



PFNDAI

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Bulletin
JUN 2020

FOOD, NUTRITION & SAFETY MAGAZINE

COVID-19 AND ITS POSSIBLE IMPACT ON INDIAN FOOD INDUSTRY

Dr. V. Krishnakumar

TRADITIONAL INDIAN DIETS –

THE NEED OF THE HOUR FOR THEIR
IMMUNITY PROMOTING PROPERTIES

Dr B Sesikeran MD

THAUMATIN

GENUINE NATURAL SWEETENER

Mr BS Khanolkar

NUTRITION AND IMMUNITY

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EDITORIAL



In the last few months of the pandemic one thing that was noticed very clearly was that we still have problems in creating awareness about safety. People have been taking safety measures such as not going out, wearing masks, not gathering, social distancing and many others but only when they were compelled to do so. The moment the force was removed people again went back to unsafe practices.

Either our population does not care much about safety or the regulators and scientists failed to convince them that it is really necessary to adhere to safety measures to avoid the virus and to remain healthy.

Several people show their concern for the effective way to avoid contamination after they go out and come home, from grocery and other essential shopping. There are so many different versions of safety procedures and it is such a chaotic condition. Even the laypersons realised that there are differences so they would not know which ones are authentic.

We have not prepared common people for such situations. We have been teaching our students in schools and colleges maths and chemistry and physics and all kinds of things but not adequate steps to keep themselves safe.

We must develop proper protocols of safety and make sure everyone understands and follows the same. They must be told the importance of such things so they would appreciate its usefulness. Just telling them to do things without

explanation becomes a compulsion which they would reject the moment the restrictions are taken off. That is why in spite of such complete lockdown for about 3 months cases were still rising and deaths were mounting.

We must start teaching kids in schools importance of safety and make sure they understand its importance. We must also use very clear and unambiguous language and make sure that in such cases the enforcers also understand it.

Media can play a big role in this but again they love to sensationalise things and so different versions come from them. We need authentic information that common people would believe and consider it as the only authentic source. An independent body would be better in this case than a government body which is usually under government control. The way US FDA was bowing down to the President shows that it is very difficult for them to be independent.

A medical or a scientific body would be better equipped to take on this role. WHO has been giving out the necessary guidelines & safety measures timely to stay safe that would be helpful in avoiding the infection risk. More such medical & scientific bodies must come together to educate the population in large and in simple terms to understand as even when this pandemic is over there will be many viral situations that would affect us in future. We must start preparing for such situation starting right now.

Prof Jagadish Pai,
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COVID-19 AND ITS POSSIBLE IMPACT ON INDIAN FOOD INDUSTRY

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Covid-19 and the global ravage

The covid-19 virus has created havoc in people's lives across the globe from health, social and economic points of view. Countries across the world went into a complete lockdown and consumers were suddenly left with no choice but to buy basic food staples and fresh produce and cook at home, as restaurants, along with all other activities, were closed down.

This violent change in consumer behaviour has dealt a serious blow to the global food industry, which probably witnessed the biggest shake-up ever during the second quarter of 2020. This in turn has had a significant impact on the global food ingredient industry.

To understand the possible changes in the food industry, let us first examine how consumer behaviour changed across the globe during this Covid-19 period.

Covid-19 and consumer behaviour

With limited access to grocery shops and a mortal fear of this unknown virus, consumers preferred, or were ordered by Governments, to lock themselves up in their houses, and food safety became the most important criterion while choosing any food item. Additional precautions, hitherto only randomly adhered to, were taken by most, such as washing all fresh produce before consuming and washing hands before handling and consumption.

The heightened worry about those products that cannot be washed and yet are sold loose such as bread caught the attention of the authorities. For example, the US Food and Drug Administration (FDA) had to explain about the transmission of the virus through food. "We are not aware of any reports at this time of human illnesses that suggest Covid-19 can be transmitted by food or food

packaging," it said. "However, it is always important to follow good hygiene practices (i.e. wash hands and surfaces often, separate raw meat from other foods, cook to the right temperature, and refrigerate foods promptly) when handling or preparing foods." Many bakers around the world are taking extra precautions to ensure fresh bread products are handled as safely as possible, whether by wearing disposable gloves and masks, or by using tongs to pick up all products.

In the mind of the consumers, local brands appear to be safer than foreign brands. This trend has been observed in many countries. Even in China, where there is generally a strong preference for international brands, a very recent survey by McKinsey has shown that only just above 40% of consumers preferred international brands. On the other hand, in Australia, more than 80% of consumers surveyed indicated that their preference for local brands increased during the Covid-19 pandemic.

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In the same survey, in all countries except China and Japan, more than three out of four consumers say they are focusing on boosting their immunity through more exercise and healthy eating. Thus, immunity as an individual driver as well as obtaining immunity and strength through healthy foods in general have come out clearly as consumer drivers in today's Covid-19 affected time-period.

Credit Suisse reported that the increase in shopping and growth in sales in Switzerland are concentrated in relatively low-priced basic foods and hygiene products. Despite enjoying a high per capita income, Swiss consumers reflect global resistance towards buying expensive products at a time when job and future uncertainties are very high.

The global foodservice sector has been hit very severely by the various social restrictions imposed by the respective governments. As an example, the Canadian foodservice industry experienced a 32% decline in traffic for March 2020 (five weeks ending April 7, 2020). This trend was observed all over the world. To sum up, Giraact has observed four major consumer drivers in global food markets over the last few months, namely, price, food safety, immunity-boost and overall health.

On-line shopping records sharp growth

Due to the inconvenience and fear of going out to shop, online shopping for groceries has been a

big winner in this strange climate. For example, in the UK in April, the proportion of online spending on food increased from 5.7% to 9.3%, according to the ONS (Office for National Statistics).

In the US, research from Coresight showed that almost half of shoppers reported that they are buying more groceries online or have

started making online purchases because of Covid-19. US online grocery sales grew 22% in 2019 and, encouraged by high demand from nationwide Covid-19 lockdowns, look to gain about 40% this year.

In another case, a leading European grocer, typically witnessing a footfall of 500 concurrent users on its website, saw this number jump to 12,000 concurrent users within one day at the onset of Covid-19 related lockdown, and has maintained this heightened level.

Indian food industry at the mercy of Covid-19

The Indian food industry has not been spared from massive market disruptions in the last few months. Following the lockdown imposed by the government, cooking at home for the entire family and for the entire day's requirement has become a general norm. Even youngsters, who had developed a 'fear of the kitchen' due to modern lifestyles which promote convenient eating habits, are currently back at the kitchen every single day. Restaurants have largely been closed and other foodservice offerings have not been very prominent owing to the over-arching need for the consumer that food should be 'safe'.

Given the large uncertainty about employment, price has become a very important factor in consumer choice of retail products. A recent Nielsen survey in India says that pre-planned expenses for the September quarter are being reallocated as consumers try to save

and ensure liquidity for future spends. In this atmosphere, the importance of expensive and niche foods may well take a back seat as long as they are not addressing health and immunity benefits.

In the current context of heightened preoccupation with food safety, street vendors and unpackaged foods are being viewed with considerable suspicion.

Retail sector shows inconsistent growth

Some segments of the food sector have been less impacted by the lockdown. For example, dairy products are viewed as healthy foods in India and milk sales have increased significantly during the past few months. According to R S Sodhi, the managing director of Gujarat Cooperative Milk Marketing Federation Ltd (GCMMF), the household consumption of milk and other dairy products is expected to rise and will compensate any temporary loss of sales caused by closure of hotels, restaurants and cafeterias (HoReCA segment) during the ongoing lockdown period.

Similarly, according to a panel discussion organised by the US Soyabean Export Council, Indian frozen food industry is expected to grow by 17% annually during 2020-24 as the coronavirus pandemic has made people conscious about healthy choices while buying daily essentials. It is interesting to note that frozen food is being perceived as healthy.



According to a report by Google, sales of immunity-boosting foods have increased by an estimated 20-40%. Online searches for such products have gone up six-fold, with ayurvedic home remedies, giloy and vitamin C dominating.

“Heightened awareness online on Instagram, Tik Tok and WhatsApp is leading to growing consumption of categories including health supplements, chyawanprash, health bars, mixes and even branded health salt, which is growing in double digits,” said Spencer’s Retail and Nature’s Basket chief executive Devendra Chawla. “One can expect more launches in the health food and immunity-building segment in the coming weeks.” Newspaper reports claim that products such as olive oil, soya oil, mustard oil, fortified bread & biscuits, and powdered chocolate drinks are in high demand. During normal times, such products would grow at just 5-10% annually, but now they are registering annualised growth of 20-40%, according to industry experts.

Food service went flat but is making a slow come-back

India’s restaurant industry has grown significantly over the years and currently employs 7.3 million people. There are no reliable estimates about how many restaurants can get back to business after the lockdown is lifted, but it is evident that a significant number will remain closed for a long time since operating conditions will be significantly stricter thus drastically

affecting profitability.

