such products do not remain in the market places and also create adequate awareness against them so young minds which can be easily swayed by the end results should not get lured by them. Let us hope that our young and old who want to keep themselves fit and also play sports as hobby or professionally enjoy the benefits of many new ingredients in these products and have been approved by our regulations.

Prof. Jagadish S. Pai,
Executive Director,
PFNDAI

NUTRITION AND CARDIOVASCULAR DISEASES



By
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Healthy diets are one of the most important factor in disease prevention and management.

However, this is also the most confusing topic for most of us especially for lay man as to what constitutes a healthy diet⁽¹⁾. Research needs to be understood in light of several constraining factors and conditions under which a particular study was undertaken⁽²⁾. But one cannot deny the fact that poor diets reduce our productivity and increase premature morbidity and mortality. Suboptimal diet was responsible for an estimated 1 in 5 premature deaths globally from 1990 to 2016. All forms of malnutrition – spanning from undernutrition to overweight and obesity - predispose to non-communicable diseases (NCDs). About 45% of cardio-metabolic deaths in 2012 (318,000/702,000) were “associated with” top 10 dietary factors: fruits, vegetables, nuts/seeds, whole grains, unprocessed red meats, processed meats, sugar-sweetened beverages,

polyunsaturated fats, seafood omega-3 fats, and sodium⁽³⁾.

According to the World Health Organization, without intervention, the number of overweight and obese infants and young children globally will increase from 41 million in 2016 to 70 million by 2025—leaving them vulnerable to premature onset of NCDs such as diabetes and heart diseases. A recent multi-country study (including India) revealed that 94% of full service meals and 72% of fast food meals contained at least 600 kcal in 4 of the 5 countries studied including India. The authors also projected that consuming current servings of a full service and a fast food meal daily would ALONE supply between 70% and 120% of the daily energy requirements for a sedentary woman⁽⁴⁾.

Healthy dietary behavior plays an important role in the primary and secondary prevention of CVD. Multiple landmark trials have also

documented the profound effect of nutritional intake on CVD incidence/severity including: The Diet And Reinfarction Trial (DART), Lyon Heart study, The European Prospective Investigation into Cancer and Nutrition study (EPIC), Prospective Urban Rural Epidemiology (PURE) study, Dietary Approaches to Stop Hypertension (DASH) and Prevención con Dieta Mediterránea (PREDIMED) etc. Information on each of these is freely available via publications. Healthy lifestyle (regular physical activity, healthy diet, normal BMI, no/minimum alcohol, not smoking) is associated with 45– 81% decreased heart failure incidence. Here we summarize the latest evidence (preferably from robustly conducted systematic reviews and meta analyses) of some of the major nutrients and cardiovascular diseases. This may not be exhaustive but we have tried to be comprehensive and provide trends of what may work and what doesn't in general.



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1. FATS

This is the most controversial of all nutrients. The American Heart Association (AHA) had issued a Presidential Advisory in 2017 (5) which suggested that lowered intake of dietary saturated fats (SFA) and replacement with polyunsaturated fats (PUFAs) reduced CVD by $\approx 30\%$, similar to statin treatment. Replacement of SFA with refined carbohydrates and sugars is not associated with lower CVD. Replacement of SFA with unsaturated fats lowers LDL-c.

Thus they advised to shift from SFA to PUFAs simultaneously in an overall healthful dietary pattern such as DASH or the Mediterranean diet. This advisory was critiqued because of its limitation to 4 RCTs. However, another comprehensive meta-analysis of 15 RCTs performed by Mozaffarian et al. (6) also reported a significant reduction in total CAD risk with replacement of 5% of

SFAs by PUFAs, but the magnitude of the reported effect was much smaller (RR: 0.90; 95% CI: 0.83, 0.97) than that reported by the AHA Presidential Advisory.

A recent Cochrane review assessed that PUFAs slightly reduce risk of CHD events from 14.2% to 12.3% (RR 0.87, 95% CI 0.72 to 1.06, 15 trials, 10,076 participants) and CVD events from 14.6% to 13.0% (RR 0.89, 95% CI 0.79 to 1.01, 17,799 participants in 21 trials), all moderate-quality evidence; CHD death (6.6% to 6.1%, RR 0.91, 95% CI 0.78 to 1.06, 9 trials, 8810 participants) and stroke (1.2% to 1.1%, RR 0.91, 95% CI 0.58 to 1.44, 11 trials, 14,742 participants) all low-quality evidence.

A meta-analysis of 8 RCTs concluded that ω -6 PUFA cause larger reduction in coronary risk than ALA or ω -3 supplementation (RR: 0.89; 95% CI: 0.71, 1.12). ω -6 PUFAs also reduce LDL & non-HDL-c in a dose-dependent manner compared with dietary carbohydrate, and have a neutral effect on blood pressure.

Observational studies also suggest that higher intake of ω -6 PUFAs, when compared with SFAs or carbohydrate, lower risks for CVD events (10–30%), CVD and total mortality (10–40%), and T2D (20–50%). Despite the concern that ω -6 fatty acids increase inflammation, current evidence from studies in humans does not support this view.

A more specific review done on omega-3 fatty acids and cvd differentiates between long and short chain fatty acid effects. They assess that long chain n-3s show little/no effect on all-cause mortality, cv mortality, cv events, CHD mortality, stroke or arrhythmia (high quality) but reduced CHD events (RR 0.93, 95% CI 0.88 to 0.97, 84,301 participants; 5469 CHD events in 28 RCTs).

This effect was not maintained in sensitivity analyses thereby concluding that long chain n-3 makes little or no difference to CHD event risk (moderate GRADE). The short chain n3s also show little or no difference to all-cause mortality, cv mortality, CHD events but slightly reduce risk of cv events (from 4.8% to 4.7%, RR 0.95, 95% CI 0.83 to 1.07, 19,327 participants; 884 CVD events, 5 RCTs, low-quality evidence), CHD mortality (1.1% to 1.0%, RR 0.95) and arrhythmia (3.3% to 2.6%, RR 0.79).

Trans fatty acids have markedly adverse effects on serum lipids—raises levels of low-density lipoprotein (LDL) cholesterol, reduces levels of high-density lipoprotein (HDL) cholesterol, and increases the ratio of total cholesterol to HDL cholesterol. Trans fats also increase triglycerides as compared with other fats, increase levels of lipoprotein A, and reduce the particle size of LDL cholesterol, each of which raises the risk of CHD. Trans fats appear to increase the risk of CHD more than any other macronutrient even at low levels of consumption (1 to 3 percent of total energy intake).

In fact, a 2 percent increase in energy intake from trans fatty acids is associated with a 23 percent increase in the incidence of CHD. Higher trans-18:2 levels were even associated with a tripling of the risk of sudden death from cardiac causes.



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GOOD BUY! NUTRELA SOYA. GOODBYE! INDIA'S PROTEIN-DEFICIENCY.



A recent survey suggests that 73% of Indian diets are protein-deficient*. Part of the reason lies in the insufficiency of protein content in conventional protein sources such as eggs, lentils, milk etc. Moreover, the steep cost (per 100 gms of protein) of these sources makes it even difficult for families to fulfil their daily protein need. We at Ruchi Soya, the makers of Nutrela Soya Chunks, Mini Chunks and Soya Granules, help consumers bridge this gap by providing the richest source of protein at the most affordable price, which we call '52% Dhaakad Protein'. 200 grams of soya contains 52% protein which is equivalent to 15 bowls of cooked daal or 16 boiled eggs or 17 glasses of cow's milk. We urge you to make soya an integral part of your diet recommendations. Let us join hands to help India say a GOODBYE to protein-deficiency!

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One may wonder as to why the effect of fats is so inconsistent. A few reasons include: all fats are not the same. Multiple fractions of fats act differently. So far evidence seems to favour PUFAs than SFAs. However, even SFA is not a homogeneous bucket- differences in long and medium chain fatty acids or even and odd chain fatty acids in saturated fats are noted. SFA from dairy products (odd chain) may be better. SFA raise both LDL and HDL-C (meta-analyses: Every 1% increase in energy from SFAs, LDL-c increase by 12.7– 17.4 mg/L and HDL-c increase by 4.3– 5.0 mg/L). There are also a large measurement error for fats which currently available dietary instruments are unable to ascertain reliably.

Thus, in summary, the American Heart Association Guidelines/American College of Cardiology(AHA/ACC) 2018panel seem most prudent which recommend lowering saturated fat intake in the context of a healthy diet to improve CVD risk factors and outcomes. The AHA/ACC panel does not specify macronutrient substitution, but notes beneficial lipid profile shifts when saturated fat is replaced with PUFAs, followed by monounsaturated fatty acids (MUFAs), then whole grains. Dairy fat is presumably not as harmful as other animal fats, but unsaturated fats and whole grains are superior selections. Replacement of dairy fat with whole grains reduced risk by 34%.

2. CARBOHYDRATES

This section includes evidence on refined carbohydrates, sugar, whole grains and dietary fiber.

- Simple carbohydrate (sugar) refers to mono- and disaccharides; complex carbohydrate refers to polysaccharides such as starch. Common disaccharides are sucrose (glucose+fructose), found in sugar cane, sugar beets, honey, and corn syrup; lactose (glucose+galactose),

found in milk products; and maltose (glucose+glucose), from malt. The most common naturally occurring monosaccharide is fructose (found in fruits and vegetables). The term dextrose is used to refer to glucose.

- Intrinsic or naturally occurring sugar refers to the sugar that is an integral constituent of whole fruit, vegetable, and milk products; extrinsic or added sugar refers to sucrose or other refined sugars in soft drinks and incorporated into food, fruit drinks, and other beverages. Added sugars are defined as sugars that are added to foods during food processing, manufacturing, or preparation. The newer term, “free sugars,” also includes sugars naturally present in unsweetened fruit juices: otherwise, these two terms are interchangeable. Under this definition, only lactose naturally present in milk products and sugars contained within the cellular structure of foods (eg, whole fruits) would be excluded (WHO, 2015).

- The GI compares foods based on a standardised amount of available carbohydrate. Glycaemic load (GI multiplied by the amount of carbohydrate in a typical serving) allows the glycaemic effect of foods, meals, and whole diets to be compared as realistically consumed, and it has been shown to be a better predictor of glycaemic response than the amounts of carbohydrate, protein, and fat in food.

Refined cereals have a much lower content of dietary fiber and of numerous micronutrients compared with unprocessed cereals. White sugar, of course, is totally lacking in fiber and all micronutrients. High-



carbohydrate diets with high glycemic index may adversely impact on glucose control and have been linked to an increased risk of CHD.

The Women's Health Initiative on 49,000 postmenopausal American reduced total fat from 36% to 29% of energy while carbohydrates were increased. Both SFA and PUFA were reduced but only minor change in blood lipids. No reduction in risk of CHD was seen even after 8 years of follow up. Two other cohort studies: the Nurses' Health Study and the Health Professionals Follow-up Study showed that intake of carbohydrates from refined starches and added sugars was positively associated with risk of CHD (HR: 1.10, CI 1.00–1.21, based on comparison of extreme quintiles). It was estimated that replacing 5% of energy intake from SFA with equivalent energy intake from carbohydrates from whole grains was associated with 9% lower risk of CHD (HR: 0.91, CI 0.85 to 0.98). Replacing SFA with carbohydrates from refined starches/added sugars did not confer any benefits against CHD.



Several reviews report that dietary fiber has a protective association with risk of CHD. The pooled estimate for the risk ratio per 7 g/day increase in fiber from cereal sources was 0.84 (CI 0.76–0.94). This amount of 7 g/day of cereal fiber may be supplied by roughly 62 g of whole grain cereal and may reduce risk of CHD by approximately 16%.

In a recent meta-analysis (n=432179), both low (<40%) and high CHO consumption (>70%) conferred greater mortality risk. After multivariable adjustment a U-shaped association is observed between percent energy consumed from carbohydrate (mean 48.9%, SD 9.4) and mortality. If about 50–55% energy was being derived from carbohydrates, lowest risk of mortality was noted. This association varied by the source of macronutrients—mortality increased when carbohydrates were exchanged for animal-derived fat or protein (1.18, 1.08–1.29) and mortality decreased when the substitutions were plant-based (0.82, 0.78–0.87). The benefit of replacing fructose containing sugars with other processed carbohydrates is unclear.

3. PROTEINS:

Most guidelines recommend 10 to 35 percent of daily calories to come from protein sources.

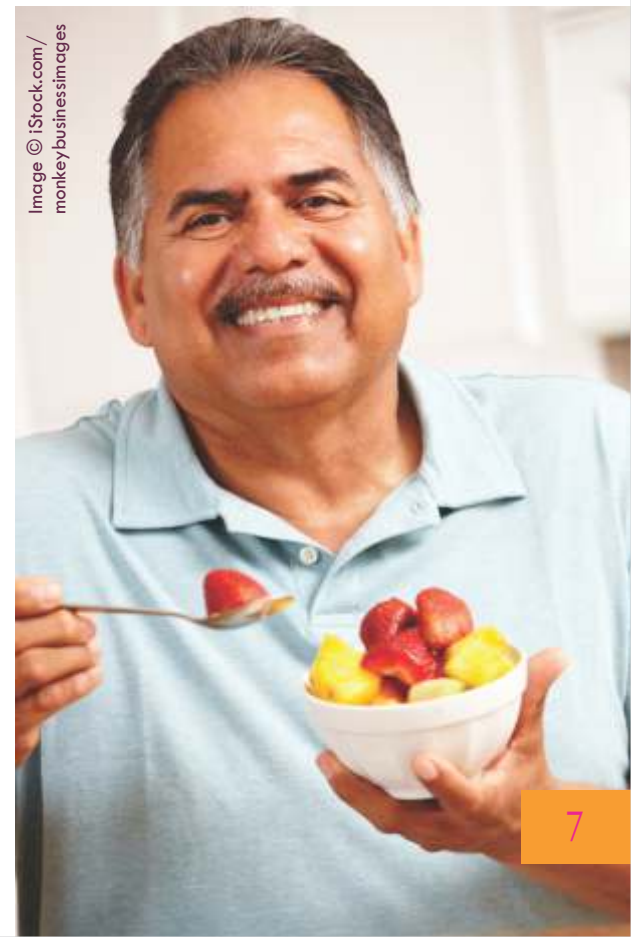
Approximately an adult should roughly eat 1 g per kg body weight per day (60g for 60kgs) (ICMR RDA 2010). However, Indians are known to be protein deficient. The European Prospective Investigation into Cancer and Nutrition-Physical Activity, Nutrition, Alcohol, Cessation of Smoking, Eating Out of Home and Obesity (EPIC-PANACEA) study showed that after adjustment for estimated energy intake, an increase in meat intake of 250 g/d was estimated to lead to a 2-kg higher weight gain after 5 years (95% CI: 1.5, 2.7 kg). Positive associations were observed for red meat, poultry, and processed meat.

4. VITAMINS, MINERALS AND ANTIOXIDANTS

Observational studies suggested protective role for vitamins (E, folate, B12 and carotenes) & inconsistent and weak evidence for vitamin C. Large clinical trials with supplements have shown no benefit in the case of vitamin E and an actual increase in risk for CVD with carotenes. Current evidence does not support antioxidant supplementation; but intake of their primary food sources should be encouraged. The summary message on these micronutrient fractions is that we should try and get them from natural sources (like fresh fruits and vegetables) and avoid synthetic preparations unless advised by physician. A latest example to substantiate this is Vitamin D. These days almost everyone is being detected of Vitamin D deficiency and the sale of these supplements has gone up tremendously. It is suggested that Vitamin D activates its nuclear receptor in

cardiomyocytes and vascular endothelial cells; also regulates the renin-angiotensin-aldosterone system, adiposity, energy expenditure, and pancreatic cell activity. However, meta-analyses have failed to show clear improvements in BP, insulin sensitivity, or lipid parameters. Experts say that the link between vitamin D deficiency and CVD may be an epiphenomenon. Thus simply popping in supplements may be of little use(3).

There are several other vitamins and minerals which are important in the development and progression of CVD. However discussing all here is beyond the scope of this write up. One critical mineral which is linked with BP and CVD is sodium. The average global sodium intake is approximately 3950 mg/day (range 2180 to 5510 mg/day) vs recommended levels (2000–2400 mg/day). A meta-analysis of RCTS (at least 4 weeks) reported that a reduction in sodium intake of 2300 mg/day would reduce SBP by 5.8 mmHg (95% CI 2.5 to 9.2mmHg).