Food delivery and e-commerce food systems are revising their strategies to increase their presence in the Indian food market. Soon after the lockdown, Swiggy partnered with firms such as Hindustan Unilever, P&G, Dabur, and Godrej to enter the grocery delivery market. Earlier this month, Swiggy also announced home delivery of alcohol. The diversification will help reduce the problem of overcrowding at liquor shops, but it will also generate additional revenue for Swiggy.

Another delivery operator, Zomato, has emulated Swiggy by expanding its business into of grocery delivery and home delivery of alcohol. Recently, Amazon India launched its food delivery services, starting with Bengaluru, and is planning to expand rapidly to multiple metropolises of the nation.

How should we analyse the food sector in 2020?

Providing market estimates for the year 2020 is a very difficult task due to the large uncertainties. Yet, companies need to set out their goals and targets for the year. Given that Europe and parts of Asia are now slowly getting back to normal life after the lockdown, and that the USA has decided to open up its economy, we need to examine the global markets based on the

observed market drivers and the expected consequences of these drivers. In order to examine market numbers in an analytical format, Giract has decided to split 2020 into three distinct periods:

- Pre-Covid-19:

January-March 2020 or Q1

- During Covid-19: April-June 2020 or Q2

- Post-Covid-19 (assuming no major flare up late this year): July-December 2020 or H2 2020.

This will help us to make realistic estimates of each sector/segment for the rest of the year. For example, sales of specific staples have increased such as instant noodles and canned soups, while business has fallen for some luxury foods. How will this change in post Covid-19? Will dairy sales continue to be high? What is the likely penetration of restaurant sales in the second half of the year? Each company needs to carry out such an in-depth analysis by examining each relevant food segment and the possible impact on its business, to have reliable market estimates. With this in-depth analysis, we will also be able to understand the respective ingredient trends in a clearer fashion. Questions such as “Will middle-level pricing be possible?” need to be posed since the food market is likely to be more polarized into basic foods and health/immune-boosting foods.

What is the way forward?

The month of May has seen some positive signals from the Indian industry in general. Businesses in Himachal Pradesh, which reported that 70% of industry had resumed operations, noted that employees were not coming to work as they





were concerned about contracting Covid-19 and preferred to join when the situation became normal. In Telangana, 13,000 businesses involved in manufacturing both essential and non-essential goods resumed functioning with 33% of their workforce, while 6,700 companies were operating with 50% staff in Kerala, a CII survey revealed.

reticent to accept food from unknown or less known sources. Brand and source loyalty will be highly important in this changing market.

FSSAI as the food regulator has a strong role to play in these difficult times since unscrupulous food producers

may take undue advantage of the current mass hysteria. With the graded easing of the lockdown, India's food regulator FSSAI has said all claims pertaining to immunity-boosting products such as biscuits, snacks, salt, water and even khakhra must conform to regulations.

However, it is unclear how the food regulator can police and identify

products such as the above, and what, if at all, will the necessary actions be to prevent such malpractice.

Finally, it will be interesting to carry out a scientifically-sound survey to understand to what extent, during the

second quarter of 2020, the younger generation has lost the 'fear of the kitchen' following forced home

cooking. This is important, since if a significant part decide to stay back in the kitchen either partly or fully, it will have a strong implication on the food and food ingredient industry as scratch cooking rarely involves the food industry outside of the commodity staples and some cooking aids. The specialty food ingredient industry stays largely outside the kitchen, in any case.

Moreover, youngsters are impressionable and are willing to change unlike the older generations who are most likely to revert to their normal food habits en-masse once the situation changes. The current younger generation is also more sensitive to issues such as job insecurity, hygiene, social responsibility, etc. which may well favour home-cooking at least to some extent, now that they have had a good immersion in the kitchen for three months. Hence, a reliable study on their expected future buying and cooking behaviours should be one of the very first demand areas that the food industry should explore post this Covid-19 crisis. Of course, there are many other issues of priority to handle for the food and food ingredient industry such as the shortage of labour, working capital deficiencies and broken supply chains. The industry has never experienced such an uncharted territory as the current one, and great efforts will be required to come out of this situation unscathed.



Food producers will try and take advantage of the new consumer trends which are likely to last at least till the end of 2020 due to the lack of a universally available vaccine. This will be seen in their focus on certain food sectors as well as an increased interest in online selling. Traditional retail is likely to continue to feel the effect of an increasing online grocery trade. Similarly, sit-in restaurants will have to be re-organized to receive a smaller number of customers which in turn will have a strong impact on the profitability of restaurants in general. Food safety will still be a concern for home-delivery foodservice, and consumers will be





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TRADITIONAL INDIAN DIETS –

The Need of the Hour for their Immunity Promoting Properties

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The present pandemic situation is making everyone look for ways and means to survive this catastrophe.

Epidemiologically the best way is to avoid the spread of the virus but also to keep the mortality and morbidity as low as possible. Similar disease pandemics and epidemics have occurred for centuries and humans have learnt to survive them.

During the days preceding modern medicines and vaccines, diet and indigenous medicines were the only options available. It is often said that Food is our medicine and it is worthwhile to analyze the components of traditional foods that have stood the test of time.

The time has also come for us to try and incorporate traditional

ingredients into present day foods to enrich them and improve their quality in order to obtain the same old benefits.

Traditional Diets in India

They were Geographic region specific and in tune with local agriculture practice and seasons-. Food was sourced locally and didn't have to travel long distances and therefore fresh. The diets were planned to sustain and maintain good health and to help the population stay healthy enough to survive the seasonal diseases. It attained a religious/ cultural/ ritual status to emphasize its importance in daily life and also for better compliance. Regions have lived through several viral disease epidemics by managing diets (e.g. Flu, small pox)

Food consumption was a public health issue than a personal choice. Festivals marked changes in

environment and prepared the community for seasonal diseases. Intermittent fasting/exclusive diets on certain days of the month were part of this health management

Modern Concepts of food and disease

Modern medicine gave us the confidence that medicines can manage diseases better than food and food is for pleasure and fun. All foods were available at all seasons. They were now multicultural and multinational. Ready to cook/ Ready to eat processed and convenience foods were suited for a modern lifestyle. Traditional practices linked with religion and culture were considered unscientific.

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When one compares traditional diet with the diet that is consumed by many who do not have enough time for home cooked meals and depend on fast foods or what is ordered, such foods tend to be quite high in fat, sugar and salt making them very appealing and people may consume more and further aggravate the problems.

Whereas traditional diets included plenty of leafy and green vegetables that would provide bulk and dietary fibre, they were low energy dense. Most catered foods would be highly palatable, energy dense, with low fibre and so higher GI. Thus macro and micro-nutrients would be more favourable in traditional home cooked diets. Now even catered foods have started providing foods with traditional ingredients with higher nutrient contents and less undesirable components such as fats especially saturated, sugar and salt. However, this is still a small beginning and will need time for popularization but awareness is growing.

The COVID 19 PANDEMIC

The present pandemic has come as a wakeup call with all of us trying to do the right things quickly to control it. We are fortunate that India is a relatively younger country (elderly 8.5% UNPF) hence case fatalities are expected to be lower. Higher risk of death is associated with advancing age > 60 yrs and co-morbidities like Obesity, Diabetes, Hypertension, Cardiovascular disease and Chronic lung disease - independent of age.

Sarcopenic (Low muscle mass) Obesity in elderly seems to be a very high risk for complications and death (Alessandro Laviano, Nutrition 2020). It is not very certain if undernutrition is a risk factor for susceptibility and / or severity of the disease though previous evidence has shown that under nourished were more susceptible to several other infections. Some of the data has

shown that Hypoalbuminemic (Low plasma albumin) are at risk (Zhou et al, Lancet 2020) though albumin levels during an infection are not reliable indicators. Lymphopenia (Low absolute lymphocyte counts) commonly observed in severe cases is also associated with under nutrition (Zhou et al). Low pre Albumin which is a good index of under nutrition has been found to be related to complications and mortality in COVID 19 patients in China (Wu et al JAMA 2020) Patients < 60 have a 2X risk of hospitalization and need for ICU care if they are Obese (Simonnette et al: Obesity (Silver Spring) 2020, Apr 9 (doi:10.1002/oby.22831) However Obesity was not a predictor in patients >60. Even if India has an advantage of having a lower proportion of at-risk elderly the obese especially the relatively younger Obese in India are considerable (11.8 to 31.3% ICMR 2015)

Nutritional status appears a relevant factor influencing the outcome of patients with COVID-19, but not much information has emerged so far on the impact of early nutritional support in pre-ICU patients with COVID-19. (Alessandro Laviano Nutrition 2020)

COVID 19 and linkages with immune function

Advancing age is associated with sub optimal immunity that is known as Immuno-senescence. Obesity is a Chronic inflammatory state. Diabetes also leads to Chronic inflammation and low antioxidant mechanisms. Cardio vascular and chronic lung diseases lead to greater inflammation in the lungs and vascular damage in response to the virus. Modern lifestyle in toto has resulted in a chronic low grade systemic inflammation by both immune cells as well as adipocytes (Calder et al Br J Nutr 2011)

Can a good immune mechanism prevent Corona virus infection
Since it is a novel virus, exposure

will lead to infection with or without a good immune function. Yes if there is some kind of a cross immunity which was the reason for the Hypothesis that BCG vaccinated may be protected (Gil Redelman-Sidi, Nat Rev Urol 2020). Good immunity subsequent to an effective vaccine is possible. Good immune function may not prevent but the virus could be eliminated with minimal effect eg in younger individuals

Components of an Immune response

Innate immunity or a built in immunity is the first response but not specific and less effective than adaptive immunity. It can be poor in persons with poor immune function. In undernourished children it is possibly poor in a range of innate immune responses but not well understood (Bourke et al Front Imm 2019)

Adaptive immunity - is specific to the virus and is mediated predominantly by the T cells. These T cells are of several subcategories and operate through a complex mechanism and have a memory for rest of our life. (Makes it surprising since re infection is seen in some patients with COVID 19). They produce a wide range of pro inflammatory Cytokines e.g. (Interferon gamma) IFN, Interleukines like IL2 which are anti viral

Treg cells that produce IL10 maintain immune tolerance and avoid damage to self antigens and stop the immune response at the right moment (Saraiva et al, Nat Rev Immunol, 2020)

B cells produce immunoglobulin/ antibodies (Ig) which are used as methods for diagnosis of the disease.



Nutrition and Immune Response

Obesity and chronic degenerative diseases continuously produce a low grade inflammation and pro inflammatory cytokines from T cells as well as fat cells (adipocytes) These are directly related to the



quality and quantity of the diets (Childs et al Nutrients 2019)

As mentioned above, Undernutrition in general impairs immune functions Non-essential (can be produced in the body) amino acid Arginine is needed for Nitric Oxide production (NO) by Macrophages Zn and Vitamin A are critical for immune cell proliferation While Vitamin E has diverse roles in addition to anti oxidant properties in the immune mechanism (Childs et al Nutrients 2019)

Chronic Low grade Inflammation

The pathogenesis of the COVID 19 and the severity of the disease seem to be related to a surge of inflammatory cytokines produced by the body in response to the virus, which in turn is associated with the pre-existing Chronic Low grade Inflammation. Such inflammation is seen in the following situations

- Associated with Aging
- Obesity and Diabetes and Insulin resistance
- High refined carbohydrates and Sugar intakes
- High Saturated fat and Trans fats

consumption

- Low intake of complex carbohydrates
 - Low dietary intake of micronutrients
- It could be mitigated by Bioactive compounds present in fruits, vegetables and spices

Gut Microbiome: the beneficial bacteria present in the gut have a major role to play in the generation of this chronic inflammatory state. The composition of these bacteria is related to dietary intakes They are directly involved in immune potentiation as well as immune tolerance High-energy low fibre dietary intakes impair the microbiome. It alters epithelial integrity, gram negative bacterial cell wall Lipo polysaccharides (LPS)

gain entry and lead to chronic inflammation Adequate intake of Prebiotics (dietary fibre components) will promote the growth of the beneficial bacteria and prevent this phenomenon. (Hansen and Sams Nutrients 2018) Modern highly processed, high sugar, low fibre foods alter the gut microbiome- and epithelial integrity is affected leading to a leaky gut- Gram negative bacterial cell wall LPS get in- Toll Like receptors TLR4 in the immune system get activated and trigger chronic low grade inflammation (Childs et al, Nutrients 2019) Traditional fermented milk products along with beneficial bacteria (probiotics) and N3 fatty acids are known to be beneficial in improving the gut microbiome. (Rogero et al, Nutrients 2018)

Cytokine Storm in COVID 19

A sudden out pouring of the inflammatory cytokines leading to destruction of patients own organs and ultimately leading to intra vascular coagulation and multi organ failure. This was observed

more often in Obese patients and with other co morbidities. There is normally an Up regulation of Inflammatory cytokine genes through LPS mediation and leaky gut in these obese individuals .Viral genes may be further triggering the same genes leading to this cytokine storm (Ramos Muniz et al Biomed Res Int 2018)

Major Nutrients involved in managing inflammation

The following nutrients are essential for a well-regulated inflammatory response when challenged by an infecting organism Zinc, Selenium, Vitamin D, Vitamin A & E Vitamin D receptors are present on all Immune cells and involved in multiple steps of immune activation. Vitamin D activating 1 Hydroxylase is present on all immune cells Vitamin C, and B6 and Nicotinamide Non essential amino acids Arginine(NO) and Glutamine (Cellular Energy source)

Bioactive molecules in spices

Traditional Indian diets anywhere in the country have always included spices and these are now recognized to have potent biologically active molecules involved in immunity and inflammation regulation. To mention a few- Turmeric-(Curcumin) acts as an Anti Inflammatory substance Acts through NF B and STAT 3 (Deguchi 2015) Phytochemicals in Onions- anti inflammatory and immune boosting (Hannan et al 2010) Garlic (Allicin) inhibits secretion of cytokines IFN and IL8- (Langa et al 2004) Ginger – anti bacterial, anti inflammatory, anti oxidant Cardamom rich in Mg and Zn both involved in immune function Capsaicin – benefit vascular function Cinnamon- free radical quencher Cummin based diets helped in weight loss Tea Catechins- anti viral properties

Immunomodulatory Proteins and Peptides in Milk

Protein/peptide	Effect
Caseins (and digests)	T-lymphocyte proliferation
Whey	Lymphocyte blastogenesis
GMP	Splenocyte proliferation
YG/YGG	Lymphocyte proliferation
Milk Ig G	Antibody secretion
Lactoperoxidase	T-cell mitogenesis
Lactoferrin	Cytokine release

Möller, N.P., et al Eur J Nutr 2008

MILK

Milk both in fermented and unfermented forms have always been the main stay during diseases in India. Recent evidences have identified several immune modulating properties and biologically active proteins and peptides.

Conclusion

It is evident that our traditional diets

were the best suited for disease pandemics and epidemics like this and it is time we reverted to our traditional food habits to be better prepared for the future.

Present day food habits and modern lifestyles with low levels of physical activity have increased our energy load and are driving obesity. The burden of excessive adipose tissue in our body and the resultant heightened inflammation may be responsible for greater morbidity and mortality due to the virus .

What needs to be done

1. Shift to a traditional / conventional diets
2. Avoid the so called Junk foods

that is high fat, sugar and salt foods (HFSS)-however we cannot undo the existing metabolic changes in a short period

3. Plenty of vegetables and fruits
4. Manage existing metabolic or health issues under medical advice, meticulously
5. Exercise within the limitations
6. Avoid supplements (evidence of the usefulness of supplements is being generated through clinical trials) unless regular food intake is not possible, except Vitamin D if Sunlight exposure is inadequate
7. Elderly may have to be given micronutrient supplements particularly the water soluble vitamins and some minerals like Zinc if food intakes are low
8. Avoid stress but take all personal precautions as per national guidelines

(Based on a webinar presentation for the NSI Mumbai chapter)

COMING EVENTS

IIPAD 2020

India Intl Poultry, Agri & Dairy Expo 2020

31 July & 1st & 2nd Aug 2020

Palace Grounds Bangalore

M: 095353 88966

T: 080 23506387

E: sales@tdci.co.in

W:

www.tentdecorcateringindia.com

Express Food & Hospitality, Goa

30 Jul - 01 Aug 2020

Dr Shyama Prasad Mukherjee

Stadium, Taleigao, India

W:

<https://goahospitalityexpo.mediagoa.com/>

ICE CREAM INDIA SHOW

18 - 19 Aug 2020

International Trade Expo Centre

Limited, Noida, India

T: 011-26941512 / +91-

7428760733

E: icecreamtradeshow@gmail.com

W: www.icecreamindia.in

India Foodex-Bangalore

18 - 20 Aug 2020

BIEC Bengaluru International

Exhibition Centre, Bengaluru, India

T: +86 21 55800330 ext 8033

E: indiafoodex@gmail.com

W: www.indiafoodex.com

99 Snacks & Bakery Expo

29 - 31 Aug 2020

Pragati Maidan, New Delhi, India

India Food Fair

06 - 08 Sep 2020

Pune, India

Express Food & Hospitality

Bengaluru

09 - 11 Sep 2020

Palace Grounds, Bengaluru, India

THAUMATIN

GENUINE NATURAL SWEETENER



AUTHOR

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E: bskandh@gmail.com

Cane sugar or sucrose is the standard of sweetness for taste and used in food and beverage. Sucrose provides the taste that people expect in a sweetener. No one is allergic to sucrose. Various other sweeteners try to come as close to sucrose as possible.