SUMMARY:

Previously, advice has been predominantly provided in terms of nutrient targets, however there is an increasing shift towards providing food-based dietary guidance. There is still a gap in the existing evidence base concerning the distinct advantages and disadvantages of providing dietary pattern-based advice compared to nutrient-based advice. Reduction in excess calories and improvement in dietary composition may prevent many primary and secondary cardiovascular events.

Most current guidelines recommend diets high in fruits, vegetables, whole grains, nuts, and legumes; moderate in low-fat dairy and seafood; and low in processed meats, sugar-sweetened beverages, refined grains, and sodium. Supplementation can be useful for some people but cannot replace a wholesome healthy diet. Many studies suggest that factors responsible for consumption of low-quality diets by most of us include lack of knowledge, lack of availability, high cost, time scarcity, social and cultural norms, marketing of poor-quality foods, and taste.

Governments should focus on cardiovascular disease as a global threat and enact policies that will

reach all levels of society and create a food environment wherein healthy foods are accessible, affordable, and desirable. Health professionals should be proficient in basic nutritional knowledge to promote a sustainable pattern of healthful eating for cardiovascular disease prevention for both healthy individuals and those at higher risk.

In lay man terms, a nurtured body and mind is the best resource one will have till the end. So invest in your health NOW. Keep your weight controlled, engage in as much physical activity as you can (10k steps per day or Adults aged 18–64 should do at least 150 minutes of moderate-intensity aerobic physical activity throughout the week), have healthy balanced portions from variety of foods and diverse food groups. Also remember to stay hydrated, sleep well and keep stress at bay.

REFERENCES:

1. Temple NJ. Fat, Sugar, Whole Grains and Heart Disease: 50 Years of Confusion. *Nutrients*. 2018;10(1):39.
2. Khandelwal S, Kurpad A, Narayan KMV. Global Non-Communicable Diseases-The Nutrition Conundrum. *Frontiers in public health*. 2018;6:9.

3. Mozaffarian D. Dietary and Policy Priorities for Cardiovascular Disease, Diabetes, and Obesity: A Comprehensive Review. *Circulation*. 2016;133(2):187-225.

4. Roberts SB, Das SK, Suen VMM, Pihlajamaki J, Kuriyan R, Steiner-Asiedu M, Taetzsch A, Anderson AK, Silver RE, Barger K, et al. Measured energy content of frequently purchased restaurant meals: multi-country cross sectional study. *BMJ (Clinical research ed)*. 2018;363:k4864.

5. Sacks Frank M, Lichtenstein Alice H, Wu Jason HY, Appel Lawrence J, Creager Mark A, Kris-Etherton Penny M, Miller M, Rimm Eric B, Rudel Lawrence L, Robinson Jennifer G, et al. Dietary Fats and Cardiovascular Disease: A Presidential Advisory From the American Heart Association. *Circulation*. 2017;136(3):e1-e23.

6. Mozaffarian D, Micha R, Wallace S. Effects on coronary heart disease of increasing polyunsaturated fat in place of saturated fat: a systematic review and meta-analysis of randomized controlled trials. *PLoS medicine*. 2010;7(3):e1000252. (More references will be available on request)

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REGULATORY FRAMEWORKS AS ENABLERS FOR INNOVATION



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Regulatory frameworks and their interplay with innovation culture, innovation capacity and their impact on innovation friendliness of the ecosystem are subject matters of great research in many areas. Looking at the impact that food processing industry has had on societies, especially in creation of jobs in the Indian context, this subject has not received as much interest in the food regulations and food science and technology, as in some other domains. This article tries to put together some of the basic concepts in this domain for starting a more comprehensive and detailed analysis in these domains as well, especially in the context of Indian food regulatory ecosystem, so that good practices can be documented and used as reference points or guiding principles for taking future decisions.

1. Regulatory Framework:

Let's first understand what is a regulatory framework, and how is a regulatory framework different from regulation. This conceptual clarity is a must to avoid confusing one with the other. In the absence of a sector specific definition one

can rely on definitions being used in other sectors, but for the similar or same purpose.

a. Regulatory frameworks as macro steps:

One of such definition which is used in some sectors is the one given below:

"A regulatory framework can be defined as the macro level steps that a regulator must complete in order to bring forward regulations.¹" The above definition provides a clear distinction between a regulatory framework and a regulation. Even a very simplistic reading of the above gives a sense that regulatory frameworks encompass a much broader and comprehensive or inclusive way of looking at matters of regulatory concerns, compared to a very narrower perspective (at least in comparative terms, when compared to regulatory frameworks) when one looks at regulation per se.

b. Regulatory frameworks as tools for regulating behaviour

An alternative way of looking at regulatory frameworks can be to look at them as some fundamental behavioral aspects which must be evaluated, before beginning the

process of regulation formation. Some of these aspects can be evaluated by asking some macro level questions. This approach takes root from the fact in a very broad sense every regulation is one among many tools in the hands of society (here we make an assumption that governments act as representative or executive form of society) to control, amend, promote or regulate a behaviour. Hence in this approach, regulatory frameworks are looked at as the high-level questions that a society or a regulator would ask of themselves throughout the process of regulations development. Some of these questions are:

- "Why do we need to regulate this behaviour?"
- "Who is harmed by the behaviour?"
- "Is this harm serious enough to warrant government intervention?", etc.

c. Regulatory framework as accountability mechanisms:

Another point of view around regulatory frameworks is to look at them as accountability mechanisms i.e. a method by which the regulator accounts for the responsibilities conferred upon it by the societies whose purpose it is supposed to serve.

While there are these and many other ways of looking regulatory frameworks, it is undisputable that a continuous evaluation against some

objective questions throughout the process of regulatory framework creation, review and modification generally leads society towards an objective mechanism which ensures that there is a genuine purpose behind such exercises, all the time. Such an objective assessment also has another benefit that it ensures that unreasonable costs in the form of avoidable regulatory burden are not imposed on societies.

2. Framework:

A framework can be defined as the basic, underlying structure to a set of regulations. A framework is composed of a several complementary elements or concepts in support of something larger. This also supports the earlier emphasis that although regulations form an important part of regulatory frameworks, but regulatory frameworks are something larger than just regulations.

A regulatory framework also looks at various other elements, apart from regulations, which are necessary for effective implementation of the regulation, so that the fundamental objectives of having a regulation in place are achieved. This may be in many forms, such as guidelines, codes of practice, maximum upper limits, minimum lower limits, rules and responsibilities, formats etc. All these are supposed to perform supplementary functions along with the regulations.

3. INNOVATION:

If defining regulatory frameworks was a challenge, defining innovation is a bigger challenge, but because of a different reason. While defining regulatory frameworks poses a challenge of paucity of published literature, defining innovation poses a challenge of far too abundant volume of literature for this purpose. However a very simplistic way of defining it can be in terms of dictionary definition of innovation, which is generally made of two components:

- introduction of something new
- a new idea, method, or device

4. INTERPLAY OF REGULATORY FRAMEWORKS AND INNOVATION:

Impact of regulatory frameworks on innovation can't be under estimated. More over in view of almost contrasting nature of innovation and regulatory frameworks, there is bound to be a bit of tension between both these frameworks. However regulatory frameworks play an important role in determining success or failure of an innovative product, process of system.

A number of studies have also found a significant linkage between regulatory frameworks and success rates of innovations, although the significance varies from sector to sector, and product to product. It is also important to mention that by its inherent nature, characteristics of innovation are almost a misfit into regulatory frameworks, especially on the following counts:

- Innovation is new and future oriented, whereas regulatory frameworks are almost always based on historical data.
- Innovation functions for expanding/ redrawing the existing boundaries, whereas regulatory frameworks believe in standardization.
- Innovation strives to enter newer areas, whereas regulatory frameworks are always more cautious about entering new areas.

- Innovation always strives to generate intellectual property rights, whereas regulatory frameworks are not always looking at intellectual property rights as a potential benefit, but are more oriented towards general public good.

Due to the above divergent characteristics, there is a complex relationship between innovation and regulatory frameworks. Regulatory frameworks have multiple levers, which impact innovation, some of them are:

- Objectives:** Good regulatory frameworks have a defined set of objectives to begin with, and these objectives may not always be innovation friendly.
- Timelines:** All regulatory changes typically require a timeline within which these changes are supposed to be implemented. A well thought out implementation plan, which takes care of the potential impact on innovations in the sector, goes a long way in creating an innovation friendly culture in societies.
- Impact analysis (cost/ benefit analysis) based approach:** Undertaking impact analysis right in the beginning before undertaking regulatory interventions help in making an objective decision making process a corner stone of regulatory frameworks. Such approaches provide incentives to innovation by all stakeholders, by providing a predictable policy environment.
- Balance between science and other factors:** While scientists have an unwavering faith in objectivity and scientific data based frameworks, there is a wider understanding in societies that other factors also play an important role in such decisions. And these factors have a huge role to play, especially in determining social implications of innovations, technologies etc.



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e. Prohibitions, inhibitions and incentives: Regulatory frameworks do have the power to put in place prohibitions or inhibitions on certain areas of operations due to scientific or other factors. They also can incentivize certain behaviors, technologies or end objectives. All these have the potential to impact innovations.

It is clear from the above that impact on innovation will depend on the specifics of sectors, technologies, societies and their complex interplay. Apart from these it also depends on the type of regulations, companies involved and the time horizon in which the impact is being studied.

Some studies have also pointed out that generally impact is seen to be negative in the short term, but long term impacts generally turn out to be positive by forcing or encouraging their adoption; accelerating the uptake of innovations or their spillover benefits. Another factor influencing the impact is that innovation culture within the regulatory bodies promotes the positive innovation impact of regulations. However, this aspect has not been fully analyzed yet.

Many of the above empirical hypotheses haven't been fully studied because there are many gaps in research methodologies. Some of them are:

- Development of appropriate indicators of the regulatory framework.
- Relationships between processes within companies and the impact of regulations: Each company is unique in a way it reacts to regulations. This is assumed to be very significant in view of the observed heterogeneous impacts on innovations.
- Impact of Interaction levels between companies and Regulators: Regulations are not only exogenous to companies, but often

there is close interaction between regulators and the regulated companies, which should further explain some of the existing ambivalence.

5. NEW TRENDS:

The globalization of the world's economies is applying growing pressure on governments to liberalize trade practices. Businesses and individuals express displeasure at restrictive trade practices, often embodied in regulations that prohibit or at the very least inhibit commerce.

Furthermore, governments are recognizing that regulations impose a fiscal burden upon companies and citizens. Enforcement and compliance activities require significant investments in personnel and equipment. In an era of fiscal restraint, regulations are often viewed as an expensive solution to social and market imbalances.

These mounting pressures have forced governments from all over the world to re-look at their existing and proposed regulations. As a result, two new trends have emerged:

- a. Deregulation, and
- b. Harmonization of regulations with other nations

Apart from these two trends, there is increasing realization that regulatory interventions must be based on well thought, scientific and objective goals and processes. Some aspects of the good regulatory practices are:

a. Policy goals: It is a good regulatory practice to start with well-defined objective or goal. These goals are not necessarily always scientific or technical only, these may be:

- Economic
- Social
- Cultural

b. Policy instruments (means to achieve goals): After fixing the goals, regulator should analyse the options available in front of it, by which it can achieve the chosen goals. Some of these options can be:

- Regulatory approaches
- Self-Regulatory approaches
- Other approaches

c. Policy Implementation: It is a good idea to evaluate policy implementation, while designing the chosen policy. A good policy which is simple, consistent and easy to implement. Some important areas to consider are:

- Enforcement capability and capacity
- Compliance mechanisms



d. Regular Evaluation (have we achieved goals?): Every policy is effective for a certain period of time, and it requires an objective re-assessment to ensure that it remains effective. Some of the ways to ensure this are:

- Impact Assessment (Both Ante/ Post Regulation)
- Stakeholder consultation before and after implementation

Summary:

The above points to a very complex interplay between innovation and regulatory frameworks, and various ways in which regulations can make or mar an innovation. It is also well understood that innovation is one of the fundamental needs for societies to grow and prosper. Hence a careful

choice while making policy interventions is required on part of governments and societies, so that innovation culture can prosper and societies can take full benefit from such innovations.

Based on the general insights from this conceptual approach, the empirical analyses, and also the gaps identified, the following proposals for more innovation-friendly regulatory policies can be developed:

a. Strengthen the focus on innovation in regulatory policy.

b. Increase the quality of the regulatory framework regarding innovation. Move innovation into the center of public policies in

general and in the set of objectives and the general culture of regulatory bodies in particular.

c. Include innovation in ex-ante and ex-post regulatory impact assessments. Integrate regulation in the research on innovation systems.

d. Optimize the frequency and timing of reviewing existing regulations.

e. Coordinate the policies of all relevant regulatory bodies to foster innovation.

f. Assess, evaluate and develop mechanism to engage regulator at the front end of innovation cycles, wherever useful.

COMING EVENTS

Agri & Food Processor's Conclave

March 8, 2019

FTAPCCI, Red Hills, Hyderabad

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E: girijapathi@ftapcci.com

W: www.ftapcci.com

IIDE 2019

Indian International Dairy Expo

April 3-5, 2019

Bombay Exhibition Centre, Mumbai

T: +91 22 2871 5201

E: v.thosar@koelnmesse-india.com

3rd Intl Conference on Food & Nutritional Sci

April 15-17, 2019

Paris, France

E: contact@foodscienceconference.org

4th Annual Nutrition Summit

April 17-18, 2019

Holiday Inn, Mumbai

T: +91 22 6608 9643

E: smushrif@inventiconasia.com

W: http://inventiconasia.com

Nutraceuticals 2019

April 22-23, 2019

Osaka, Japan

E: nutraceuticals@annualmeetings.net

5th Intl Conf on Food & Beverages

April 22-23, 2019

Osaka, Japan

E: food@annualmeetings.net

Superfood Asia 2019

April 17-18, 2019

Sands Expo & Convention Centre, Singapore

T: +91 98101 78293

E: hemant@allianceexpo.in

Vitafoods Europe

A Brave New World in Nutrition & Food Safety

May 7-9, 2019

Palexpo, Geneva

E: info@informaexhibitions.com

W: www.vitafoods.eu.com

Frontiers in Food Safety & Nutrition

May 13-15, 2019

Brussels, Belgium

E: foodsafety1010@gmail.com

IFT Food Expo

June 2-5, 2019

New Orleans, USA

W: www.ift.org

Agro F&B Pro

August 1-3, 2019

Dr SPMukherjee Indoor AC Stadium, Goa

E: megashow704@gmail.com

W: www.agrofnbpro.com

NUTRITION AWARENESS ACTIVITY

AT PSGR KRISHNAMMAL COLLEGE FOR WOMEN, PEELAMEDU COIMBATORE ON FRIDAY 28TH DEC 2018

Report By

Dr. Subramanian Chitra,
Associate Professor & Head,
Department of Chemistry,
PSGR Krishnammal College for Women

Dr. N. Arunadevi,
Assistant Professor,
Department of Chemistry,
PSGR Krishnammal College for Women

Ms. Anuja Rawool,
Food Scientist,
PFNDIA



The Nutrition Awareness Activity was organized by Department of Food Processing Technology and Management, PSGR Krishnammal College for Women Peelamedu, Coimbatore in collaboration with Protein Foods and Nutrition Development Association of India (PFNDIA) on 28th of December, 2018 at Chandra Seminar Hall, PSGR Krishnammal College for Women, Peelamedu, Coimbatore. The activity was supported by Kellogg's India, Marico and Tata Chemicals Pvt.Ltd. The theme of the activity was Fitness, Health and Nutrition. The two components of the Awareness Activity included the Inter -collegiate events and a seminar on "Role of

Food in Healthy Life".

The programme started with the registration of the participants. About 260 students from 16 colleges in addition to 100 students from PSGRKCW participated in the programme. This was followed by prayer. The welcome address was given by Dr. (Mrs.) N. Yesodha Devi, Secretary PSGRKCW. The Programme was inaugurated by Dr.N. Ramasubramanian, Founder Director, VR Food Tech Mumbai. Three intercollegiate events were organized in the forenoon session. The first event was the Nutri-Suspi - Quiz Competition which was based on Food Science, Food Technology, and Nutrition. It was conducted by the quiz master Mr. Surya Narayanan from Catalyst Quiz Corp, Coimbatore. The quiz consisted of the preliminary round and the final round. All the students participated enthusiastically in the competition. Mr.K.Vivek and Mr.J.Gokulnath, B.Tech students from Amritha School of Engineering won the first prize while Mr.K. Vishnu Prashanth and Mr.Kavin Ayapparaj from PSG

College of Technology won the 2nd Prize.