However, sugars have two problems, they cause tooth decay and have 4 calories per gram. Excessive use of sugar over a long period also may induce serious medical conditions including diabetes.

Some people choose non-sugar/artificial sweeteners to avoid the ill effects of sugar. Unfortunately, artificial sweeteners cause detrimental effects to a person's health. According to some recent studies, some artificial sweeteners can actually contribute to weight gain. Artificial sweeteners change the balance of gut microbes. When this happens, it ultimately leads to a higher glycemia and increased risk of type 2 diabetes. There is an alternative and a natural one namely thaumatin.

WHAT IS THAUMATIN?

Thaumatococcus daniellii

plant (Thaumatococcus daniellii) which is native to Sudan and Western Africa. The Katemfe fruit contains 1-3 black seeds surrounded by a gel and capped with a membranous sac, the aril, which contains the 'sweet protein' thaumatin.

THAUMATIN IS A NATURAL SWEETENER

The first industrial extraction of this sweetener happened in the 1970's. Thaumatococcus is isolated from the Katemfe fruit by water extraction and purified by selective ultrafiltration - a process that is 100% natural. Around six grams of thaumatin can be obtained from 1kg of fruit.

THAUMATIN DOESN'T IMPACT BLOOD SUGAR LEVELS

Blood sugar spikes are caused by carbohydrates (starch and sugar in food) with a high glycemic index. Being a protein (207-amino acid chain), thaumatin won't cause any spike or even rise of your blood sugar level. It has a zero glycemic index, thus it is very suitable for diabetics.

THAUMATIN IS LOW-CALORIE

Most sugars carry about 4 calories per gram and will quickly increase your daily calorie intake. Thaumatococcus also has the same energetic values but it is an astonishing 2,000 times sweeter than sugar, even 7 times sweeter than stevia, making it the most potent natural sweetener. As a result, the amount of thaumatin necessary to sweeten our protein powder (or any other food) is so little that it has insignificant calorie contribution.

THAUMATIN WON'T HARM YOUR TEETH

Thaumatococcus is safe for your teeth! Like stevia, thaumatin is not a fermentable sugar; hence the bacteria that is present on teeth or gums can't produce the acid that harms your teeth and create decay.

THAUMATIN IS 100% SAFE

Thaumatococcus has been shown to have no adverse effects when consumed by humans. It actually has been used for centuries by natives of that geographical area to sweeten food. Only tiny amounts are ingested and the body is able to metabolize like any other protein. There are no known concerns around thaumatin.



Only tiny amounts are ingested and the body is able to metabolize it like any other protein. Thaumatin has a GRAS (generally recognized as safe) approval in the USA and is an approved sweetener in Europe (reference E957). Only humans and primates are able to taste the sweetness of thaumatin. Following a favourable scientific opinion from the European Food Safety Authority (EFSA), formulators are able to use the natural protein sweetener and flavour modifier thaumatin in a broader range of applications. Thaumatin can be used in applications like food flavourings, salt substitutes, soups, sauces and snacks, energy-reduced breakfast cereals, jams and jellies, food supplements and alcoholic beverages. The risk assessor has also given its stamp of approval to an increase in the maximum use level from 0.5 mg per litre to 5 mg per litre in flavoured drinks.

Thaumatin is classified as generally recognized as safe by the FDA as animal and human studies showed no adverse reactions. The JECFA gave thaumatin an ADI of 'not specified'. Thaumatin is a permitted sweetener and has been approved in all applications in the European Community as a 'flavour preparation.' Similar approval exists in Switzerland, the USA, Canada, Israel, Mexico, Japan, Hong Kong, Korea, Taiwan, Vietnam, Australia, New Zealand, and South Africa, and further approval is being sought

elsewhere.

Industrial applications

Thaumatin's flavour is slightly different from sugar. The slight licorice aftertaste is barely perceptible given the quantity used. Thaumatin also works very well as a flavour enhancer. When used in very tiny amounts it seems to bring out the flavours in food, perfect to help make the organic

freeze-dried fruit powders we use in our blend more flavourful. Thaumatin protein is highly water-soluble and is heat-stable, which make it very suitable for cooking and for processed foods.

Thaumatin's masking effects, particularly for metallic or bitter tastes, are an important feature accounting for its widespread use in the human and animal food industry. It can also be used along with other high intensity sweeteners.

In citrus fruit products, thaumatin has been shown to be very effective in masking the bitter elements of natural flavours from the fruit hence its application in products such as juices, yoghurts and desserts. In application with citrus and sweetened with high intensity sweeteners thaumatin also masks the bitter notes and the sweetener aftertaste, enhances the flavour and also contributes to the sweetening. At high levels of inclusion but still in the parts per million ranges, thaumatin is effective in masking the taste of some pharmaceutical products in chewables and suspensions.

Thaumatin can be used in savoury applications and may help

in salt reduction and masking potassium chloride bitterness. In savoury product salt level can be reduced by almost one third. It enhances the spicy notes. Thaumatin works well in yoghurts, mousses, ice-cream and soya-based desserts. It improves flavour perception in low fat products and masks astringency or unwanted notes from other ingredients. It works well for hard candies, gummies and chocolates. It enhances, improves and prolongs flavours, particularly citrus, berry and mint. It gives sugar-like taste when combined with polyols and high intensity sweeteners. A longer lasting flavour is necessary for every chewing gum manufacturer.

TAKE HOME MESSAGE

Thaumatin is a very potent natural sweetener. Thaumatin is isolated from the arils of the Katemfe fruit by water extraction and purified by selective ultrafiltration - a process that is 100% natural. Around six grams of thaumatin can be obtained from 1kg of fruit. Sugars carry about 4 calories per gram and will quickly increase daily calorie intake. Thaumatin also has the same energy values but it is 2,000 sweeter than sugar, even 7 times sweeter than Stevia, making it the most potent natural sweetener. As a result, the amount of thaumatin necessary to sweeten our protein powder (or any other food) is so marginal that it has an insignificant calorie contribution.



TEST YOUR TASTEBUDS!



THAUMATIN FORMULATED RECIPES

for your favourite desserts, appetizers, snacks, sweets, coffee, tea, yogurt, chewing gum, other beverages and even tooth paste and mouthwash!

Contact: BS Khanolkar, Anish Pharma Research Pvt Ltd
Call: +91 98335 69088, Mail: bskandh@gmail.com

NUTRITION AND IMMUNITY



AUTHOR

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The global pandemic of COVID-19 has taken lives of many and yet gives a chance to most of us to re-live life in a new way. It has given an opportunity to each one of us to press "LIFESTYLE RE-SET" button. No air-pollution, No Noise-pollution. Only one focus-GOOD HEALTH. Manage the 24 hours of each day in the best possible way to work on your health. It is clear that there is restricted movement within the homes, and minimum resources.

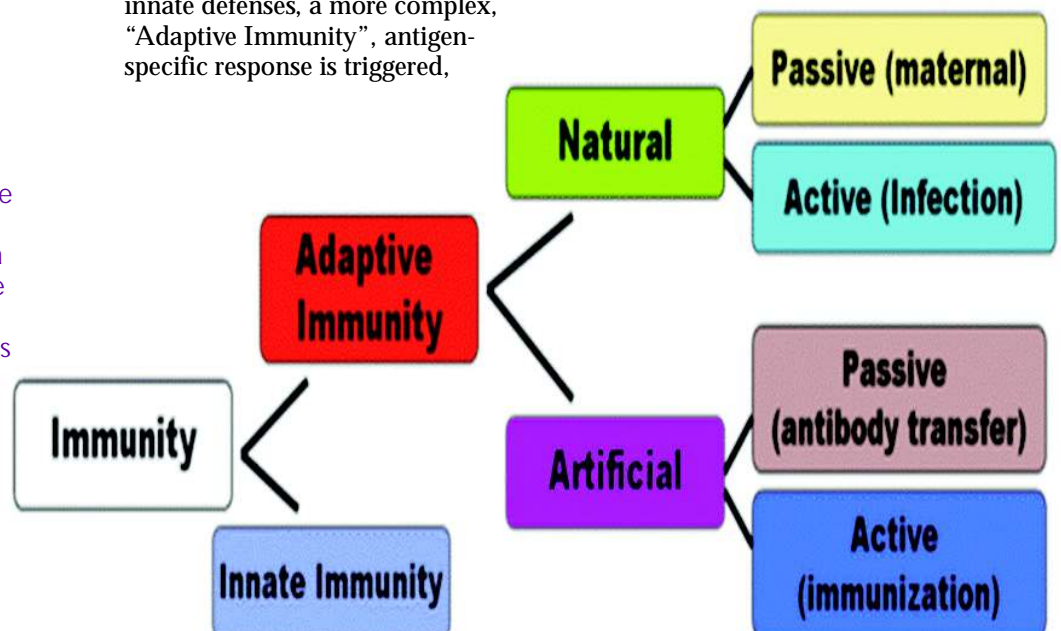
With less physical activity, it is imperative to avoid weight gain and maintain body's immunity. While we are still awaiting a wonder drug or a magic pill or a life-saving drug or a vaccine, we know that the only weapon against this deadly novel Corona Virus is our own healthy immune system. There is enough clinical evidence that body's immunity is the first line of defense.