The second event was the poster presentation themed as Good Food Good Life. The topics for the poster competition were Nutrition and Women health or Reducing Food Wastage for Hunger Free world. The participants were given guidelines to represent their innovative ideas in an attractive manner in order to ensure it as an effective tool for communication. The participants brought in beautiful and creative ideas on paper sending strong messages. The competition was judged by Dr.D.Sridevi from Dr. NGP Arts & Science College & Ms.K.Parimala Devi Consultant - Dietitian & Nutritionist, Founder & Head at Parims Nutrition Coimbatore. Ms.T. Poovizhi and R. Deepa from Vellalar College for Women bagged the first prize while Ms.Kaviya. K and Ms.Shalini M form the Dept. of Botany PSGKRCW won the 2nd prize. The third prize was given to Ms. Hemalatha B and Ms. Harithasri S from Vellalar College for Women.



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The Third Event was the Hitch Free Recipe competition wherein the students had to prepare recipes using the sugar substitute- Stevia branded zero sugar by Tata Chemicals. The participation was overwhelming. A lot of delectable and mouthwatering dishes were witnessed by Mr. S. Ashok Kumar, Chef Chief, The Residency Hotel Pvt Ltd Coimbatore & Ms. Kavitha, Chief Dietitian, P.S.G Hospitals, Coimbatore.

The recipe titled “Golden balls and Millet Cookies” prepared by the students- Danusya B and Kalavathy DN of Food Processing Technology and Management PSGRKCW received the first prize. This was followed by “Eggless Banana Cashew Muffin” Kavipriya S and SarayuRashikaa students of Dept. of Botany; PSGRKCW took away the second prize. The third prize was handed over to S.Nandini and S. NasrinBanu for preparing Ragi Balls Vellalar College of Women.

The afternoon session comprised of four technical sessions conducted by eminent speakers. The first session was presented by Dr. N Ramasubramanian, Founder Director VR Food tech, Mumbai on Sports Nutrition. He highlighted

upon the importance of nutrition for sports persons, RDA's for sports men and women. He also emphasized on how nutrient and exercises play a vital role in enhancing their endurance as well as keep them fit.

The technical session II witnessed was an engaging presentation by Dr. Rohini Sharma – Consultant Food Technologist and Nutritionist, Mom Made foods, Coimbatore. Her presentation showcased upon the ways of stress management in our day to day life, with a dose of essential amino acids like tryptophan. She also highlighted the relationship between the Essential amino acids and hormones related to sleep and happiness.

The third session was presided by Dr. Malathy Venkatesan, Senior Scientist, Tata Chemicals Pvt. Ltd., Mumbai. She showcased upon the role of sugar substituted in healthy life. The focal point of her presentation was how sugar substitutes are better alternative to table sugar especially for people suffering from type II diabetes. She also said that some of these substitutes were designed for lactose- intolerance people.

Session IV was a presentation by Ms. Swechha Soni on Aseptic Processing and Health. She drew special attention on the need of aseptic processing in the current scenario and the various technologies employed to ensure aseptic processing and packaging of food in order to ensure safe and wholesome food to the consumer.

Also, Ms. Shobana Boopathy from Dr. N.G.P Arts & Science was felicitated by giving the PFNDAI merit cum means scholarship for the year 2018-19 by the hands of Dr. Ramasubramanian, VR Food Tech.

The technical session was succeeded by the valediction. The Valedictory address was given by Dr. S. Nirmala, Principal, PSGRKCW. She mentioned the importance of food right from being as a basic necessity of life to an important trading commodity. Hence with right knowledge and technology up gradation it can pave the way for development.

The Programme concluded by vote of Thanks by Dr. S. Chitra, Head & Associate Professor, Department of Chemistry, PSGR Krishnammal College for Women, Coimbatore.

EVENT PHOTOGRAPHS





Poster Competition



Recipe Competition



Dr.N.Ramasubramanian – VR FoodTech



Dr.Rohini Sharma-Nutritionist Coimbatore



Ms. Swetha Soni, PFNDAI



Ms. Shobhana Boopathy from Dr NGP Arts & Science College receiving PFNDAI Merit cum Means Scholarship for year 18-19 by Dr. N Ramasubramanian, VR FoodTech with Dr S Nirmala, Principal PSGRKCW at NAA-Coimbatore



Dr. Malathy Venkatesan, Tata Chemicals



Mr. Vishnu Prashant receiving the first prize from Dr. Malathy, Tata Chemicals and Dr. S Nirmala, Principal, PSGRKCW for Quiz Competition on behalf of Mr. Vivek and Mr. Gokulnath of PSG College of Technology



Ms. Rennie receiving award from Dr. S Nirmala, Principal, PSGRKCW and Dr. Rohini on behalf of Ms. Poovizhi & Ms. Deepa of Vellalar College for Women, for winning the first prize in Poster Competition.



Mr. Vishnu Prashant of PSG College of Tech, being felicitated by Dr. N. Ramasubramanian, VR Tech and Dr. S Nirmala, Principal, PSGRKCW for winning the second prize in the Quiz Competition.



Ms. Kavitha of PSGRKCW being felicitated by Dr. S Nirmala, Principal, PSGRKCW and Dr. Rohini Sharma for winning the second prize in Poster Competition.



Ms. Monisha receiving award from Dr. S Nirmala, Principal, PSGRKCW on behalf of Ms. Hemalatha & Ms. Harithasri of Vellalar College for women, for winning the third prize in Poster Competition.



Ms. Kalavathy of PSGRKCW, being felicitated by Dr. S Nirmala, Principal, PSGRKCW and Ms. Swechha Soni for winning the first prize in Recipe Competition



Ms. Saraya Rashikaa and Ms. Kavipriya of PSGRKCW, being felicitated by Ms. Swechha Soni and Dr. S Nirmala, Principal, PSGRKCW for winning the second prize in Recipe Competition.



Ms. Nasrinbanu and Ms. Nandhini of Vellalar College for Women, being felicitated by Dr. S Nirmala, Principal, PSGRKCW and Ms. Swechha Soni for winning the third prize in Recipe Competition.



Image © iStock.com/memoangles

REGULATORY ROUND UP



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

Dear Readers

Please find below the summary and the link to regulations, order, etc published by FSSAI since the last round up. Readers are encouraged to have a close look at the Processing Aid regulation which has a far-reaching consequence in food processing. Go through the draft in detail and send in the comments and suggestions before 11 March 2019 in the prescribed **format**.

[Final Gazette notification setting standards for the quality of water offered or sold through water vending machine.](#) This refers to water for drinking other than packaged drinking water and must comply with Indian Standards IS:10500.

[Draft regulation on Processing Aids](#) has the following salient features

- Categorizes processing aids as per their functionality in terms of antifoaming agent, catalysts, solvents for extraction, carriers/excipients, antimicrobial agents, etc,
- Lists permitted processing aids along with the level in different foods and food categories
- Lays down the condition for labelling of processing aids.

[Draft regulation on fortification of foods has been published.](#) It proposes to include all types of milk including skimmed milk, goat milk, camel milk, etc. It also introduces standards of fortification of cereal products like pasta, noodles, bakery products like bread, bun, biscuits and fruit juices. etc. It specifies the levels of essential vitamins and minerals. The regulation specifies upper threshold levels for fat, saturated fat and trans fat in these types of products. This means products having these parameters above the threshold can fortify the product but cannot use the fortification logo.

[FSSAI introduces a draft regulation which describes the process to handle and distribute surplus food.](#) This is a timely regulation which will help in cutting down the food wastage and feeding the needy. The regulation addresses the challenges in the process.

[Draft regulation proposing standards for wheat bran and non-fermented soy products like soy beverage , tofu, soy curd and related products.](#)

[A few important amendments in Import regulation is proposed.](#) For example - the draft requires that the sampling fees to be paid at the time

of submitting the Integrated Declaration on arrival itself. The draft also states that the importer or its representative to be present for sampling at the first indicated date, failing which the consignment shall be sampled in their absence.

[An order reiterating the process of disposal of used cooking oil especially food business operators using more than 50 litre per day.](#) The order states that the used cooking oil may be sold only by government authorized agents. It is not clear whether the states have a list of authorized agents to deal with such used oils.

[FSSAI has issued a directive regarding declaration of statutory warning on packages containing alcoholic beverages](#)

[FSSAI through an order specifies the style of declaration of different wheat flours like Maida, Atta etc under the list of ingredients.](#)

Apparently the order is to remove the ambiguity when a generic name like "wheat flour, etc is used. Specifying the style would help the consumers to make an informed choice.

[An order keeping in abeyance the implementation parameters of honey standards till 30 June 2019](#)

RESEARCH IN HEALTH & NUTRITION

Low salt diet benefits women more than men, study suggests

12 Dec 2018 Nutrition Insight

Following a low salt diet is more effective in lowering blood pressure in women than men, according to a study from the Medical College of Georgia at Augusta University. Even though the levels of salt retention are similar in both sexes, the researchers found that blood pressure was more elevated in females.

The study, published in the journal *Hypertension*, also suggests that the use of aldosterone-blocking drugs may benefit women. Aldosterone is a hormone and blood vessel constrictor that is naturally found at higher levels in females and is further elevated by high-salt diets.

Dr. Eric J. Belin de Chantemele of Augusta University, co-author of the study, says that when testing on mice, the team found that after seven days on a high-salt diet there was a reduction in female mice's blood vessel relaxation while their blood pressure increased.

"When we gave mice a high-salt diet

for a week, we saw an increase in the blood pressure of the female mice of about 10mmHg, which is clinically significant," says Dr. Jessica L. Faulkner, MCG Postdoctoral Fellow and the study's first author.

Eplerenone, a steroidal antimineralocorticoid of the spironolactone group that is used as an adjunct in the management of chronic heart failure, was used to restore the blood pressure to a healthier level and promote the ability of blood vessels' lining to relax, according to de Chantemele.

"Salt (sodium chloride) is essential for proper body function, but only a small amount is needed. The average adult sodium intake in the US is more than double the American Heart Association's recommendation for ideal heart health. A large volume of scientific research shows that reducing sodium can help people lower their blood pressure, get healthier and even save lives. That's why we want to reduce sodium in the food supply," tells NutritionInsight, Lawrence J. Appel, M.D., M.P.H., chair of the American Heart Association's Sodium Reduction

Taskforce.

Previously, Faulkner and de Chantemele had discovered that the levels of aldosterone are higher in females, while blood pressure is the same in both sexes. This is a typical difference between males and females they say.

"We thought that if the female mice have more aldosterone than the males, they should be more salt-sensitive," says de Chantemele. "That is what really pushed us to do this study."

One of aldosterone's functions is to increase sodium and fluid retention by the kidneys. When one consumes too much salt aldosterone levels go down to avoid excessive salt retention, which increases fluid retention and blood pressure.

The researchers found that in males, the aldosterone-salt interaction works in a way that increased salt intake suppresses aldosterone, which helps protect males from this path to hypertension. While for females a high salt intake does not suppress aldosterone levels as much, so the hormone increases fluid retention and blood pressure.



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

In this case, instead of retaining more fluid and salt, the hormone seems to cause problems by impairing the ability of blood vessels to relax. The study found that the kidneys were functioning normally. Both sexes excreted more sodium when they consumed more of it. In fact, females actually excreted the most.

“In the salt-sensitivity field there are two main concepts,” says de Chantemele. “One is it’s mediated by the kidney retaining more salt. Another one suggests that it’s an improper relaxation of the blood vessels in people who are salt-sensitive. Our data support that second concept.”

The use of eplerenone was found to restore blood pressure and endothelial function in the females. It decreased both day and nighttime measures of the systolic blood pressure (top number which indicates pressure when the heart is contracting), diastolic pressure (bottom number, which indicates pressure when the heart is relaxed) and mean arterial pressure (an average between the two which gives an overall idea of blood flow). In male mice, the use of eplerenone didn’t have any effect.

The study findings point towards aldosterone possibly being beneficial for more pathological problems that females face like obesity and salt-sensitive hypertension.

Female mice experienced lower activity of the renin-angiotensin system, a kidney-based system for regulating blood pressure and fluid levels often targeted by common hypertension medications like angiotensin-converting-enzyme (ACE) inhibitors.

The team’s previous work has shown that female mice are particularly susceptible to mineralocorticoid receptor activation and aldosterone-mediated hypertension

mechanisms.

Mineralocorticoids are steroid hormones produced by the adrenal gland that affect salt and water balance in the body. Aldosterone is the primary mineralocorticoid and works directly in the kidneys to get these to retain sodium and water.

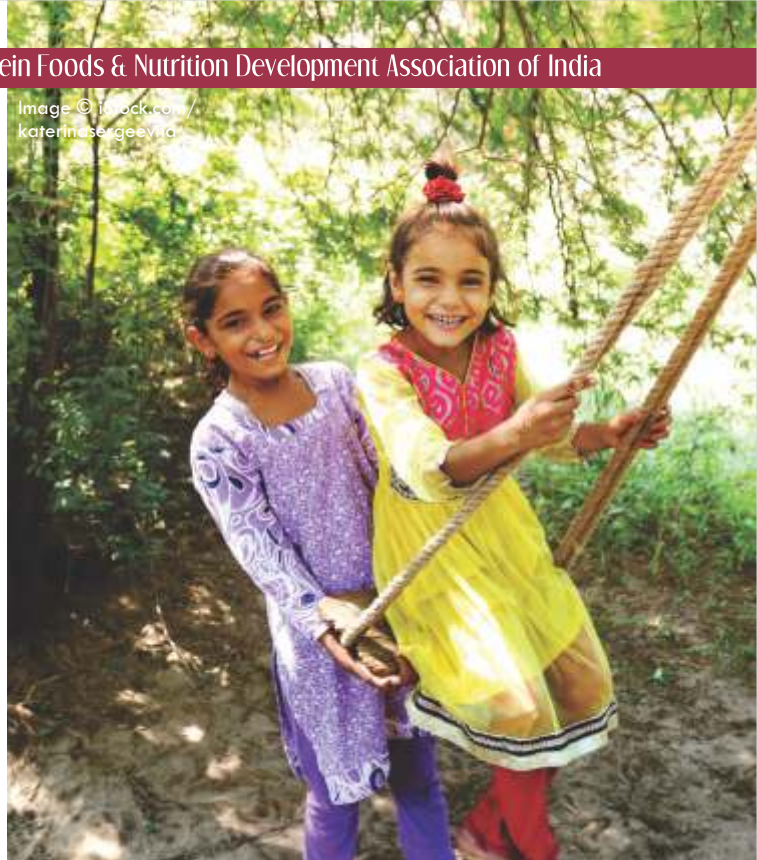
Sodium is included in most foods and the effects of a diet high in salt have long been the subject of study. Clinical studies have indicated that females are generally more salt-sensitive, but those findings have not held up in animal studies – which mostly have been done in male rodents – until now.

“There are many ways other than salt to flavor food. Lemon juice, citrus zest or hot chilies can add extra flavor without the extra sodium,” adds Appel. The results of a recent study, also published in the journal *Hypertension*, showed that people eating higher amounts of salt had higher blood pressure – no matter how healthy the person’s overall diet.

The excessive consumption of salt is known to affect heart health and blood pressure, but research by scientists at Weill Cornell Medicine has now underlined its negative effect on cognitive health. Meanwhile, another study showed that for the vast majority of communities, sodium consumption is not associated with an increase in health risks except for those whose average consumption exceeds 5g/day.

By Kristiana Lalou

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katerinasergeevna



Scalable model for reducing anemia in girls: Indonesian study highlights collaboration as key

17 Dec 2018 Nutrition Insight

A multi-sectoral approach that goes through the schooling system is key to reducing iron deficiency in girls, according to a project trialed in Indonesia and published in the *British Medical Journal (BMJ)*.

Seeking to implement a successful program that would be scalable in other geographic regions, the team began a project in West Java, Indonesia, which followed the World Health Organization (WHO) recommendation of weekly iron-folic acid supplementation (WIFAS) to reduce anemia in adolescents aged 10-19 years and women of reproductive age.

“Adolescent Nutrition programs, and specifically weekly iron-folic acid supplementation programs, are scalable especially when they involve partnerships and collaborations with both the health

image © iStock.com/pixelfusion3d

and education sectors. When anemia becomes everyone's issue – academic performance, productivity and health – multiple sectors are more likely to become engaged," Marion Roche, Senior Technical Advisor, Adolescents' & Women's Health & Nutrition at the NGO Nutrition International, tells NutritionInsight.