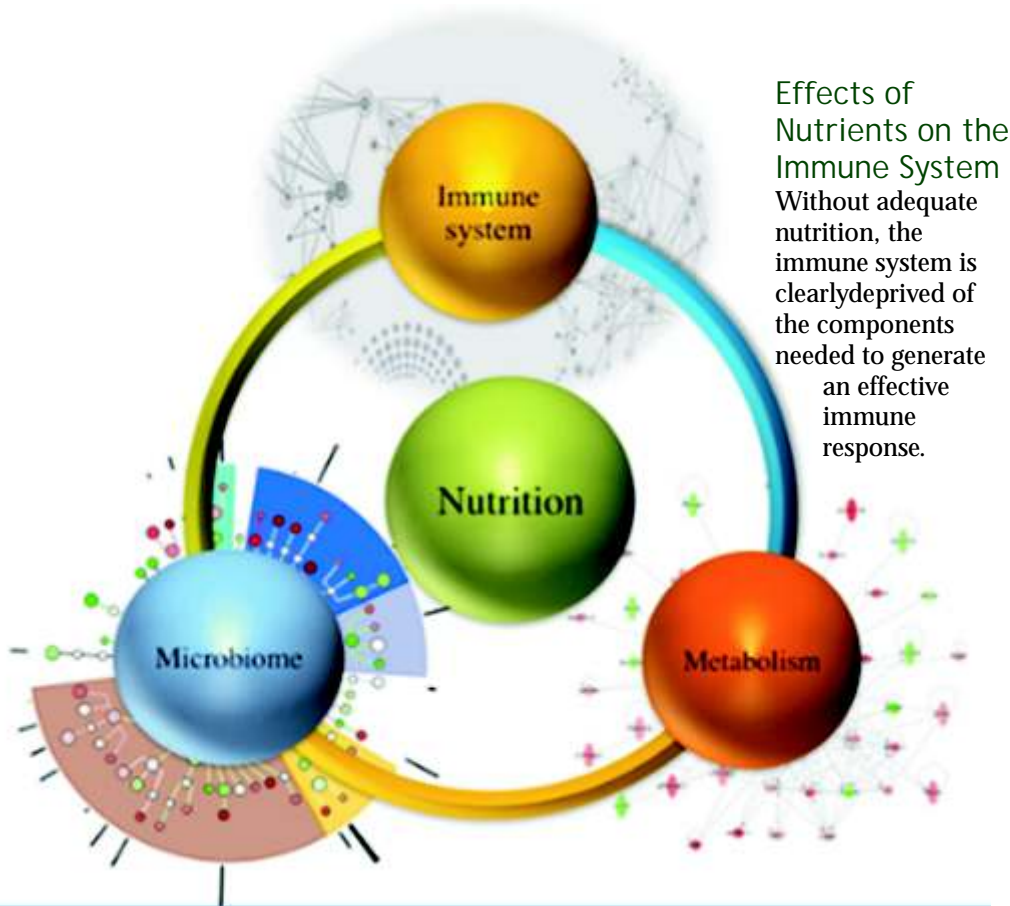
What is Immunity?

The immune system, which is integrated into all physiological systems, protects the body against infections and other external and internal insults by utilizing three

distinct layers (e.g., skin, epithelial lining of the gastrointestinal and respiratory tracts) and biochemical barriers (e.g., secretions, mucus, and gastric acid), numerous different immune cells (e.g., granulocytes, CD4 or CD8 T and B cells), and antibodies (i.e., immunoglobulins). The first line of defense is "Innate immunity", which combines physical and biochemical barriers with a non-specific cellular response to defend against pathogens. If the pathogen manages to avoid these innate defenses, a more complex, "Adaptive Immunity", antigen-specific response is triggered,

mediated by T and B lymphocytes, which produces antibodies to target and destroy the pathogen. The immune system undergoes many changes over the life course—developing and maturing during childhood, potentially achieving peak function in early adulthood, and gradually declining in most people in older age. Hence, the elders are at a risk and severity of infections such as common cold, influenza, pneumonia and diarrheal infections.





antioxidant/oxidant balance in immune cells and in protecting them from oxidative stress and preserving their adequate function. The addition of the deficient nutrient back to the diet can restore immune function and resistance to infection. However, excessive amounts of some nutrients also impair immune function.

○ Protein Energy malnutrition

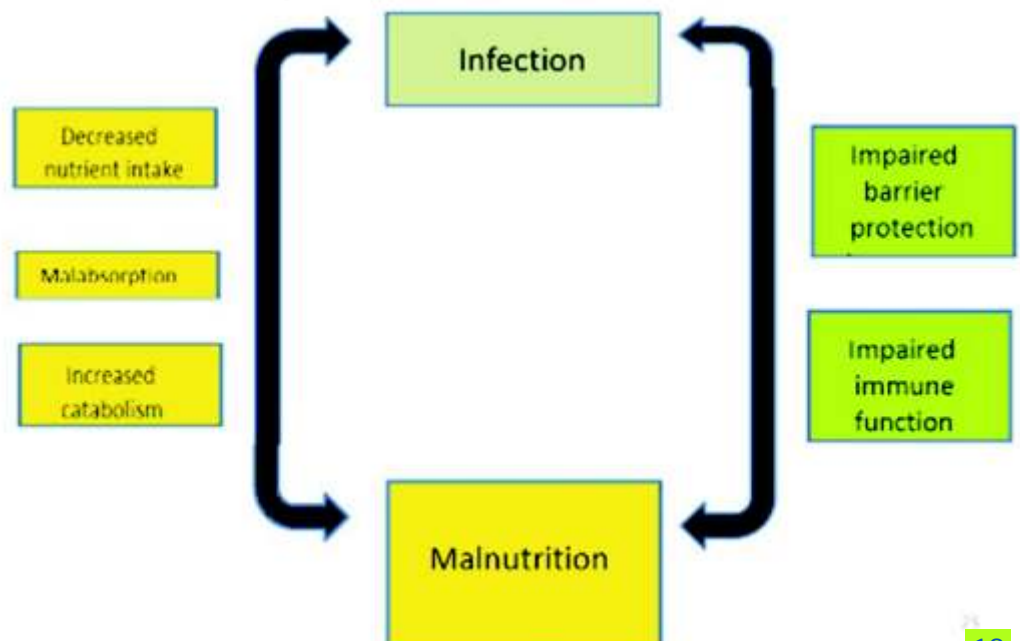
Nutritional deprivation, such as protein energy malnutrition (PEM), often causes immunodeficiency leading to increased frequency and severity of infection. Older individuals tend to have a high prevalence of nutrient deficiency making them more susceptible to common infections affecting the upper and lower respiratory, urinary, and genital tracts.

○ Obesity

Evidence supports a link between adipose tissue metabolism and immunocompetent cell functions. This includes the closely related factors leptin and tumour necrosis factor- α (TNF- α) in adipose tissue. The mechanisms responsible for increased risk of infection and poor antibody response among obese subjects are unknown, but may be linked to the negative effect that their metabolic milieu produces on immunity.

Optimal immune function is dependent on a healthy immune system. Adequate nutrition is crucial to provide nutrients required for the development, maintenance and expression of the immune response. There is a bidirectional interaction among nutrition, infection and immunity: the immune response is compromised when nutrition is poor, predisposing individuals to infections, and a poor nutritional state may be exacerbated by the immune response itself to an infection. Having said that, it is not always possible to achieve good nutritional status via the diet alone. Nutrition supplements based on the specific needs of individuals may help to provide an adequate basis for optimal immune function. The available clinical data suggest that micronutrient supplementation can reduce the risk and severity of infection and support a faster recovery. However, much more research is required to understand the clinical outcomes of micronutrient on immune functions.

Malnutrition is usually a complex syndrome of multiple nutrient deficiencies. Vitamins, minerals and trace elements are essential in the maintenance of immunocompetence. This includes vitamin A, beta-carotene, folic acid, vitamin B6, vitamin B12, vitamin C, vitamin E, riboflavin, iron, zinc, and selenium. Antioxidant nutrients are important in maintaining the



○ Exercise

The effect of exercise on immune response is multifaceted. While moderate exercise enhances immune functions, high-intensity physical activity and periods of heavy training can suppress various immuneresponse parameters. Improper nutrition and physical stress increase the negative effect of heavy exertion upon the immune system.