Iron deficiencies are prominent in girls worldwide. A recent report by the UN Food and Agriculture Organization (FAO) identified iron deficiency as one of the most prevalent

micronutrient deficiencies in Europe and Central Asia, with the Caucasus subregion showing the highest level among women – 34.4 percent – followed by Central Asia – 33.8 percent – and the EU, at 18.7 percent.

Micronutrient deficiencies are a form of malnutrition, which, in general, is a significant obstacle to socioeconomic development due to its impact on the health of the population, learning ability and productivity. These deficiencies contribute to a cycle of malnutrition, reduced development prospects and poverty, often affecting already-disadvantaged groups.

Iron deficiency anemia is now recognized as the number one cause of lost disability-adjusted life years (DALYs), a measure of overall disease burden, in adolescent girls globally, the study reports.

Anemia has three significant consequences for adolescent girls: decreased school performance; loss of productivity; and decreased current and future reproductive health.

Screening data from the junior high school students in West Java, the most

populous province with 47 million inhabitants, indicated an anemia prevalence of 50 percent.

The campaign image used by the weekly iron-folic supplementation program in Indonesia.

The program

In Indonesia, adolescents rarely access preventive health services, but over 86 percent are enrolled in secondary school. Thus, school-based interventions are seen as ideal to reach adolescent girls and are cost-effective in other settings.

The adolescent nutrition WIFAS demonstration project was conducted between 2015 and 2018. It aimed to show how the revised national WIFAS policy could be introduced through the school health program, supported by four ministries: Ministry of Health, Ministry of Education and Culture, Ministry of Religious Affairs and Ministry of Home Affairs.

The project outcomes estimate that the demonstration project might have contributed to preventing 4,071 cases of anemia, by reaching 52,000 adolescent girls with the WIFAS scheme in the two districts.

The multisectoral collaboration was driven by a change in a policy, as well as an existing mandate for collaboration, political commitment at all levels and by overall coordination across sectors by the non-governmental organization; Nutrition International. The study also fostered informal relationships which Roche explains was also key to the success.

"One of the most surprising things during the research was that the joint training was credited with building social and informal relationships, which ended up being one of the biggest enablers to collaboration. For example, the teachers and health workers formed WhatsApp groups to remain connected socially, but teachers also were instantly connected for

program support when needed. Health workers also had better access to attendance data, which helped them in forecasting supplies for the project," she says.

In West Java, the most populous province with 47 million inhabitants, there is an anemia prevalence of 50 percent. In this way, the project also highlights the importance of engaging with the culture at hand.

In Indonesia, for example, the Islamic-Indonesian term and concept of *silaturahmi* is very important for building personal relationships. It is based on the Islamic value of goodwill and fellowship, and the ability to extend personal ties of friendships to strengthen fraternity and mutual solidarity.

Working in a multi-sectoral and collaborative manner enhanced this feeling among the professionals, the project leaders say. Nutrition International is also aiming to reduce anemia through WIFAS in other countries such as Ethiopia, India, Kenya and Pakistan.

Leading change in countries such as Indonesia, where the rate of anemia is high, could help foster reduction in other locations. This study highlights how successful collaborations can be more effective than any one sector working alone and highlights the benefits of working through the schooling system.

"The program has shown to be effective in reducing anemia and the school-based adolescent nutrition program also provides an opportunity for adolescent girls and boys to learn about their health, growth and nutrition. This can also involve sexual reproductive health education and support for menstrual hygiene management to support girls in being in class more days of the month," says Roche.

The recent FAO report which also highlighted the high instances of iron deficiency in girls also notes that a multi-sectoral approach could improve attempts to lower malnutrition amounts by aligning policy with better quality, disaggregated data, for example. A UK study found that a quarter of women at childbearing age had an iron deficiency and called for improvements in dietary quality alongside supplementation and fortification.

Earlier this year, a Nestlé study found that nearly 20 percent of infants (6 to 12 months old) are not getting enough iron in their diet, putting them at risk for suboptimal cognitive development.

By Laxmi Haigh

School-based nutritional programs reduce student obesity

Science Daily December 17, 2018

In-school nutrition policies and programs that promote healthier eating habits among middle school students limit increases in body mass index (BMI), a new study led by the Yale School of Public Health finds.

The five-year trial, conducted in conjunction with the Rudd Center for Food Policy and Obesity at the University of Connecticut, followed nearly 600 students from 12 schools in New Haven.

In schools with enhanced nutrition policies and programs, students had healthier body mass index trajectories (a measure of obesity) over time, and by the end of the study they reported healthier behaviors than their peers in schools without the nutrition policies and programs. Students in

schools with enhanced support to implement nutrition policies had an increase in BMI percentile of less than 1%, compared with students in schools without enhanced support for these policies and programs who demonstrated increases of 3% to 4%. The study is published in the American Journal of Preventive Medicine.

"These findings can guide future school and community interventions. Childhood obesity is a serious health threat, and schools are a vital way to reach children and their families to reduce risks and promote health," said lead author Jeannette Ickovics, the Samuel and Liselotte Herman Professor of Social and Behavioral Sciences at the Yale School of Public Health. "These findings strongly support previous administration policies that provided healthier food for all



Image © iStock.com/fotoedu

children in public schools." These policies were rolled back last week by the U.S. Department of Agriculture.

The study is one of the first school-based policy intervention studies that followed students through middle school. The researchers analyzed both behavioral and biological indicators. Results are among the most compelling to date, said the researchers, perhaps because of the strong community-

university partnership, and the recognition that health and academic achievement often go hand-in-hand.

"This is some of the strongest evidence we have to date that nutrition education and promoting healthy eating behaviors in the classroom and cafeteria can have a meaningful impact on children's health," said Marlene Schwartz, director of the Rudd Center and senior study author. "These findings can inform how we approach federal wellness policy requirements and implementation in schools to help mitigate childhood obesity."

The nutritional interventions in the schools studied included ensuring that all school-based meals met federal nutritional criteria; providing nutritional newsletters for students and their families; school-wide campaigns to limit sugary

drinks and encourage the use of water; and limiting the use of food or beverages as rewards for academic performance or good behavior.

Researchers also tested whether a series of policies to promote physical activity would impact adolescent body mass index. They determined that the physical activity policies alone had little or no impact on body mass

index.

In the study authors said that more than one in five American teenagers are currently obese, and as many as one in two are overweight or obese. Being overweight or obese early in life affects health across the lifespan, contributing to a range of chronic diseases such as hypertension, diabetes, and depression that reduce productivity and shorten life expectancy.

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shylendrahoode

How dietary fibre and gut bacteria protect the cardiovascular system

Science Daily December 21, 2018

The fatty acid propionate helps defend against the effects of high blood pressure, including atherosclerosis and heart tissue remodeling, a study on mice has found. Gut bacteria produce the substance -- which calms the immune cells that drive up blood pressure -- from natural dietary fiber.

"You are what you eat," as the proverb goes. But to a large extent our well-being also depends on what bacterial guests in our digestive tract consume. That's because gut flora help the human body to utilize food and produce essential micronutrients, including vitamins.

Beneficial gut microbes can produce metabolites from dietary fiber, including a fatty acid called propionate. This substance protects against the harmful consequences of high blood pressure. A Berlin research team from the Experimental and Clinical Research Center (ECRC), a joint institution of the Max Delbrück Center for Molecular Medicine (MDC) and Charité -- Universitätsmedizin Berlin, shows why this is the case. Their study has been published in advance online in the journal *Circulation*.

The researchers fed propionate to mice with elevated blood pressure. Afterwards, the animals had less

pronounced damage to the heart or abnormal enlargement of the organ, making them less susceptible to cardiac arrhythmia. Vascular damage, such

as atherosclerosis, also decreased in mice. "Propionate works against a range of impairments in cardiovascular function caused by high blood pressure," says MDC researcher and research group leader Professor Dominik N. Müller. "This may be a promising treatment option, particularly for patients who have too little of this fatty acid."

Detour via the immune system

"Our study made it clear that the substance takes a detour via the immune system and thus affects the heart and blood vessels," say Dr. Nicola Wilck and Hendrik Bartolomaeus from the ECRC, who have been working together on the project for nearly five years. In particular, T helper cells, which enhance inflammatory processes and contribute to high blood pressure, were calmed.

This has a direct effect on the functional ability of the heart, for example. The research team triggered heart arrhythmia in 70 percent of the untreated mice through targeted electrical stimuli.

However, only one-fifth of the animals treated with the fatty acid were susceptible to an irregular heartbeat. Further investigations with ultrasound, tissue sections, and single-cell analyses showed that propionate also reduced blood pressure-related damage to the animals' cardiovascular system, significantly increasing their survival rate.

But when researchers deactivated a certain T cell subtype in the mice's bodies, known as regulatory T cells, the positive effects of propionate disappeared. The immune cells are therefore indispensable for the substance's beneficial effect. A research group under Johannes Stegbauer, an adjunct professor at Düsseldorf University Hospital, confirmed the team's findings in a second animal model.

Short-chain fatty acid as a therapeutic option

The results explain why a diet rich in fiber, which has been recommended by nutrition organizations for many years, helps prevent cardiovascular diseases. Whole-grain products and fruits, for example, contain cellulose and inulin fibers, from which gut bacteria produce the beneficial molecules like propionate, a short-chain fatty acid with a backbone of just three carbon atoms.

"Previously, it had not been clear which fatty acid is behind the positive effects and how it works," says Wilck. The study opens up new avenues in the treatment of cardiovascular diseases. "It might make sense to administer propionate or a chemical precursor directly as a drug" -- for example, when the blood of those affected contains too little of the substance.

Propionate still has to prove itself in everyday clinical practice. The research team now hopes to validate their findings by examining the substance's effects on human subjects. It is already known that propionate is safe for human consumption and can also be produced economically: The substance has been used for centuries as a preservative, for example. It is already approved as a food additive. "With these favorable conditions, hopefully propionate will soon make the leap from the lab to patients who need it," says Wilck.

Why green leafy vegetables can protect liver health

Medical News Today 20 December 2018
By Ana Sandoiu

New research that features in the journal *Proceedings of the National Academy of Sciences (PNAS)* discovers that a compound present in green leafy vegetables helps prevent nonalcoholic fatty liver disease in mice.



Nonalcoholic fatty liver disease (NAFLD), or liver steatosis, is a condition in which fat builds up in the liver. Between 30 and 40 percent of adults in the United States are living with NAFLD.

The condition is one of the most common causes of chronic liver disease in Western countries, and experts associate it with obesity, being overweight, and metabolic risk factors.

Currently, there are no approved treatments for NAFLD, which can progress into more serious conditions, such as steatohepatitis, fibrosis, and cirrhosis. Healthcare professionals recommend losing weight, making healthful food choices, and doing more physical activity to reduce fat in the liver.

New research, however, may pave the way for a new treatment. Scientists at the Karolinska Institutet in Sweden have just published a study in which they show that inorganic nitrate — a compound that occurs naturally in green leafy vegetables — can reduce the buildup of fat in the liver.

Mattias Carlström, an associate professor in the Department of Physiology and Pharmacology at

the Karolinska Institutet is one of the senior researchers and corresponding authors of the study.

Inorganic nitrate is key for liver health
Carlström and colleagues studied the effects of supplementing a high-fat, high-sugar Western diet with dietary nitrate in mice.

They divided the mice into three groups and fed each of them a different diet. The control group received a normal diet, while the high-fat diet group ate the equivalent of a Western diet, and the third group received a high-fat diet with nitrate supplementation.

As expected, the mice in the high-fat diet group gained weight and fat mass, and they had raised blood sugar levels. However, all of these markers were significantly lower in the group that also received nitrate.

Carlström reports on the findings, saying, "When we supplemented with dietary nitrate to mice fed with a high-fat and sugar Western diet, we noticed a significantly lower proportion of fat in the liver."

The researchers also found that the rodents that received the nitrate had lower blood pressure and better insulin sensitivity than those on a high-fat diet without nitrate.

Previous research, the investigators explain, has shown that dietary nitrate boosts cell metabolism. It has also suggested that green leafy vegetables may protect against metabolic conditions, such as type 2 diabetes.

Scientists also know that higher consumption of fruits and vegetables has a positive effect on cardiovascular function. "We think that these diseases are connected by similar mechanisms," Carlström hypothesizes, "where oxidative stress causes compromised nitric oxide signaling, which has a detrimental impact on cardiometabolic functions."

The researchers explain that the medical community still does not know exactly which compounds make leafy greens so healthful. "No one has yet focused on nitrate, which we think is the key," continues Carlström.

"We now want to conduct clinical studies to investigate the therapeutic value of nitrate supplementation to reduce the risk of liver steatosis. The results could lead to the development of new pharmacological and nutritional approaches." Mattias Carlström

More studies are necessary to clarify which compounds are responsible for these healthful properties and to confirm that nitrate is key for liver and metabolic health. In the meantime, the team advises people to consume more green leafy vegetables.

Those with the highest concentration of inorganic nitrate include "celery, spinach, lettuce, and rocket."

"[I]t doesn't take huge amounts to obtain the protective effects we have observed — only about 200 grams per day," says Carlström.

"Unfortunately, however, many people choose not to eat enough vegetables these days," he adds.

Does magnesium hold the key to vitamin D benefits?

Medical News Today 30 December 2018

By Yella Hewings-Martin PhD

New research finds that magnesium may hold the key to understanding how vitamin D levels relate to health and disease.

A recent study investigates the importance of magnesium in vitamin D deficiency.

Vitamin D, also known as the sunshine vitamin, has enjoyed something of a celebrity status, receiving praise for a multitude of health benefits.

Yet, in the complex web of biological processes that govern our health, few players ever work in isolation.

New evidence shifts the focus onto magnesium, implicating it in playing a central role in determining how much vitamin D our bodies can make.

In a study that features in the December issue of *The American Journal of Clinical Nutrition*, a research team from Vanderbilt University Medical Center in Nashville, TN concludes that optimal levels of magnesium may play an important role in the vitamin D status of an individual.

The link between magnesium and vitamin D
Dr. Qi Dai, a professor of medicine at Vanderbilt University Medical Center and the lead study author,

previously reported on the relationship between magnesium intake and vitamin D levels in over 12,000 individuals taking part in the National Health and Nutrition Examination Survey (NHANES) 2001–2006 study.

Here, Dr. Dai and team found that individuals with high levels of magnesium intake, whether from dietary sources or taking supplements, were less likely to have low levels of vitamin D.

Importantly, the researchers also found a possible association between magnesium intake and a



reduction in mortality, particularly when they looked at mortality due to cardiovascular disease and bowel cancer.

So, how does magnesium affect vitamin D biology in the body? It is a cofactor in the synthesis of vitamin D from both exposure to sunlight and dietary sources.

"Magnesium deficiency shuts down the vitamin D synthesis and metabolism pathway," Dr. Dai explains.

Digging deeper

While the data from the NHANES study indicated a link between magnesium, vitamin D, and mortality, the team did not design

the study to show whether giving an individual extra magnesium would change their vitamin D levels.

To look at the link between magnesium supplementation and vitamin D levels in more detail, Dr. Dai and colleagues worked with a subset of 180 individuals taking part in the Personalized Prevention of Colorectal Cancer Trial, which enrolled a total of 250 individuals.

Treatment with a magnesium supplement led to an increase in vitamin D levels in people who had low levels initially, but it reduced levels of the sunshine vitamin in those with high levels.

This is important because there is an association between too much vitamin D and excess calcium in the blood (hypercalcemia), which can cause serious health complications.

On the other hand, researchers have linked low levels of vitamin D with a variety of symptoms, and Dr. Dai is particularly interested in its role in bowel

cancer.

Vitamin D, magnesium, and bowel cancer

The results of recent studies looking at the link between vitamin D and bowel cancer are contradictory.

Earlier this year, *Medical News Today* reported on a study that pooled data from 17 study cohorts and included 5,706 individuals with bowel cancer and 7,107 control participants.

In this study, the authors found that people with vitamin D levels below the national guidelines had a 31 percent increased risk of developing bowel cancer.

However, last month, a different study found that study participants who took vitamin D supplements fared no differently from those who took a placebo when it came to developing cancer, including bowel cancer.

Could magnesium be the missing ingredient?

"Vitamin D insufficiency is something that has been recognized as a potential health problem on a fairly large scale in the [United States]," explains Martha Shrubsole, Ph.D., a research professor of medicine and senior study author.

Shrubsole notes that, in many cases, healthcare professionals have recommended vitamin D supplements to individuals whose blood tests have revealed low levels of the sunshine vitamin.