○ Gastrointestinal disorders

The primary activity of mucosal immune response is to protect the mucosa by blocking microbial, toxin and antigen entry. Commensal bacteria may stimulate the mucosal mechanisms of defence and the maintenance of homeostasis of the immune response. It is observed that reduction of normal commensal bacteria in the context of infection or after antibiotic treatment may interfere with nutrient availability and impair the gastrointestinal immuneresponse. Thus, the manipulation of the host microflora by exploring role of functional foods and probiotics may have positive influence on immune-mediated and gut-related health problems.

Modulation of Immune Function by Nutrients

It is well-documented that nutritional status is closely associated with immunity and host resistance to infection. Deficiency in both macronutrients and micronutrients causes immune function impairment, which can be reversed by nutrient repletion. Especially, the older people may have greater requirements for certain dietary components to compensate for the deficit in cellular functions and increased stress associated with aging. Besides the known nutrients, many phytochemicals and functional foods have been shown to have beneficial effects on immune function.

○ Vitamin D is unique as the human body can synthesize it in the

skin from the precursor 7-dehydrocholesterol when exposed to sunlight. Both sunlight induced and diet-derived vitamin D are first hydroxylated to 25(OH)D mainly in liver, and further hydroxylated to the active form 1,25(OH)₂D mainly in kidney. This function is besides the regulation of calcium homeostasis and bone health. According to ICMR, the RDA for adults is 400 IU. Vitamin D has been shown to influence different innate immune cells and also influence the adaptive immune response. Although the clinical studies have demonstrated some promising effects of vitamin D supplementation on several infection outcomes including tuberculosis, upper respiratory tract infection, hepatitis C virus, and HIV, the presence of great discrepancy among studies disallows for a definitive conclusion. Vit. D is found in fatty fish, eggs, Fortified Milk and juices. Adequate exposure to sunlight is essential for the production of Vitamin D in human body.

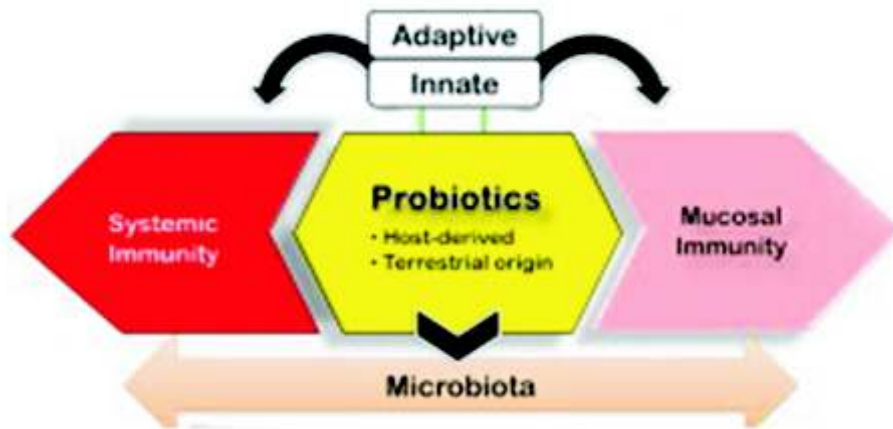
○ Vitamin E is a lipid-soluble antioxidant present in the membrane of all cells including the immune cells, which protects them from oxidative damage related to high metabolic activity and high PUFA content in these cells. In a subsequent larger, double-blind, placebo-controlled trial, this group found that the elderly nursing home residents (>65 y) receiving vitamin E supplementation (200 mg/d) for 1 year had lower incidence of upper respiratory infection and common cold compared to those receiving the placebo. However, there are inconsistent and controversial results for vitamin E's effect on infection in some studies with no effect or adverse effects. Until further research, include vitamin E in your diet with nuts, sunflower seeds, almonds, fortified cereals. The RDA for Vit E is 7.5 – 10 mg - tocopherol, as per ICMR.

○ Vitamin A plays an important role in enhancing immune function, and having a regulatory function in both cellular and humoral immune responses. As per ICMR, the RDA of Retinol is 600- 800 µg/d. Include foods such as sweet potatoes, carrots, broccoli, spinach, red bell peppers, apricots, mango, tomato, eggs or foods labeled "vitamin A fortified," such as milk or some cereals.

○ Vitamin C is known as an essential antioxidant and enzymatic co-factor for many physiological reactions in the body, such as hormone production, collagen synthesis and immune potentiation. RDA is 40 mg/dl. Foods rich in this vitamin are amla, lemon, tomato, capsicum, bell peppers, broccoli, papaya, strawberries, citrus fruits such as oranges, sweet lime.

○ Zinc is a nutrient crucial for maintaining homeostasis of immune system. Zinc deficiency and inadequacy are estimated to affect 30% of the world's population and contribute to 800,000 death. Zinc deficiency is the fifth leading risk factor for bacterial diarrhea and pneumonia. Several controlled trials have investigated that zinc supplementation is protective against infection in the children and elderly population. Indian RDA for Zinc is 10-12 mg/dl. Eat foods rich in Zinc such as nuts, sesame seeds, hemp seeds, pumpkin seeds, groundnuts, almonds, cashewnuts, legumes like chana dal, lentils, beans, milk, whole grain products, lean meat, poultry, seafood.





○ **Selenium** is a trace element that has antioxidant & anti-inflammatory properties. Low selenium status has been associated with an increased risk of mortality and poor immune function. As per ICMR 2010, the RDA is 40 µg/day. Consume oil seeds, fish, cereals, pulses, egg to get adequate selenium.

○ **Magnesium** plays an important role in controlling immune function. RDA of this element is 310-340 mg/dl as per ICMR. Foods rich in magnesium are nuts, oilseeds, pulses and spices.

○ **Protein** plays a role in the body's immune system, especially for healing and recovery. Protein malnutrition has an impact on IgA production. Research shows role of dietary proteins in the formation and maintenance of lymphoid structures such as the gut mucosa. Daily intake of 1 gm per kg body weight is recommended. Eat a variety of protein foods from animal sources as well as plant sources. Protein rich foods include milk and milk products (curd, paneer, cheese), seafood, lean meat, chicken, eggs, soya and its products, beans, dal, pulses, peas, unsalted nuts and seeds.

○ **Probiotics** are “good” bacteria that promote health. Probiotics are “live microorganisms” that, when administered in adequate amounts, confer a health benefit on the host. The primary genera of probiotic microorganisms include

Lactobacillus, *Bifidobacterium* and *Streptococcus*. Studies suggest that probiotics positively impact the immune response against infection. Probiotics modulate immune and inflammatory response in gut through their interaction with intestinal epithelial cells. Probiotics sources include yogurt, fermented foods and probiotic labeled dairy products.

○ **Functional foods** offer immunity enhancing benefits. Consume 1 tsp of ginger juice with Tulsi Juice, mixed with lemon and honey. Fresh garlic can be used in chutney and in different salads. Supported by Ayurvedic literature and scientific publications, the Ministry of AYUSH recommends the use of immune boosting foods with special reference to respiratory health. These include drinking herbal tea / decoction (Kadha) made from Tulsi (Basil), Dalchini (Cinnamon), Kalimirch (Black pepper), Shunthi (Dry Ginger) and Munakka (Raisin) to be taken once or twice a day. Add jaggery (natural sugar) and / or fresh lemon juice for taste, if needed. Additionally, consume Turmeric Milk (Golden Milk) with half tea spoon Haldi (turmeric) powder in 150 ml hot milk, once or twice a day.

Incorporating these foods can go a long way to build your immunity. Daily consumption of atleast 5 servings of fruit and vegetables, 2-3 servings of protein rich foods and 4-5 servings of cereals will provide adequate nutrients. Do not overcook

vegetables as this can lead to the loss of vitamins. For snacks, choose raw vegetables and fresh fruit rather than foods that are high in sugar, fat or salt. Avoid foods loaded with trans fats such as fast food, snack food, fried food, frozen pizza, cookies, margarines and spreads. Avoid too much caffeine, sweetened fruit juice concentrates, soft drinks as they are high in sugar. It is also important to drink atleast 8-10 glasses of water daily.

In conclusion, in order to strengthen our immune system, to reduce the risks of ailments and to stay healthy the body defence system should be strengthened. To do so, regular exercises and having an immune boosting diet will be more economical and natural preference in today's time and thereafter too. Stay indoors, Eat Healthy, Stay Safe.

Suggested Reading:

1. Maggini S, Pierre A, Calder PC. Immune Function and Micronutrient Requirements Change over the Life Course. *Nutrients* 2018, 10, 1531; doi:10.3390/nu10101531
2. Marcos A, Nova E, Montero A. Changes in the immune system are conditioned by nutrition. *European Journal of Clinical Nutrition*. 2003; 57(1):66–69
3. Wu D, Lewis ED, Pae M, Meydani SN. Nutritional Modulation of Immune Function: Analysis of Evidence, Mechanisms, and Clinical Relevance. *Frontiers in Immunology*. 2019 (9). doi: 10.3389/fimmu.2018.03160
4. ICMR, Nutrient Requirements and RDA for Indians- A report of Expert Group of the ICMR, 2010.