"In addition to vitamin D, however, magnesium deficiency is an under-recognized issue. Up to 80 percent of people do not consume enough magnesium in a day to meet the recommended dietary allowance (RDA) based on those national estimates." Martha Shrubsole, Ph.D.

The data that the team has presented certainly imply that getting the right amount of magnesium is important to allow the body to regulate vitamin D levels. More studies are necessary to determine exactly how this affects bowel cancer and other conditions.

To ensure that you are getting enough magnesium in your diet, the National Institutes of Health (NIH) recommend green leafy vegetables, legumes, whole grains, seeds, and nuts as good sources.

Ashwagandha for sports? New study results suggest herb may boost strength

By Adi Menayang 17-Dec-2018 - NutraIngredients Asia

Recreationally active men who ingested 500 mg of aqueous ashwagandha extract experienced 'statistically significant improvements' in average squat power and peak bench press power



Image © iStock.com/eskymaks

compared to those who took a placebo.

These results came from a 12-week study conducted by researchers from Lindenwood University's Exercise and Performance Nutrition Laboratory, as well as the Center for Applied Health Sciences, a contract research organization.

The investigated ingredient was Sensoril, a patented, aqueous extract of the roots and leaves of ashwagandha (*Withania somnifera*) manufactured and distributed by Natreon, the study's funder. Ashwagandha, also known as Indian ginseng, has been used in the South Asian botanical medical tradition Ayurveda for centuries.

In the US market, ashwagandha has enjoyed an upward sales trajectory. Sales data compiled by HerbalGram, which compiles sales analysis of botanical products annually, revealed a 25% year-over-

year increase for ashwagandha in the natural retail channel. This is boosted mainly by the rise of adaptogenic consumer products with general health claims, from supplements to tonics to functional beverages, according to market research firm Nielsen.

But according to Dr. Tim Ziegenfuss, CEO of The Center for Applied Health Sciences and one of the lead authors of this current study, these latest results "help

establish an evidence

base for this impressive Ayurvedic herb in sports nutrition." The results were published recently in the journal *Nutrients*.

Study details

Thirty-eight recreationally active men completed the study. The primary outcomes the researchers wanted to explore included changes in muscle strength, body composition, muscle endurance, power and recovery. Because previous studies on ashwagandha have linked it to anti-inflammatory, anabolic, and antioxidant effects, the researchers hypothesized that the herb may also benefit physical performance and muscle recovery in a sports context.

Participants first were matched based on training experience and baseline body weight before researchers divided them into two groups—19 were assigned capsules containing 500 mg of ashwagandha extract, while another 19 participants were assigned capsules containing rice flour. Both capsules were similar in size, color, and smell.

Throughout the study period, participants were instructed to take one capsule in the morning with 12 fluid ounces of cold tap water. Participants visited a clinic four times during the period, in which they went through several exercise protocols, such as bench presses and squats. Researchers measured how many sets a participant could complete and for how long, as well as their power output using specialized equipment. Body measurements and blood analysis were also collected throughout the study.

“Ashwagandha extract from the plant and leaves (Sensoril), in combination with a progressive, heavy resistance training program, resulted in significant improvements in maximal lower-body and upper-body strength,” the researchers wrote. Researchers also observed that participants who ingested the placebo reported more muscle soreness posttraining than the ashwagandha group.

Future studies

Potential limitations of the study included the fact that workouts were not strictly supervised by study personnel, and that the participants' diets were not closely controlled. “The subjects' total energy and protein intakes may have undermined their ability to attain more pronounced changes in muscle mass,” the authors wrote. “Future studies should attempt to more thoroughly control diet, and then include measurements of appetite.”

Asian ailments: New report highlights steep rise in obesity and diabetes across the region

By Cheryl Tay
04-Dec-2018 -
NutraIngredients Asia

Obesity, diabetes,
anaemia in women

of reproductive age, and childhood malnutrition are the among the most pressing health issues in Asia, according to the Global Nutrition Report 2018.

Countries in East, South East and South Asia are facing all these issues to varying degrees, with obesity and diabetes major problems in China, Japan, Indonesia, Malaysia, the Philippines, Thailand and India. All the aforementioned countries are struggling with anaemia in women of reproductive age, and childhood malnutrition is especially prevalent in Indonesia, Malaysia, the Philippines and India. The annual report was published for the first time in 2014 by Nutrition for Growth (N4G), a partnership between the Japanese, UK and Brazilian governments that is supported by civil society organisations and philanthropic foundations. At the first N4G summit in 2013, a Global N4G Compact was endorsed by 100 stakeholders — including governments, aid donors, civil society, the UN and businesses — who pledged over \$4bn for nutrition-specific projects, and \$19bn for nutrition-sensitive projects. The report was created to track these commitments, as well as to provide comprehensive updates on the state of global nutrition.

Higher incomes, larger waistlines
All the countries experienced a rise in GDP per capita between 2014 and 2017, a factor that typically correlates with higher obesity rates. While the incidence of diabetes and

obesity between 2000 and 2015 grew in all seven countries, the increase was particularly steep in China, Malaysia and Thailand. Within that period, the incidence of obesity among male children and teenagers aged five to 19 increased by 12.9% in China, 10% in Malaysia, and 10.5% in Thailand. This meant that of this demographic in 2015, 15.4% in China and Malaysia and 14.2% in Thailand were obese — the highest percentages among all seven countries.

While the figures for female children and teenagers in these three countries were markedly lower than those for males, they were still the highest among the seven countries: 7.1% in China, 10.4% in Malaysia, and 8.7% in Thailand. In adults aged 20 and above, the obesity rates rose by 8.6% to 13% among men and 9.1% to 17.9% among women in Malaysia, and 7.6% to 12.7% among women in Thailand. Once again, these were the highest obesity rates among all seven countries. When it came to diabetes, men in China experienced the highest increase of 4% to 9.9% between 2000 and 2015. This rate of diabetes was second only to that in Malaysia, where 11.4% of men were reported as diabetic in 2015. Among the seven countries, only Japanese women saw a decline in diabetes rates, from 5.6% to 5% within the same period.

You are what you eat

The limited availability of nutritious foods was one of the reasons for higher diabetes and obesity rates highlighted in the report. In India and China, for instance, less than 25% of packaged foods carry a Health Star Rating of 3.5 or more, significantly lower than the



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Deepak Sethi

37% in Australia and New Zealand. The report stated: "The results suggest a disparity between developed and emerging markets. On average across all nine markets (including the UK, US, Hong Kong, South Africa and Mexico), 31% of products have a Health Star Rating of 3.5 or more, meaning 69% of products did not meet the healthy threshold and are thus of relatively low nutritional quality."

In Indonesia and Malaysia, the rapidly rising volume of sugar consumption has been contributing to complications with diabetes and obesity.

Women and children

The incidence of anaemia in women of reproductive age was worryingly high across all seven countries, ranging from 14.9% in the Philippines to 51.5% in India. Pregnant women were the most severely affected, with the lowest incidence of anaemia in the Philippines at 30.3%, and the highest in India at 50.1%.

Malnutrition in children under five remained prevalent issues in Indonesia, Malaysia, the Philippines and especially India, which is home to the world's largest population of malnourished children (46.6 million stunted and 25.5 million wasted).

In 2013, 13.5% of children below five in Indonesia, 11.5% in Malaysia, 7.1% in the Philippines and 20.8% in India were considered wasted. In 2015, 36.4% in Indonesia, 20.7% in Malaysia, 33.4% in the Philippines and 37.9% in India were considered stunted.

With the exception of Malaysia, however, these figures represented declines in the incidence of stunting in these countries between 2000 and 2015. Indonesia and India had shown the most improvement, with percentages of stunted children below five having dropped by 6% in

the former and 16.3% in the latter.

In China, the incidence of stunting among children under five fell from 17.8% to 8.1% between 2000 and 2015. In Thailand, this figure dropped from 15.7% to 10.5%.

Indonesia, the Philippines and India had the highest rates of under-five mortality per 1,000 live births. 2017 data from the UN Inter-agency Group for Child Mortality Estimation 2018 showed that there were 25.4 deaths per 1,000 live births in Indonesia, 28.1 in the Philippines, and 39.4 in India.

However, as in the case of stunting in children under five, these figures represented gradual declines since 2014. Once again, Malaysia was the exception, with its rate of under-five mortality per 1,000 live births having seen a slow but steady increase since 2014, from 7.5 to 7.9.

Policy to prevent and protect The improvements in childhood malnutrition in China could be partially attributed to government action to fight the problem. Healthy China 2030, which was started in 2016, is the first national medium-to long-term strategic health plan, and "underlines the significant political will to enhance the health status of Chinese citizens".

This was followed in 2017 by a new National Nutrition Plan to 2030 that targets stunting, obesity, anaemia, breastfeeding, and folic acid deficiency among more vulnerable demographics.

The authors further stated: "The plan reinforces existing nutrition programmes benefitting infants, children, primary and middle school students, and pregnant women. It also proposes new interventions for people who are older, ill or living in poor areas.

"Given the historically unbalanced

focus on rural populations, especially infants and children, another goal is to reduce the difference in height between urban and rural students."

The plan includes a healthy lifestyle campaign, nutrition monitoring, recommended dietary intakes and limits, nutrition labelling, and fortified food standards. China has also taken a multi-sectoral approach, leading to changes in supply-side policy.

The authors wrote: "The Food and Nutrition Development Outline 2014 — 2020 emphasises food quantity and quality equally, as well as innovation and the coordination of production and consumption.

Meanwhile, agricultural policies are evolving — albeit slowly — to promote the evaluation of agricultural products' quality and nutrition, as well as research on the impact of food processing, storage and transportation of nutrients."

In India, the government has developed a national nutrition strategy that draws on "district-specific nutrition profiles to enable diagnostic work and policy action to reduce inequalities and childhood stunting".

The national government also works closely with state governments to implement this strategy, and the FSSAI's continuous push for mandatory fortification of staples and essentials such as rice, wheat, salt, milk and edible oils plays a major role in efforts to lower the incidence of malnutrition in the country.

In Malaysia, the government has embarked on public-private partnerships with tech companies to develop apps designed to motivate the user to exercise, and facilitate better access to professionals such as personal trainers, nutritionists and healthcare workers.



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Botanical blend may have positive effects on endurance and muscle in young men: Indian study

By Cheryl Tay

13-Dec-2018 - NutraIngredients Asia

A botanical formulation featuring extracts from two popular Asian herbs may help to increase muscle strength and size, as well as endurance and total lean mass, say researchers in India.

The proprietary composition, GMCT, contains the extracts *Garcinia mangostana* (GM) fruit rind and *Cinnamomum tamala* (CT) leaf. The study, published in the *Journal of the International Society of Sports Nutrition*, was conducted to systematically evaluate the impact of GMCT on physical performance and muscle strength in a mouse model. This was followed by a 42-day double-blind, placebo-controlled human trial in resistance-trained adult men.

Mighty mice

For the mouse study, the researchers used 24 Swiss albino mice, divided into four groups: all were placed on a standard laboratory diet, with one group given Carboxymethylcellulose sodium (CMC) and another given Oxymetholone (OXY). In the third group, each mouse received 150mg/kg of GMCT, and in the third group, each was given 300mg/kg of GMCT. The treatment period lasted 21 days, after which the mice's physical performance was tested in a forced swimming test and muscle strength in a forelimb grip strength experiment.

The researchers then reported that the mice that had each received 300mg/kg of GMCT

showed significant improvement in swimming times (6.6 to 7.95 minutes versus 4.5 to 5.5 minutes in the CMC group) and distance (341.22m to 407m versus 260.84m to 310m in the CMC group). Their grip strength was also superior to that of the CMC group, ranging from 43.92N to 50.89N, compared to the latter's 35N to 41.92N.

Human resistance

For the human trial, the researchers recruited 38 resistance-trained young men whose mean age was between 26.32 and 30.71 years. Their mean body weight was between 67.79kg and 80.63kg, and mean BMI between 22.92 and 26.46.

Half the participants each received 800mg of GMCT daily, with the other half receiving an equal amount of placebo for 42 days. They also had primary variables such as their one-rep maximum (1-RM) bench press, leg press, and leg extension repetitions measured at baseline and on the 14, 28 and 42 days of the intervention period.

Before and after the intervention period, their anthropometric parameters and serum markers, including free testosterone, insulin-like growth factor (IGF-1), insulin and lactate, were also measured. After 42 days, per protocol analyses found that mean changes from baseline in the treatment group differed significantly from those in the placebo group, including the 1-RM bench press (23.47kg to 33.54kg versus 3.42kg to 5.48kg), leg press (29.32kg to 44.49kg versus 5.21kg to 6.93kg), and number of leg

extension repetitions (6.58 to 9.15 versus 2.05 to 3.27).

Furthermore, inter-group analyses showed that the men in the treatment group had experienced a significant increase in circumference in their arms, as well as in their lean mass, when compared to the placebo group. However, GMCT did not significantly improve free testosterone, IGF-1, insulin or lactate levels, compared to placebo.

More information needed

The researchers said the human study lacked quantitative information regarding the participants' food intake during the intervention period. The participants were also instructed not to alter their regular food habits, as the aim was to assess the ergogenic impact of the herbal formulation when combined with a resistance training protocol in the subjects, without the need for dietary changes.

However, even though they claimed to have followed the instructions, the lack of information on daily caloric or protein intake limited the evaluation to whether these factors did in fact influence the effects of GMCT supplementation. As such, the researchers recommended a dietary analysis of the participants' calorie and protein consumption in future studies.

At the same time, some data for analysis that had been lost due to certain subjects being unable to attend the DEXA scan, or technical issues in collecting serum samples for testosterone analysis. These issues correlated with a substantial effect from GMCT supplementation, in comparison with placebo. They wrote: "We firmly believe that the comparative analyses would have been better if we could have included the data that we lost. Future studies in a larger sample size with better measure can address these issues."

They then concluded:

Conclusion: “The present clinical trial demonstrates that GMCT supplementation in combination with resistance training is effective in promoting muscle strength and growth, and in improving endurance performance in resistance-trained young males. “This study also indicates that the participants tolerated well the GMCT supplementation, and have substantial benefits in improving lean body mass in conjunction with a resistance training programme.

“Future studies should be conducted to explore the underlying molecular mechanisms responsible for the anabolic activities of GMCT. Further, it would be interesting to evaluate whether GMCT supplementation can improve muscle functions and physical performances in ageing males and untrained young men as well.”

Data supports increased role for probiotics, prebiotics in healthy aging, study finds

By Hank Schultz

28-Nov-2018 - NutraIngredients Asia

Gut dysbiosis is a common feature of the afflictions that come with aging, according to a recent Japanese review. The finding opens wider the door for probiotics and prebiotics in a healthy aging positioning.

Dealing with the implications of aging populations is a worldwide issue. China, Japan, the United States and many European countries are facing demographic bulges that will see an increasing share of gross domestic product going to care for these populations.

Critical problem of aging

The issue is especially acute in Japan, where a recent census found that almost 27% of Japanese are

now 65 or older. Many of these elderly Japanese live alone, and the number of younger workers available to support them is shrinking. The country’s population fell by more than 1 million in the 2010-2015 time frame to about 127 million. With a low birth rate, some reports have predicted that Japan’s population may fall below the 100 million mark in coming decades.

So finding cost effective ways to support this population is of critical national importance. In the recent review, published in the World Journal of Gastroenterology, researcher Yukihiro Shimizu summarized the microbiome aspects of the afflictions of aging.

Shimizu looked at the microbiome research related to Alzheimer’s Disease, osteoporosis, sarcopenia and atherosclerotic cardiovascular disease and stroke. (Obesity, which is a plague elsewhere in the



Image © iStock.com/curtoicurto

developed world, is not yet a serious concern for the elderly populations in Japan.)

Finding a gut link for Alzheimer’s

The review found a wealth of information on dysbiosis connected to all of these conditions. A recent study on Japanese Alzheimer’s Disease patients isolated four bacterial strains common to all, information with Shimizu said may shed light on the unique gut

microbiome features related to this condition.

The review also noted that as much as 90% of serotonin was produced in the gut, and exogenous serotonin has been shown in a mouse model to reduce deposition in the brain of the amyloid plaque associated with the disease. As gut-produced serotonin has yet to be shown to cross the blood-brain barrier, Shimizu noted that, “Thus, the actual role of gut-derived serotonin in brain function remains unclear.” But he said that studies have shown that a reduced gut microbial diversity seems associated with the disease.

Probiotics, prebiotics specifically cited in osteoporosis

For osteoporosis, the review noted that most of the microbiome data comes from mouse models. A recent study found that gut microbes can “increase serum

concentrations of insulin-like growth factor-1 (IGF-1), which promotes bone formation and remodeling.” The review found a specific role for probiotics here, noting that, “Probiotics such as Lactobacillus strains have been shown to increase bone mass along with changes in gut microbiota.”

Shimizu also noted that prebiotics have been shown by several studies to increase calcium absorption. Taken together, he said recent research shows that, “Supplementation with probiotics or prebiotics may be a potential therapeutic intervention for the prevention or treatment of osteoporosis in humans. However, there is limited evidence showing that prebiotics are effective in patients with postmenopausal or senile osteoporosis.”

Sarcopenia, CVD evidence
For sarcopenia, the review found that the evidence is less clear cut. But it did find studies that link probiotics with preventing muscle loss in mice with leukemia, and cited a study linking prebiotics with improved muscle function in humans as measured by grip strength.

For heart disease, the review cited studies linking the gut microbiome with playing both a positive and negative role. Some aspects of gut dysbiosis have been linked with increase levels of trimethylamine-Noxides in the liver, which is associated with arterial plaque formation. But other gut microbial species have been associated with improved lipid metabolism and reduced cholesterol levels.

“Although, adequate exercise and a proper diet are important for the prevention of these diseases, the combination of these lifestyle interventions with methods that manipulate the composition and/or diversity of gut microbiota may be a promising strategy for maintenance of healthy conditions with preserved activities of daily living,” the review concluded.

Further study needed on seafood-derived omega-3's healthy ageing potential: Cohort study

By Cheryl Tay 19-Dec-2018 - NutraIngredients Asia

Omega-3 polyunsaturated fatty acids (PUFAs) from seafood – particularly EPA and DPA (eicosapentaenoic acid and docosapentaenoic acid) – can support healthy ageing, according to a prospective cohort study.

The study, published in BMJ, defined 'healthy ageing' as "survival without chronic diseases (i.e., cardiovascular disease, cancer, lung disease,

and severe chronic kidney disease), cognitive and physical dysfunction, or death from other causes not part of the healthy ageing outcome after age 65". The researchers sought to investigate the longitudinal association between serial biomarker measures of circulating omega-3 PUFAs and healthy ageing, and recruited participants from four communities in the US between 1992 and 2015.

Fatty acid follow-up

The cohort had 2,622 adults with a mean age of 74 years and who were in generally good health at baseline, and the researchers followed up on them for the 22 years. Their plasma phospholipid omega-3 PUFA levels were measured at baseline, six and 13 years to provide an objective assessment of four individual PUFAs: two mainly derived from seafood (EPA and DHA), one predominantly endogenous (DPA), and one derived mainly from plants (α -linolenic acid, or ALA).

The researchers also reviewed the participants' medical records and diagnostic tests, and subsequently reported that 89% of the participants experienced unhealthy ageing during the follow-up period, while the remaining 11% remained relatively healthy.

They also found, after multivariable

adjustments, that higher levels of long-chain omega-3 PUFAs were linked to an 18% lower risk of unhealthy ageing. In addition, the group with the highest cumulative mean concentrations of EPA from seafood had a 24% lower risk of unhealthy ageing than the group with the lowest concentrations.

Individually, higher EPA and DPA — but not DHA — levels were associated with a respective 15% and 16% lower risk of unhealthy ageing. When it came to the predominantly endogenously metabolised DPA, the three groups with the highest level of the fatty acid had an 18% to 21% reduction in risk when compared to the group with the lowest level. DHA from seafood and ALA from plants, however, were not found to be linked to healthy ageing.

In terms of cardiovascular disease risk, the study's results were supported by previously published literature, but the effects of omega-3 PUFAs on the other components of unhealthy ageing as defined by the current study had been mixed or inconclusive in earlier research.

The researchers hypothesised that self-reported dietary data might have been partially responsible for this, as such data may be subject to measurement errors and recall bias. To ensure clearer, more accurate

results, the current study combined reported dietary data with repeated biomarker measurements to account for trends over time in individual omega-3 PUFAs.

Considerations before interpretation

The researchers also stated that there were a few points worth considering when interpreting the study's results. Firstly, biomarker concentrations are a function



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of both dietary intake and metabolism, influenced by genetic and exogenous factors that are difficult to separate. Despite the lack of a significant association between healthy ageing and DHA from seafood, they had observed that after adjusting for the consumption of fish, the link between became noticeable. This implies that metabolically determined levels of DHA play a larger role in healthy ageing than DHA levels determined by diet.

The researchers added that primarily endogenously derived DPA acted as a metabolic intermediary between EPA and DHA, and that further investigation into the independent and combined impact of DPA with other omega-3 PUFAs in controlled feeding conditions were needed for their specific roles in healthy ageing to be better understood.

The second consideration was that the link between EPA and healthy ageing, and between combined EPA, DPA and DHA and healthy ageing, were significant only in the group with the highest levels of these omega-3 PUFA.

As the study cohort was born in the 1910s and 1920s, they tended to enjoy long-term improvements in population-level socioeconomic resources, which could have influenced their longevity and health across their lifespan. Since education attainment was one of the strongest covariates in the study, the researchers said there was a possibility of differential exposures to unmeasured socioeconomic resource-related chronic and acute stressors that could have affected the results.

Lastly, the median circulating concentrations of ALA across the cohort made up a mere 0.09% to 0.21% of total fatty acids, far lower than the concentrations of the other

PUFAs, a factor that could have contributed to the lack of a significant association between plant-derived ALA and healthy ageing. The researchers concluded: "In older adults, a higher cumulative level of serially measured circulating omega-3 PUFAs from seafood (EPA and DPA), but not DHA from seafood or ALA from plants, was associated with a higher likelihood of healthy ageing.

"These findings support guidelines for increased dietary consumption of omega-3 PUFAs in older adults. (However) epidemiological associations cannot infer causality, so we caution against using these findings to inform public health policy or nutritional guidelines. Following the WHO's policy framework for healthy ageing, any evidence-based clues to improve health in later life are welcome, but additional efforts to accelerate this area of research are essential."

Hemp's cognitive help: Elixinol's supplements finding favour amongst Japanese consumers

By Tingmin Koe
06-Dec-2018 - NutraIngredients Asia

Hemp oil supplements are gaining higher acceptance in Japan, with manufacturer Elixinol ramping up its investment in the country on the back of more favourable advertising rules.

Hemp oil, which contains cannabidiol (CBD), is the main product that Elixinol sells in Japan, along with chocolate bars containing CBD and oil essence. The hemp oil

products are recommended for improving concentration and relaxation, according to Elixinol's website. To find out the link between hemp and cognitive function, NutraIngredients-Asia spoke to Paul Benhaim, the founder and CEO of Australian headquartered firm Elixinol.

"It works on the CBD system which is throughout our bodies and in our brains. Since our brains have CBD receptors, this suggests that we used to consume hemp plant in the wild," Benhaim said. "(But) in the modern culture, we have forgotten about this, that's why these products are coming back to play a role in brain health, including epilepsy, autism, and neuropathic brain disorders. There are already existing studies that suggest that CBD interacts with 5-HT1A receptors to produce anxiolytic effects and its potential as a type of anxiolytic drug."

Currently, the firm is not making specific health claims, but is selling hemp oil for general health. "We are not making any health claims now. But we are making scientifically-backed nutraceutical products and that sometimes require clinical studies and trials which may lead to health claims or the development of medicines in the future. As a company, we have derived anecdotal evidence (of CBD's effects on cognitive health) from our consumers. Some have told us that they use CBD for epilepsy and neuropathic pain disorders."



In APAC, the firm has found the biggest success in Japan. Asked why hemp was widely accepted, he explained that hemp seeds, together with sesame seeds, was part of a local spice consumed by the locals, and has enjoyed a long history in the country. "In Asia, Japan is certainly the leading country today. It has been a long progress. We have been working with the Japanese people and government for nearly five years. The First Lady (Akie Abe) is also supportive and a lot of people are opening up. For example, Rakuten and Yahoo are selling these kind of products. The support is also coming when people recognise that the products we sell do not get people high and that they are not a drug."

Progress in Japan
With further success in sight, the firm recently injected a AUD\$3m investment to scale up its sales and marketing in Japan. "There is an increased acceptance this year, and that's why we are confident that year 2019 is a year of success in Japan," Benhaim said.

Earlier in May, the Japanese authorities have approved outdoor advertisement for hemp-derived CBD for the first time – a mark of progress of Japan's hemp industry. As a result, Elixinol was able to advertise its hemp oil products – in Tokyo's Omotesando train station. Besides Elixinol, Canadian-based Phivida, and Naturally Splendid are some of the players in Japan's hemp market.

R&D efforts

Elixinol is exploring the interaction between CBD and other plant-based ingredients as part of its R&D efforts. "A clear calendar" for new products has been set, Benhaim said. As for his hemp food business, Benhaim said that Hemp Food Australia will be launching a new product in this month.

Probiotics present 'new way' to fight Staph infections: US, Thai researchers

By Cheryl Tay
19-Dec-2018 - NutraIngredients Asia

A certain strain of probiotic Bacillus bacteria can help eliminate the harmful bacteria Staphylococcus aureus, according to a joint population study by US and Thai researchers.



Live probiotic bacteria ingested through food intake are thought to be able to minimise intestinal colonisation by pathogens, thereby lowering the body's susceptibility to infection. One such bacteria is *B. subtilis*, which is often found in vegetables and probiotic digestive supplements. It is said to be effective against *S. aureus*, a type of bacteria that can cause severe antibiotic-resistant infections. Despite this, the underlying mechanisms behind its effects against *S. aureus* are still unclear.

Colonisation and exclusion

Based on this, researchers from the National Institutes of Health in the US, as well as Thailand's Mahidol University and Rajamangala University of Technology, conducted a study on a rural Thai population to assess the effects of *B. subtilis* against *S. aureus* colonisation. They recruited 200

healthy individuals, all from rural areas in Thailand so they could rule out the food sterilisation and antibiotic usage common in most urban areas, which could potentially reduce the abundance of probiotic bacteria in the participants' food and intestinal tracts.

They then collected faecal samples from all the participants for analysis, and reported that 101 samples tested positive for *Bacillus* — primarily *B. subtilis*. At the same time, 12.5% of them were carrying *S. aureus* in their intestines. Interestingly, the presence of *Bacillus* bacteria was correlated with the absence of *S. aureus* in the faecal samples. The researchers added, however, that the results showed "no substantial high-order taxonomic differences in the microbiome composition between *S. aureus* carriers and non-carriers", leading them to hypothesise that the *Bacillus* isolates produced a substance that "directly and specifically" impeded intestinal colonisation by *S. aureus*.

Mediation in the mouse microbiome

The researchers then conducted a mouse study with similar primary outcomes, and discovered that in order for *S. aureus* to successfully grow in the mice's guts, a functioning sensing system was required. They found that all the 100-plus *Bacillus* isolates they had retained from the faecal samples obtained in the human study effectively inhibited that system.

Discoveries to aid in decolonisation?

The researchers stated that the current study provided evidence for a molecular mechanism through which probiotic bacteria in food could directly inhibit pathogenic colonisation, proving in particular the probiotic value of *B. subtilis*.

In conclusion, they wrote: "Our study suggests several valuable translational applications regarding alternative strategies to combat antibiotic-resistant *S. aureus*.

"First, the quorum-quenching fengycins — which previously had been known only for their antifungal activity — could potentially be used as quorum-sensing blockers in eagerly sought antivirulence-based efforts to treat staphylococcal infections.

"Second, *Bacillus*-containing probiotics could be used for simple and safe *S. aureus* decolonisation strategies. In that regard, it is particularly noteworthy that our human data indicate that probiotic *Bacillus* can comprehensively eradicate intestinal as well as nasal *S. aureus* colonisation.

"Such a probiotic approach would have numerous advantages over the present standard topical strategy involving antibiotics, which is aimed exclusively at decolonising the nose. "Our findings suggest a probiotic-based method for *S. aureus* decolonisation, and new ways to fight *S. aureus* infections."

Sports in high altitudes? Brazilian researchers suggest supplementing with glutamine, carbohydrates

By Adi Menayang 11-Dec-2018 - NutraIngredients Asia

Supplementation with carbohydrates and glutamine may mitigate the negative effects of playing sports or doing other rigorous activities in high altitudes, suggest Brazilian researchers.

Two researchers from the Federal University of Sao Paulo in Brazil sought to find out the latest consensus regarding possible nutritional measures to optimize

athletic performance in high altitudes. To do this, they reviewed peer-reviewed studies published between 1985 and 2018. Their paper was published in the journal *Nutrition*.

They approached the effects of high-altitude hypoxia (or a deficiency of oxygen reaching the body's tissues) from the point of view of exercise immunology. "High altitudes are a challenge for human physiology and for sports enthusiasts," they wrote. "Several reasons lead to deterioration in performance at high altitudes. Hypoxia owing to high altitude causes a breakdown of homeostasis with imbalance in several physiological systems, including the immune system."

It's a relevant issue for countries in Latin America, where the Andes mountain range, the world's longest continental mountain range, stretches through seven countries. "In South America, for example, each year ~4000 people visit the Aconcagua Provincial Park in the Argentine Andes, where the maximum altitude can reach 6960 m," the researchers said.

Nutritional interventions:

Carbohydrates and glutamine
The researchers have studied the effects of glutamine supplementation in the past, hence their current search focused on the body of evidence supporting glutamine's benefit for hypoxia. Numerous studies have

demonstrated reduced plasma and tissue glutamine concentrations during and after intense and prolonged exercise.

"In one of the few studies on the importance of glutamine to the immune system in hypoxia, elite runners were exposed to an altitude of 1640 m for 4 weeks and a considerable elevation was observed in the incidence of upper respiratory tract infections (URTIs), accompanied by a reduction in plasma glutamine," they wrote, citing a 2000 article by British researchers.

They've also observed improvements of the immune system when athletes in high altitudes were supplemented with carbohydrates, attributing it to improved mucosal immunity and increasing salivary flow after exercise.

"Supplementation with glutamine and carbohydrates, which are important strategies at sea level, could be a useful tool to mitigate the effects of hypoxia," they wrote. But in sum, studies on this particular issue remain scarce.

"More studies are needed to understand the role of sports nutrition and immunonutrition from a broader perspective, in relation to different sports modalities, times of exposure to hypoxia, intensity of hypoxia, and level of physical conditioning."

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FOOD SCIENCE & INDUSTRY NEWS

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Expert analysis: Meat and seafood consumption in Asia will rise 78% by 2050

By Pearly Neo 03-Dec-2018 - Food Navigator Asia

Asia's appetite for meat and seafood protein will rise by an astounding 78% by 2050, driven by growing wealth and urbanisation in the region.

According to by Asia Research and Engagement's (ARE) report 'Charting Asia's Protein Journey', meat and seafood consumption in Asia will rise 33% by 2030, and 78% from 2017 to 2050. "This will take place on the back of higher urbanisation rates, [economic growth, rising incomes] and growing wealth in emerging Asian countries," said the report authors.

"Asia's rapidly growing middle class is fuelling an increase in protein consumption," added Robert Appleby, Founder and Partner, ADM Capital. "An interesting landscape has developed as countries without adequate resources to feed their populations have turned their attention to domestic food security, via cross-border purchases of agribusiness companies in countries with

sufficient resources and the ability to export foods. This global strategy to achieve food security acknowledges the significant increase in protein consumption with population growth and affluence."

Additionally, the report revealed that by 2050, China's total contribution to the Asian region will drop to 50%, as compared to its current 70%. "Other emerging and frontier markets will be the main contributors to additional meat and fish demand," stated the authors. "Pakistan, Philippines, Vietnam and Thailand are the four most populated countries and set to lead demand growth for Rest of Asia (this excludes China, Bangladesh, Indonesia, South Korea, India, Japan), making up over 70% of this group. In particular, we expect Pakistan's relative weight in the group to increase to approximately 36% by 2050 from 30% at present."

Other protein consumption trends in Asia

That said, protein consumption trends in Asia are not necessarily driven by population growth or size. This is evidenced by the report's findings that Indonesia's consumption will overtake India's within the next 20 years. India's

population is some five times that of Indonesia per capita GDP is predicted to increase at a faster pace (over the forecast period).

"In our projections, Indonesia's total meat and seafood supply will grow by nearly three times between 2018 and 2050 — a much faster pace than the 60% expected for India over the same period," said the authors. "This faster pace will result in Indonesia's meat consumption overtaking India's by 2036 at around 7.5 million tonnes."