Image © iStock.com/
memoangeles

REGULATORY ROUND UP



By
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Dear Readers

Hope you and your family are safe. Please find below FSSAI notifications since the last round up.

FSSAI has launched a new online licensing system - Food Safety Compliance System (FoSCoS)– with effect from 01 June 2020 in Tamil Nadu, Gujarat, Goa, Delhi, Odisha, Manipur, Chandigarh, Puducherry and Ladakh. This replaces the present FLRS system. To be launched in other states soon. I found it more user friendly and it is truly online. There is no need to

take a print out of Form B and separately load it. The system has also provision to submit annual return in Form D and apply for approval under Non Specified regulation.

FSSAI guidance note on Food Safety and Hygiene for Food Business Operators during COVID 19 pandemic.

Draft regulation on Alcoholic Beverages is operationalized with effect from June 2020

Deadline for renewing Licence expiring between 22 March and 31 July 2020 has been extended to 31 July 2020

Recognizing the difficulties faced by the Food Business Operators in complying with the testing requirements of chemical and biological contaminants and pesticide residues in finished goods once in 6 months due to the present situation, FSSAI has requested the State authorities not to penalize the FBOs on this account.

FSSAI requests its officers to keep a close watch on the import of rice syrup, golden syrup and similar products which are potential adulterants in Honey. It would be more effective if these actions are not publicized.



Image © iStock.com/
memoangeles

A recent regulation amended the standards of Calcium and Magnesium in Packaged Drinking Water. [Compliance to this amendment has been deferred till 01 January 2021 on account of COVID 19 pandemic](#)

FSSAI takes a serious note of the fact that many products under the category of Health Supplements, Nutraceuticals, etc have vitamins and minerals beyond 1 RDA. [In a letter, the Central Authority has requested the licensing authority to ensure that these nutrients are within 1 RDA while issuing the licenses.](#)

[Deadline for the mandatory safety](#)

[audit of high risk food manufacturers \(Meat, Milk and their products\) has been extended to 30 September 2020](#)

Standards for fortified Atta, Maida and Salt are described both in FSS (Fortification of Foods) Regulation, 2018 and FSS (Food Products Standards and Food Additives) Regulation, 2011 and they are at variance. [FSSAI vide a notification has omitted the standards for fortification of these products from FSS \(Food Products Standards and Food Additives\) Regulation, 2011](#)

[A FSSAI directive, amending the FSS \(Prohibition and Restriction on Sales\) Regulation, 2011, permits the](#)

[incidental presence of Kesri Dhal \(LathyrusSativus\) in pulses up to a maximum of 2%.](#) It is not clear as to how the “incidental presence” will be differentiated from the “intentional addition”. A clarification is required and more so because Kesri Dhal is known to contain a neuro toxin. It would have been more appropriate if the risk assessment, based on which this decision was taken, is placed in public domain.





RESEARCH IN HEALTH & NUTRITION

Link identified between dietary selenium and outcome of COVID-19 disease

April 29, 2020, Science Daily

An international team of researchers, led by Professor Margaret Rayman at the University of Surrey, has identified a link between the COVID-19 cure rate and regional selenium status in China.

Publishing their findings in the American Journal of Clinical Nutrition, researchers using data (up to 18 February), investigated possible links between selenium levels in the body and cure or death rates of those with the COVID-19 virus in China. Selenium is an essential trace element obtained from the diet (i.e. fish, meat and cereals) which has been found to affect the severity of a number of viral diseases in animals and humans.

For example selenium status in those with HIV has been shown to be an important factor in the progression of the virus to AIDs and death from the condition. China is known to have populations that

have both the lowest and highest selenium status in the world, due to geographical differences in the soil which affects how much of the trace element gets into the food chain.

Margaret Rayman, Professor of Nutritional Medicine at the University of Surrey, said: "Given the history of viral infections associated with selenium deficiency, we wondered whether the appearance of COVID-19 in China could possibly be linked to the belt of selenium deficiency that runs from the north-east to the south-west of the country."

Examining data from provinces and municipalities with more than 200 cases and cities with more than 40 cases, researchers found that areas with high levels of selenium were more likely to recover from the virus. For example, in the city of Enshi in Hubei Province, which has the highest selenium intake in China, the cure rate (percentage of COVID-19 patients declared 'cured') was almost three-times higher than the average for all the other cities in Hubei Province.

By contrast, in Heilongjiang Province, where selenium intake is among the lowest in the world, the

death rate from COVID-19 was almost five-times as high as the average of all the other provinces outside of Hubei.

Most convincingly, the researchers found that the COVID-19 cure rate was significantly associated with selenium status, as measured by the amount of selenium in hair, in 17 cities outside of Hubei. Kate Bennett, a medical statistician at the University of Surrey, said; "There is a significant link between selenium status and COVID-19 cure rate, however it is important not to overstate this finding; we have not been able to work with individual level data and have not been able to take account of other possible factors such as age and underlying disease." Ramy Saad, a doctor at Royal Sussex County Hospital, Brighton, currently taking an MSc degree in Nutritional Medicine at the Department of Nutritional Sciences at Surrey, commented; "The correlation we have identified is compelling, particularly given previous research on selenium and infectious diseases. As such, a careful and thorough assessment of the role selenium may play in COVID-19 is certainly justified and may help to guide ongoing public-health decisions."



Childhood obesity and high blood pressure warn of future heart disease

April 28, 2020, Science Daily

A large study in adolescents and children, some as young as 3 years of age, shows a link between obesity, high blood pressure, and later damage to blood vessels. The research is presented today on EAPC Essentials 4 You, a scientific platform of the European Society of Cardiology (ESC).

"The results of this study highlight the need to adopt healthy lifestyles from an early age," said study author Ms. Julia Bueschges, a PhD student at the Robert Koch Institute, Berlin, Germany. Until now, there has been little information on the connection between risk factors present in childhood -- such as obesity and high blood pressure -- and cardiovascular disease later in life. The study used data from the nationally representative German Health Interview and Examination Survey for Children and Adolescents (KiGGS cohort). Children from diverse backgrounds were enrolled from all over Germany irrespective of their health status; they were selected using a sophisticated sampling design to ensure they represented the German population.

Three study teams travelled over three years and set up temporary

examination centres in 167 locations across the country. The baseline examination of 4,716 participants aged 3 to 17 included blood pressure, height and weight. The measurements were repeated 11 years later in

the 14 to 29-year-olds, who also had an ultrasound of their arteries. The ultrasound assessed the thickness of the inner two layers of the carotid artery: thicker lining is an early indicator of clogged arteries. High blood pressure (hypertension) at baseline was associated with a 33% increased risk of having a thicker lining of the artery 11 years later, while baseline obesity was linked with a 38% elevated risk of thicker artery lining. Thicker lining was defined as the top 25% of measurements according to current guidelines. Being hypertensive at both examinations was linked with a 63% raised risk of thicker artery lining, while being obese at both examinations carried a 53% greater risk.

Ms. Bueschges said: "The study provides evidence from a large general population sample for a connection between cardiovascular risk factors in children and adolescents -- namely high blood pressure and obesity -- and subsequent deleterious changes in the blood vessels." She cautioned that individual risk prediction is only moderate, meaning

that not all children and adolescents with high blood pressure or obesity will develop subclinical atherosclerosis. She said: "These findings underline the importance of good cardiovascular health from an early age. Physical activity and a healthy diet can help prevent high blood pressure and obesity. Alcohol and tobacco should be avoided. Last but not least, it is important to manage stress." She concluded: "Tackling these unhealthy behaviours does not depend on children and their families alone but also on the promotion of healthy environments and the reduction of social inequalities which are strongly associated with cardiovascular disease."

Fruit may mask taste of dark green vegetables in commercial baby foods

April 13, 2020 Science Daily

Commercially prepared baby foods that purport to be loaded with dark green vegetables are sweetened with fruit puree and often don't contain a high percentage of dark green vegetable content, according to a team of researchers.

The resulting lack of dark green vegetable taste matters, said team leader John Hayes, associate professor of food science at Penn State, because young children don't learn to like the taste of broccoli, spinach, brussels sprouts and kale,



to name a few, unless they repeatedly are exposed to them. So, they may not want to eat them later. "Other research indicates young kids need to be exposed to the flavor of vegetables to learn to like them," he said. "If true, this new work is key because it shows that current commercial products on the market fail to meet this need, as they cover up and hide the flavor of vegetables -- even when vegetables are on the ingredient list." Because vegetables are an important but under-consumed part of a healthy diet, there is growing interest in promoting vegetable acceptance and consumption among infants to help establish life-long healthy eating patterns, noted Hayes, director of the Sensory Evaluation Center in Penn State's College of Agricultural Sciences.