The report speculates that this is due to a 'cultural aversion towards meat consumption' in India, and higher income levels in Indonesia. In addition, poultry has emerged as the most preferred protein type in Bangladesh, India and Indonesia, whereas East Asian countries still show a clear preference for pork.

"East Asia typically favours pork over other types of meat, accounting for about 63% of total meat consumption (excluding fish) in China and 52% in Korea — respectively about three and two times the amount of the second meat type consumed," said the report. "Japan's meat preferences are more balanced, with pork consumption representing 42% of

the total (excluding fish), followed by poultry at 39%.”

That said, a marked evolution in Japan’s protein tastes was also highlighted in the report. Fish, traditionally one of Japan’s largest protein consumption sources via local products such as sushi and sashimi, is on a downturn.

“Fish consumption [in Japan] has steadily declined from nearly 70% of total animal protein consumption (including animal-derived products such as dairy and eggs) in the early 1960s to about 38% in 2014,” it said. “At this pace of change, meat protein will match fish protein consumption by the end of the decade.”

Taiwan and Mongolia have also seen declines in meat and seafood consumption. The authors surmised that this is due to health consciousness in the former, and urban migration leading to wider food opportunities in the latter.

The future of food: the age of the bots

By Ellie Woollven 18-Dec-2018 - Food Manufacture

Marius Robles, chief executive and founder of Reimagine Food, forecasts how the consumer and macro trends of the next 10 years will affect food manufacturing.

For society at large, the future is arriving faster than they think, suggests Marius Robles. As such, any complacency from a food manufacturer is suicidal, regardless of whether or not the business has a market-leading position. It’s typically bold thinking from the man who claims to have set up the world’s “first disruptive centre committed to the future of food” .

As chief executive and co-founder of Reimagine Food, Robles connects the more innovative

strands of the food and drink industry with technologies that are transforming the way consumers select, purchase and, ultimately, eat and drink.

Robles’ latest forecast is that food and drink manufacturing in the future will be driven by what he terms the Food Paradox – a permanent coexistence between the natural and the artificial. And for manufacturers, it’s all about embracing the correct technology at the right time to maximise the benefit, both for them and the consumer.

“Technology is going to render many companies obsolete – mainly those without a capacity for accelerated transformation and which have grown with innovative short-sightedness,” he says. “But those businesses that have openly embraced technology and have been founded as practically digital rather than analogue enterprises, will be able to move much faster. We are talking about collaborative robots [cobots], artificial intelligence [AI], big data etc.”

Macro trends forecast

Robles’ previous consumer and macro trends forecast makes it clear that the way food is manufactured will also be affected. He predicts the first to undergo this change will be the primary sector, through the use of harvesting robots. “Most of today’s food factories were

conceived under the notion of centralisation and their products are aimed at large-scale distribution – this is the first aspect that will change,” predicts Robles. “What would happen if we started to have food products created exclusively for digital distribution, without passing through a supermarket?”

Secondly, personalisation will have an effect, he says. “How prepared are food manufacturers to create personalised products for their clients? I recently talked to some world leaders in the baking, snacking and confectionery sectors and they reported having three main challenges on their plate: aligning their products with current health trends; working on new packaging models; and increasing the personalisation of some products.

“They asked how they could possibly align more than 150 factories with personalisation trends. Therein lies the challenge.”

Having a process model that facilitates fast-prototyping is yet another problem. “I still meet manufacturers that take an average of two to three years between conceiving a product and market launch. That is absurd, especially when we consider that accelerated and agile food start-ups are taking market share from big brands. Large food manufacturers are losing the growth game.”



While Robles does not advocate that established manufacturers move on to a start-up model overnight, he believes, in some cases, they should try to think more like start-ups. “I recently visited two firms in San Francisco: Just and Impossible Foods,” he says. “Both are still technically labelled as start-ups, but their positioning and figures say otherwise. I think they’ll soon be market leaders.”

Slow blockchain growth

As far as existing technologies go, Robles says blockchain’s growth so far is slow, with the main interest coming from tech companies rather than food manufacturers. “But consumers hold the key,” he says. “Although the first applications have focused on controlling food safety, during the coming decade food markets (just like financial) will probably be governed by automatic transactions, from the negotiation of large-scale deals between suppliers to the automation of home delivery.”

In imagining the factory of the future, Robles believes deploying AI in large-scale food manufacture will be one of the main challenges.

“This includes nanotechnology, Internet of Things sensors for supply chain management, predictive machine analytics, wearable robots, cameras using machine-learning to categorise boxes in warehouses, scanning for quality and assurance defects, and cobots,” he says. “I also believe technology will provide us with high-quality predictive analysis, enabling factories to detect any elements blocking productivity and predict bottlenecks.”

He feels Brexit, meanwhile, could be a catalyst for the UK “to transform the dystopian part” into one “full of possibilities”. Given the level of dependence on overseas workers, it might allow the UK to

become a leader in “food revolution”, he says, adding, “There will be a need to accelerate some industries and make them smarter.”

Robot development

Robles believes the progress in robot development that could revolutionise the agricultural sector in particular is huge, he says. “A recent study by Anderson Midlands found the UK employs around 10,300 seasonal workers every year to manage 300,000t of fruit harvests, worth £180m.

In the US, harvesting fruit and vegetables requires a similar workforce. “However, market research from Alpha Brown valued the US harvesting robot market at \$5.5bn. This figure is based on the capacity of robots to offset the current cost of labour and will be the factor that eventually determines the level of deployment of such technologies in the market.”

Since 2013, he argues, there has been a “maturity curve” in the application of robotics in the food sector, where they have passed the point of serving as entertainment and are now generally a guarantee of productivity. That said, and considering the fact that the cost of robotic technology has dropped by over 40% in five years, Robles believes “we will have to wait for a second wave of change in robotics applied to food”.

Combining robotics and AI could produce a new level of robotisation, Robles claims. Until now, we have sought to create robots that replicated repetitive tasks – hence the term automation, he adds. But what would happen if we were to witness a giant

technological leap?

Robles has identified more than 20 issues that will determine how our relationship with food will be transformed through robots. These include food mobility, cobots, chefbots, wearable robots, robot-driving-cooking, warehouse robots, flying robots and barista robots. The future, it seems, is all bot.

PBFA members to FDA: Banning use of dairy terms on plantbased foods is a ‘solution in search of a problem’

By Elaine Watson 03-Jan-2019 - Food Navigator USA

Enacting new labeling rules for plant-based ‘milks’ “would create unnecessary, confusing, and costly label changes that likely violate the First Amendment and would be struck down in court,” members of the Plant Based Foods Association (PBFA) have told the FDA as it solicits comments on labeling conventions.

Writing in response to a request for information on the use of dairy-derived terms in plant-based products, Doug Radi, CEO of flax-fueled brand Good Karma and PBFA board member, said the “entire debate over the use of the term milk and other dairy terms on plant-based foods and beverages is a solution in search of a problem .”



Image © iStock.com/Aamulya

He added: “Companies selling dairy alternatives are using easy to understand, clear, descriptive and truthful language. Many brands use terms such as milk, yogurt, cheese, and cream, all with appropriate qualifiers such as non-dairy, dairy-free, alternative, or with a descriptive compound word qualifier such as ‘flaxmilk.’

“Consumers think these words represent proper descriptors for the products and do not believe we are trying to pass off our products as a dairy product. In fact, we would not be successful doing so as consumer buying our products are looking for alternatives to dairy.

“Plant-based foods that can directly replace dairy-based products make use of the same terminology (e.g. milk, butter, cheese) because they serve the same purposes and are used in almost exactly the same way as their dairy counterparts (in cereal, a glass, smoothies, coffee, etc). Consumers understand words in context.”

Good Karma: Milk is a liquid beverage that you put in cereal, smoothies, a glass, recipes and coffee

At Good Karma, which adds pea protein isolate to its flaxseed-based milks and yogurts, Radi said, “We do not share the concern implied by FDA’s questions regarding potential risk of poor nutrition due to differences between dairy products and plant-based alternatives. To the contrary, our products are nutritionally dense containing similar levels of protein, calcium, vitamin A, and vitamin D as dairy milk. Plus, our products contain omega 3s from flax, less sugar, less saturated fat and cholesterol. And, our products are allergen friendly with no dairy, nuts or soy.”

He added: “Milk is a liquid beverage that you put in cereal, smoothies, a glass, recipes and coffee. It’s not necessarily something that only comes from

cows (see goats, sheep, almonds, soy, rice, oat, coconut). If anything, you should modernize the standard of identity to reflect the current market and NOT go back to the 1950s.”

Standards of identity were designed to tackle rampant dairy milk adulteration

The Animal Law Committee of the New York City Bar Association added that the standard of identity for milk (limiting it to the lacteal secretions of cows) was “established to address the rampant adulteration of dairy milk products in the early 20th century that harmed consumers who wished to purchase cows’ milk, not to preclude or hinder the marketing of truthfully labeled new variations or new foods.”

School Nutrition Association: Consumers ‘simply aren’t aware of the nutritional differences’ between dairy and plant-based milks

However, dairy brand Land O’ Lakes cited a 2018 IPSOS survey commissioned by Dairy Management Inc., which found that 68% of consumers that only purchase plant-based milks believe they are nutritionally equivalent to dairy milk, while 53% of consumers in general believe that plant-based food manufacturers label their products ‘milk’ because they have similar nutritional value. The School Nutrition Association, meanwhile, argued that many students and parents “simply aren’t aware of the nutritional differences” between dairy and plant-based milks.

Some brands of almond milk contain four times more nuts

than others

Consumers may also be unaware of the differences between different brands of plant-based milks, said the Animal Law Committee of the New York City Bar Association, which claimed that some brands of almondmilk contain four times more nuts than others.

“To help consumers determine the ratio of plant-sourced ingredients to water and other ingredients in plant-based milk products, the FDA should implement labeling requirements for these products similar to existing juice label requirements, which require juice products to disclose the proportion of fruit or vegetable juice to other ingredients.”

A new compliance policy?

While the FDA has largely ignored dairy producers’ calls for a crackdown on the use of dairy-derived terms such as milk, butter and cheese on plant-based products in recent years, FDA commissioner Dr Scott Gottlieb recently indicated that “a new compliance policy” may be on the cards.

But he also acknowledged that there could be legal challenges were the agency to suddenly ban terms such as ‘almondmilk’ having tacitly endorsed such terms on food labels for a decade, and recently issued a public request for information (RFI) to help inform the development of draft guidance to “provide greater clarity on appropriate labeling of plant-based alternatives.”

Image © iStock.com/Aamulya



The RFI includes questions about the size of the plant-based dairy market, how products are labeled and merchandised, and what direct or indirect messages brands in the space are giving out about the nutritional properties. The FDA also wants data on why consumers buy them, how they're used, whether they think they are healthier and how consumers perceive or understand 'soy milk' vs 'soy-based beverage' or 'soy drink.' The deadline for submitting comments is January 28.



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New £24m food research facility opens doors

By Aidan Fortune 10-Dec-2018 - Food Manufacture

A £24m research facility with a focus on the food industry has opened at the University of Nottingham. The Advanced Manufacturing Building (AMB) is home to the Institute for Advanced Manufacturing (IfAM), which has 8,918m of world-class research and teaching facilities for design, manufacturing, assembly and metrology, measurement, testing and modelling.

With a total research portfolio of £80m, scientific research takes place in key sectors, such as aerospace, automotive, food, biomedical, energy generation, chemical products and digital manufacturing. Professor Svetan Ratchev, director of IfAM, described the AMB as one of the largest manufacturing,

engineering, teaching and research facilities in the UK, housing some 400 staff, students and researchers.

Skills challenges

“Skills challenges remain a key issue for many manufacturing businesses in the UK, due to factors such as the fast pace of technology development, an ageing workforce and a shortage of graduates with relevant multidisciplinary skills and experience,” said Ratchev.

“The Institute is helping to shape the manufacturing research agenda nationally and internationally and is supplying the technology and specialist skills to support key industrial sectors and encourage the growth of emerging industries.”

The University collaborates with many of the world's leading companies, including Airbus, BAE Systems, BMW, Bentley Motors, Cummins, GSK, HP Enterprise, IBM, Jaguar Land Rover, Laing O'Rourke, Nestlé, PepsiCo, Rolls-Royce and Siemens. The Institute also specialises in helping industry to produce the products of the future, ranging from highly complexity, customised future aircraft and cars to artisan or allergen-free lines for big-name food brands and personalised medicine formulations for the pharmaceutical industry.

'The start of something truly special'

Juergen Maier, chief executive of Siemens UK, who officially opened the facility, said:

“This new facility heralds the start of something truly special for Nottingham, and will help place the region and indeed the country at the cutting edge of digital manufacturing.”

Image © iStock.com/dusanpetkovic



“Why is this important? It's important because our future lies in driving a new technological revolution focusing on AI, automation, robotics and 3D printing, as well as many other new exciting technologies. It will ensure graduates are at the cutting edge and ready to take up the high productivity, high-wage jobs of the future.”

Designed by Bond Bryan Architects and built by J. Tomlinson, the Advanced Manufacturing Building received £5m funding from D2N2 Local Enterprise Partnership, the private sector-led partnership of business, local authorities, skills and training providers, and community and voluntary organisations, which promotes economic and jobs growth across Derby, Derbyshire, Nottingham and Nottinghamshire.

Investing in the Future of Food: Collaborating with other entrepreneurs can speed development

By Elizabeth Crawford 14-Nov-2018 - Food Navigator USA

While the food and beverage industry is inherently competitive that doesn't mean companies need to operate as islands - rather, at Rabobank's FoodBytes! pitch slam in New York City the founder of whipped vegetable spread brand Frescious explains collaborating with other entrepreneurs can help startups build a strong foundation and grow more quickly.

“At FoodBytes! today, everyone is sharing so many of the same challenges and to gather around and discuss these and realize the amount of collaboration and cross-learning that can happen, is a really valuable experience,”

Noemie Delfassy, founder of Finer Flavors and creator of the Precious brand, told FoodNavigator-USA. She explained one of the shared-challenges addressed by the startups gathered at FoodBytes! in New York City earlier this fall was how to grow beyond ‘small batch’ production or ‘local’ distribution without alienating or losing early adopters who value those attributes and who may shun ‘big’ companies that use ‘industrial’ production.

She explained that when she first developed Precious as a line of fresh, whipped dips and spreads made from whole vegetables, nuts, lemon juice and salt she worked closely with chefs to create a local, loyal following who used and evangelized the product. This helped more people discovered the brand in a way that they still felt a local attachment to it.

As the brand expands with a second line of products that will pair the whipped vegetable spreads with crunchy dippers, Delfassy says she hopes to maintain the feeling that the brand is local in part by moving the headquarters to Southern California where the company will focus first on the surrounding region before slowly expanding outwards.

She acknowledges maintaining a local focus is difficult for businesses as they expand, explaining, “Food is inherently local, and it is tied to culture, and very quickly we had to serve different countries with different habits and different traditions around food, and even different languages.

So, as a small startup to serve a

complex mix of fragmented consumers was really hard.”

One way that Precious is navigating this challenge is by moving to the US and focusing on building a local market in Southern California, which will give it a launch pad for future expansion.

“If you start and you develop roots for the business in your local community and you are able to get supporters in your local community, then they will help you improve your product and grow,” she said.

‘The sweet spot between artisanal and industrial’
As for navigating the question of artisanal versus industrial, Precious is exploring production options that are easy to scale but do not compromise on quality.

“It was really the idea of finding the sweet spot between artisanal and industrial supply chain, and really looking at how we make our food and improving the food manufacturing practices so that we can deliver a really clean label product that is also delicious and affordable,” Delfassy explained.

With this in mind, the company landed on pouches – a form that is typically used in the US for baby food, which could be a confounding factor as the products roll out in the US.

“The pouches are a great format because the packaging content is really light and it allows us to use HPP technology. That said, there is a real risk of consumer confusion,

and some more issues with adoption because spreads and dips are not usually presented in this format,” Delfassy said, adding, “which is why we will explore other pack formats for our consumer launch here.”



Four strategies for food service to boost delivery and tap into consumer desire to eat at home more

By Elizabeth Crawford 03-Jan-2019 - Food Navigator USA

As manufacturers and grocery retailers offer more convenient meal solutions, such as kits and pre-made options that emphasize nutrient density and freshness, consumers are eating out less and eating at home more - ratcheting up the competition between CPGs and food service, according to new research from ingredient supplier Kerry.

The taste and nutrition company found Americans now eat 82% of meals at home – up from 75% from a decade ago. But according to its survey of more than 2,000 consumers in the US, only 31% are completely homemade meals –

revealing a sizable marketing opportunity for restaurants, retailers and even some manufacturers to increase their 'share of mouth' by offering convenient solutions to ease meal prep or replace it entirely.

For restaurants in particular, the growth opportunity for providing at-home meal solutions through delivery is "staggering," according to Kerry. For example, it found that Americans on average order-in five times per month and most orders are for two people. This equates to about \$154 per month on typical two person deliver orders versus only \$117 per month per capita for dining out. To fully capitalize on this potential though, Kerry says restaurants need to focus on meeting consumers' sensory expectations, offering a more diverse menu, catering to new dayparts and targeting the ideal delivery consumer. Retailers and CPG manufacturers or meal kit providers can also learn from these lessons.

Deliver on sensory expectations

According to Kerry's research, maintaining food quality for delivery "makes or breaks consumer loyalty," and is one of the biggest challenges that restaurants face. "Consumers want the ideal dine-in experience replicated at home, from look and feel, to texture and temperature, without compromise," according to Kerry. That said, Kerry also found that most consumers will cut restaurants some slack on delivery and "rationalize the deterioration of temperature, texture and overall experience." Still, a third said that they wished restaurants could figure out how to deliver fried foods that stayed hot and 36% said they wished they

could get in-store or in-restaurant quality meals at home via delivery. Fulfilling these wishes and delivering a higher quality sensory experience could help restaurants and direct-to-consumer meal solutions secure consumer loyalty, according to Kerry. In particular, it found improving the quality of food could result in four additional orders per month – worth about \$133 in the time period.

Boost check size with diverse menus

While 80% of delivery orders are for 'typical menu items,' consumers surveyed by Kerry said 20% of their orders were for new menu items that they had never tried before – "implying desire for variety and menu exploration for delivery," according to Kerry. In particular, 38% of consumers told Kerry they would like to see more healthy options. In addition, 39% of consumers said they'd like to see greater variety of food for delivery, according to the survey. Kerry also sees potential for restaurants to boost the size of orders by offering specialty beverages – both hot and cold, according to the survey results.

Offer more options throughout the day

Restaurants also can increase orders by going beyond the typical dinner and late night fare, and offering more breakfast, lunch and snack options, according to Kerry. "While 60% of all delivery orders are placed after 5 pm, typically for dinner, over 37% of delivery orders are placed between 11 am and 5 pm," according to Kerry. It adds that many of the daytime orders are on weekdays, suggesting office workers are looking for convenient

options. Late-night snacking orders placed after 8 pm also are gaining traction among younger consumers, the research adds. Expanded delivery times and menu options will help restaurants capture the X% of consumers who say that they order food for delivery in the spur of the moment, according to Kerry. But it also could help them appeal to the increasing number of consumers who want to pre-plan deliveries hours or even days in advance, it adds.

Target heavy users

Finally, Kerry says that restaurants and direct-to-consumer meal solution manufacturers can increase their share of market by fine-tuning their marketing to better target consumers predisposed to ordering food. Kerry's research revealed three main categories of delivery users including 'traditionalists,' 'followers' and 'frontrunners.'

Traditionalists are light users who order delivery one or two times a month "out of sheer lack of time" or because they want to take advantage of a deal or discount. Followers, are moderate users of delivery – ordering it three to five times a month. Like traditionalists, they do it as a timesaver, but also because they want to indulge or treat themselves. This group is diverse across demographics, but a commonality is the desire among 29% of them for customizable solutions for their delivery orders. Finally, frontrunners, order delivery six or more times a month and do so at different times of day and from different parts of the menu. This group represents about 25% of the delivery consumer population and are more likely to be older millennials men with children.

Nutrition Facts

Serving Size 1 cup (228g)
Servings Per Container 2

Amount Per Serving
Calories 250
Calories from Fat 110

	% Daily Value*
Total Fat 12g	18%
Saturated Fat 3g	15%
Trans Fat 3g	10%
Cholesterol 30mg	20%
Sodium 470mg	10%
Total Carbohydrate 31g	0%
Dietary Fiber 0g	
Sugars 5g	
Protein 5g	4%

Fibre augmentation: Are food labels missing an 'F' word?

By Nikki Cutler 07-Dec-2018 -
NeutralIngredients

Fibre must join the front of pack nutritional guide as populations throughout Europe are in need of "fibre augmentation", according to a food and nutrition expert.

Dr Charlotte Evans, lecturer at the University of Leeds School of Food and Nutrition, spoke at the Nutrition Society's Winter Conference in London this week (December 5) and argued that fibre needs to take centre stage ahead of total fat as people struggle to follow fat, sugar and fibre guidance all at once. She informed delegates that sugar and fat are currently taking rank in the list of diet concerns. "I'm very rarely asked to speak on the subject of fibre so I thought I'd do some Google Analytics on the number of searches of the term fibre, compared to sugar. Sugar beat fibre seven-fold. I didn't think this was too bad until I realised a lot of the searches for fibre were in relation to fiber-optics!

"It's time we had a campaign for fibre augmentation and get people eating more of this essential food group that has been proven to be

beneficial to our health in many ways. When people think of fibre they tend to think of constipation and nothing much else very interesting. This is a really bad thing as the potential benefits of fibre are huge."

She added that studies have shown fibre can lower risk of a number of diseases including cardio-vascular disease and type 2 diabetes. She pointed out that, throughout Europe, the average recommended daily intake of fibre is at least 30g, which requires us to eat eight to ten high fibre foods per day which can be quite difficult to do.

Evans points out that some parts of Europe are very good at reaching their recommended dose but those lagging behind might need a helping hand from a change in labelling laws. "People tend to only be able to concentrate on two pieces of diet advice at one time and fibre has been pushed out of the running by fat and sugar," she added.

She argued it would be easier for consumers to follow recommendations if fibre quantities were included on the front of packs along with sugar, fat, saturated fat, calories and salt. She concluded with food for thought: "There's an important 'F' word missing on the front of pack. Could we take out

total fat and replace it with fibre?"

The next food group fashion? Delegates of Health Ingredients Europe in Frankfurt last week (November 27th) heard that fibre is set to be the next big thing in sports nutrition. Irene Kersbergen, market analyst for Innova Market Insight, provided a presentation informing that consumers are becoming more aware of the importance of fibre and, as such, there has been a 55% growth in instances of fibre being added to sports nutrition products in the last five years.

"We've seen a lot of sports nutrition bars now being launched with 'more fibre' or 'added fibre'." The survey found, of the consumers who had increased their fibre intake, 64% had done so to improve their digestive health, while 24% had done it to help with weight management and 16% had done so to increase their energy.

Fibre start-ups

Swedish start-up Carbiotix launched last year with the aim to help consumers fill their 'fibre gap'. More recently, Polish start-up Pure Grain Bread won praise and investment on TV's Dragon's Den. Dragon Deborah Meaden said the products was 'bang on trend' thanks to its high fibre health profile.

REGULATORY NEWS



Image © iStock.com/ffolas

India infant formula row: Company defends 'science-sharing' stance amid NGO criticism

By Cheryl Tay 10-Dec-2018 - NutraIngredients Asia

The Breastfeeding Promotion Network of India (BPNI) has called for government action to restrict what it claims are attempts by infant nutrition companies to influence paediatricians to promote formula to mothers.

The BPNI, an NGO founded in 1991, appealed to the health ministry to ensure "effective implementation" of India's Infant Milk Substitutes, Feeding Bottles and Infant Foods (Regulation of Production, Supply, and Distribution) Act 1992, which prohibits the public promotion of manufactured foods for children below two years of age.

It also prohibits infant food manufacturers from offering any contribution or pecuniary benefit to individual healthcare professionals or health worker associations. This includes funding seminars, conferences, and educational courses.

In a letter to the health ministry, the BNPI wrote that the authorities needed to "beat market forces that undermine breastfeeding" , and

encouraged them to instruct district health officers to better enforce the act. BNPI's central coordinator, paediatrician Arun Gupta, said infant nutrition firms might have been promoting

their products through doctors under the pretext of educational initiatives, a suspicion that formed the motivation for its letter to the health ministry.

Sustained attack

This letter came shortly after the BNPI had alerted the New Delhi branch of the Indian Academy of Paediatrics (IAP) to the company's Nutrition Institute's planned 'scientific session', titled Infant formulas: Paediatricians' dilemma, which was to feature two paediatricians as speakers. An invitee had alerted the BPNI, whose doctors saw the session as an industry event designed to influence paediatricians into prescribing infant formula to parents of young children.

Nutrition institute's spokesperson defended the session, saying the institute organises scientific workshops where healthcare professionals discuss various scientific topics and share science-based nutrition information. The spokesperson said: "Participation in these sessions is voluntary.

The objective of the planned session in New Delhi had been to share nutrition information and not to promote infant formulas. The IMS Act does not discourage or prohibit the dissemination of scientific information. Scientific conferences are organised by the NNI and no

payment or pecuniary benefit is provided to the participants. Furthermore, infant nutrition products are not discussed or displayed at such scientific conferences."

Vigilance to stamp out violation

However, Gupta remains adamant that doctors should rely on medical journals and academic research instead of infant food manufacturers. He also said he and his colleagues fear that such promotional tactics could continue should government health authorities and the Indian medical community fail to exercise greater vigilance.

Speaking to NutraIngredients-Asia , he said: "Companies do this through the health system. For example, the nutrition institute sponsors conferences and invites doctors. They also do this through e-marketing on websites, including social media platforms, and by offering discounts on their products to hospitals and clinics. Such actions undermine breastfeeding and promote formula, which is unhealthy and dangerous for babies, and goes against the laws in India."

Maternal health or monetary gain?

Recent findings from the Global Nutrition Report highlighted severe problems in Asia and especially India when it came to anaemia in women of reproductive age, and malnutrition, wasting, stunting and mortality in children under the age of five.

In light of this, NutraIngredients-Asia raised the question of whether it was wise to push for exclusive breastfeeding while placing stringent restrictions on infant formula manufacturers, since micronutrient deficiencies in pregnant and breastfeeding women are bound to affect their offspring.

Gupta replied: "We don't need formula to help mothers who have micronutrient deficiencies. It's better to invest in the nutrition of the mother rather than to put her baby on formula, which is much more dangerous than breastfeeding."

Indeed, governments at the national and state levels in India have been making concerted efforts to fight widespread malnutrition in the country, which disproportionately affects women and children.

Programmes to get suppliers and manufacturers to provide fortified ingredients and staple foods, as well as to enable farmers to grow fortified crops, have sprung up in numerous states in the last few years. Still, when it came to the issue of women who had trouble expressing sufficient breastmilk, Gupta remained resolute: "Women can decide what they want to feed their babies after consulting their doctors, but our problem is with the promotion of infant formula."

He added that while organisations like the nutrition institute were free to conduct their own privately funded research and hold their own conferences and seminars, they should not be inviting medical professionals to their events.

"Why should a nutrition institute founded and promoted by Nestlé sponsor doctors' registration fees or even invite them (to attend their conferences and seminars)? It doesn't matter whether they sponsor flights (to overseas events) or simply invite them to attend a conference. To me, it is the same thing. Whether they are just hosting or sponsoring, these companies are spending money to bring doctors to their events, and they shouldn't be doing it."



Image © iStock/Yanawut

India's dairy dispute: FSSAI insists milk contamination is 'not serious at all'

By Pearly Neo 03-Dec-2018 - Food Navigator Asia

The Food Safety and Standards Authority of India (FSSAI) has declared milk in India to be 'largely safe' following reports from its 2018 National Milk Quality Survey, holding 'poor farm practices' responsible for current contaminations.

"[In] a large number (6432) of samples, very few samples were found to be adulterated. Slightly less than 10% samples had contaminants coming mainly from poor farm practices. Over 90% of the samples were found safe in the survey," said FSSAI via its official press release on the matter.

The agency has also described this survey to be 'by far the largest systematic survey' in terms of sample size and parameters tested, although it only covered liquid milk and not milk products. "The survey also did not cover microbiological examination of the samples," it added.

FSSAI also claimed that of all the samples tested, only 12 were adulterated, and less than 10% contained pesticide, antibiotic,

aflatoxin or ammonium sulphate residues. "In all these cases, milk is getting contaminated due to poor quality of feed, irresponsible use of antibiotics and poor farm practices," it said. Further, quantitative analysis suggests that this problem is not serious. It is restricted to few pockets and in some states. There is no concern at all due to pesticides residues."

FSSAI CEO Pawan Agarwal declined to reveal the origin of the remaining contaminated samples due to worries of these being 'false positives'.

Clearing up 'misinterpretations' Agarwal said that this report aimed to clear up the 'misinterpretation of information' released after another FSSAI survey on milk conducted back in 2011.

Speaking to local media outlets, he said there were 'infirmities' in the previous survey covering sample size, data collection and analysis methods, and this latest survey was to "get the real picture about the quality of milk in India."

The 2011 survey had found that 68.4% of samples did not conform to FSSAI standards. Earlier this year, an Animal Welfare Board of India representative had expressed concerns over the findings that some 68% of all milk and milk products in India were adulterated.

This was followed in November by an FSSAI report that some 25% samples of edible products (including milk) that were tested through the year had been found to be adulterated or in violation of FSSAI standards.

Despite these, Agarwal said to New Indian Express that: "There is a fake report going around that says that a large number of Indians are at great risk of serious diseases due to consumption of heavily contaminated milk. However, there is no such evidence for such an inference."

Quality concerns

A recent report released by the Consumer Guidance Society of India (CGSI) has said that over 78% of the milk in India does not meet quality standards. The samples comprised both branded and unbranded milk.

According to the report, only 20.7% of branded and 22.5% of unbranded milk samples respectively were standards-compliant. "Milk needs to comply with set standards. In comparison to last year's test results, poor quality milk sale has actually increased," said CGSI Chairman Dr Sitaram Dixit to Mumbai Mirror.

Quality concerns, specifically the levels of fat and solid non-fat in milk were also assessed by FSSAI in this 2018 study, and here 39% of samples did not meet the required parameters. Agarwal said: "There should be zero-tolerance to adulteration in milk, [but] concerns of quality due to contaminants need to be addressed over a period of time by taking large scale awareness drive and public education at the primary production level."

Image © iStock.com/
AndreyGorulko

Mandatory rice fortification for public programmes in India by December 2019

By Cheryl Tay 19-Dec-2018 -
NutraIngredients Asia

The use of fortified rice will be mandatory in all midday meal schemes, and public nutrition programmes under the Integrated Child Development Services (ICDS) in India by December 2019.

In the Indian government's latest effort to combat malnutrition in the country, the Ministry of Women and Child Development pushed for the use of fortified rice across the board in these nutrition-based schemes, having already made the use of fortified wheat, salt, milk and oil mandatory. Government sources have revealed that by December 2019, midday meals at schools, as well as food served at ICDS centres, will be prepared using fortified wheat flour and edible oil. Currently, the use of double-fortified iodised salt under these programmes is already mandatory. The Food Safety and Standards Authority of India (FSSAI) also said that by January 2020, fortified rice, wheat flour, salt and edible oil would be supplied throughout the country's Public Distribution System (PDS).

Phasing out

Speaking from an international conference called Aligning Food Systems for Health Diets and Improved Nutrition, held at the National Institute of Nutrition (NIN) in Hyderabad on November 11, joint secretary for the Department of Women and Child Welfare Rajesh Kumar said he and his colleagues would be meeting

with officials from the Food Ministry and the FSSAI over the next few weeks. The purpose of these meetings would be to discuss how best to introduce rice fortification through the ICDS and in schools. The department will also ensure that the double fortification of rice, wheat, salt, milk and oil will be implemented in several phases. He also said that the fortification of food was just one of the ways in which malnutrition, which has plagued India for a long time, could be alleviated.

Addition of nutrition

The rice used in the aforementioned schemes will be fortified by the addition of vitamins and minerals, many of which are lost when rice is milled and polished. Fortified rice and wheat flour will contain folic acid, iron, niacin, pyridoxine, riboflavin, thiamine and vitamins A and B12, while fortified milk and edible oil will contain vitamins A and D, all in amounts that can help consumers reach their RDI (recommended daily intake). The Indian government has made multiple attempts to lower the incidence of malnutrition in the country over the years, with its most recent effort involving pearl millet fortification, carried out in conjunction with the Indian Council of Agricultural Research (ICAR) and US-based firm HarvestPlus.

However, while the fortification of staple foods in general has been welcome by the public and complied with by many companies, the FSSAI has received criticism from industry over its push for the mandatory fortification of edible oils, with the main complaint being that it is likely to be too impractical and far too costly to implement.

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