He suggested that many well-meaning parents who want their young children to eat and like dark green vegetables may be fooled by misleading content descriptions.

"If parents don't stop and taste these foods themselves, the front of the package may lead them to think these products taste like vegetables rather than a fruit puree," he said. A recent survey of commercial baby food products in the United States conducted by some researchers on the team revealed a lack of variety in the types of vegetables offered. Most notably, there were no commercially available single, dark green vegetable products. Instead, dark green vegetables often were mixed with fruits or red/orange vegetables -- such as squash -- that provide additional sweetness. For the liking of vegetables to be learned, the flavours from the vegetables must be perceptible within the mixture, explained Alyssa Bakke, staff sensory scientist in Penn State's Department of Food Science, who spearheaded the research. She pointed out that the study was an effort to understand the sensory profiles of vegetable-containing, stage 2 infant products

commercially available in the United States, and how ingredient composition affects flavour profiles.

In the study, recently published in *Appetite*, researchers performed descriptive analyses to quantitatively profile the sensory properties of 21 commercial vegetable-containing infant foods and one prepared in Hayes' laboratory. Eleven experienced adult panellists, after 14 1/2 hours of training, rated all 22 products -- in triplicate -- for 14 taste, flavour and texture attributes. Panellists found that products containing fruit not only were sweeter than products that did not contain fruit but also were higher in fruit flavours and lower in vegetable flavours. In general, sensory profiles were driven by the first or majority ingredient in the product. Because few products had dark green vegetables as a first ingredient, dark green vegetable flavour was not prevalent.

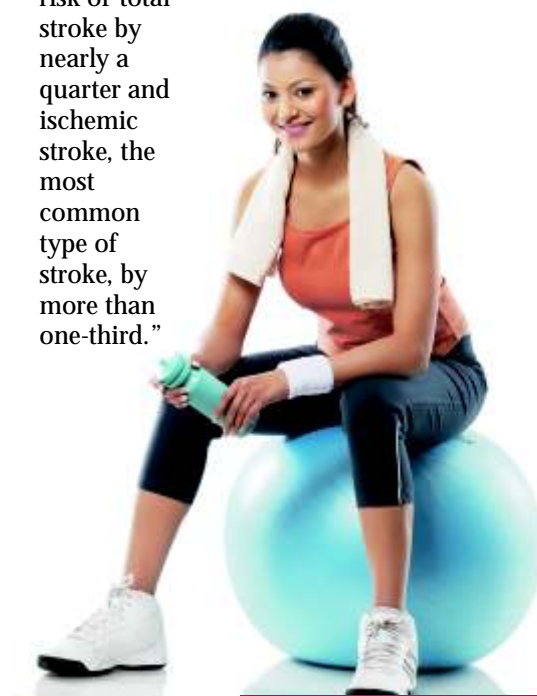
"This suggests the sensory profiles of commercially available infant vegetable foods may not be adequate to facilitate increased acceptance of green vegetables," Bakke said. "This is a huge concern right now -- how can we promote the liking of vegetables? From infants to adults, people tend not to like vegetables." There are understandable reasons why vegetables are not preferred, Bakke said. They tend to be more bitter than other foods, and they tend to have less intense, more subtle flavours than most other foods. Sensory attributes that, unfortunately, are innate drivers of liking, she said, are salt and fat. "Vegetables, of course, just don't have those things, so we have to learn to like them, and sometimes we have to overcome things like bitterness," she said. "The number one way we do that is just repeated trial -- trying it over and over and over again. If this is done early on, we can prepare people to have a liking for vegetables throughout their whole lifetimes."

Women's lifestyle changes, even in middle age, may reduce future stroke risk

April 9, 2020 Science Daily

Middle age may not be too late for women to substantially reduce their stroke risk by not smoking, exercising, maintaining a healthy weight and making healthy food choices, according to new research published today in *Stroke*, a journal of the American Stroke Association, a division of the American Heart Association.

In general, women are more likely than men to have a stroke, die from stroke and have poorer health and physical function after a stroke. The average age of first stroke in women is 75 years. Based on this information, researchers theorized that making mid-life lifestyle changes might help reduce stroke's burden among women. "We found that changing to a healthy lifestyle, even in your 50s, still has the potential to prevent strokes," said Goodarz Danaei, Sc.D., lead study author and Bernard Lown Associate Professor of Cardiovascular Health at Harvard T.H. Chan School of Public Health in Boston. "Women who made lifestyle modifications in middle age reduced their long-term risk of total stroke by nearly a quarter and ischemic stroke, the most common type of stroke, by more than one-third."



Researchers analyzed the Nurses' Health Study, which includes health information on nearly 60,000 women who enrolled at average age of 52 and continued in the study for an average of 26 years. Researchers studied the impact on stroke risk from smoking cessation, exercising 30 minutes or more daily and gradual weight loss if women were overweight. The researchers also studied the impact of making recommended dietary modifications that emphasize eating more fish, nuts, whole grains, fruits and vegetables and less red meat, no processed meat and less alcohol.

During the 26-year follow-up, researchers found:

- 4.7% of women with no lifestyle interventions had a stroke of any type; 2.4% had ischemic stroke; and 0.7% had hemorrhagic stroke.
- Engaging in the three non-dietary interventions -- smoking cessation, daily exercise and weight loss -- was estimated to reduce the risk of total stroke by 25% and ischemic stroke by 36%.
- Sustained dietary modifications were estimated to reduce the risk of total stroke by 23%.

Researchers also found that increasing fish and nut consumption and reducing unprocessed red meat consumption appeared to have positive impacts on reducing stroke risk, although the degree of impact from these dietary changes was not as big as those achieved through increased physical activity, smoking cessation and maintaining a healthy weight. While this was an observational study that included mostly white, middle-aged women, Danaei said, "There are other studies to support that the proportional changes in stroke risk from lifestyle and dietary modifications may be generalizable to men. We also estimate that exercising 30 minutes or more daily may reduce the risk of stroke by 20%."



Fibre consumption linked to lower breast cancer risk

April 6, 2020 Science Daily

Consuming a diet high in fibre was linked with a reduced incidence of breast cancer in an analysis of all relevant prospective studies. The findings are published early online in *CANCER*, a peer-reviewed journal of the American Cancer Society (ACS).

Because studies have generated inconsistent results regarding the potential relationship between fibre intake and breast cancer, Maryam Farvid, PhD, of the Harvard T.H. Chan School of Public Health, and her colleagues searched for all relevant prospective studies published through July 2019. When the investigators pooled data from the 20 observational studies they identified, individuals with the highest consumption of fibre had an eight percent lower risk of breast cancer. Soluble fibre was associated with lower risks of breast cancer, and higher total fibre intake was associated with a lower risk in both premenopausal and postmenopausal women.

"Our study contributes to the evidence that lifestyle factors, such as modifiable dietary practices, may affect breast cancer risk," said Dr. Farvid. "Our findings provide research evidence supporting the

American Cancer Society dietary guidelines, emphasizing the importance of a diet rich in fibre, including fruits, vegetables, and whole grains." Importantly, the findings do not demonstrate that dietary fibre directly reduces breast cancer risk, and a randomized clinical trial is needed to test such cause and effect.

Fenugreek extract increases strength and endurance in men, study finds

29 Apr 2020 Nutrition Insight

Fenugreek extract Testofen can increase strength, aerobic endurance and lean body mass in healthy, exercising men.

This is according to a study published in the *Transitional Sports Medicine Journal* that tested Testofen's effectiveness on impacting lean body mass, fat mass, upper and lower body muscular strength and endurance in men. The study builds on research that found the extract to promote free testosterone, vitality and a healthy sexual desire in men. Positive findings demonstrate the synergy between Ayurvedic medicine tradition with clinical trials. "After years of research showing Testofen's positive effects for men, we wanted to assess its efficacy on muscle strength and endurance," says Ramasamy Venkatesh, Managing Director at Gencor Pacific.



“The results verified the powerful effects of Testofen and supported our initial hypothesis that participants would experience improvements in body composition, muscle performance and endurance.”

The double-blind, randomized, dose-response, clinical trial of eight weeks was conducted at RDC Global with 138 healthy, non-smoking male participants. The findings suggest that Testofen is both effective and acts in a dose-response manner. The use of fenugreek can be found in Ayurvedic medicine. The study concluded that Testofen at doses of 300 mg per day and 600 mg per day, in conjunction with an effective exercise regime, had superior positive effects in lower body strength.

Testofen at a dose of 600 mg per day also showed a decrease in body mass, body fat and an increase in lean mass at eight weeks. The 600 mg group also demonstrated an increase in testosterone concentration from baseline to eight weeks. This is consistent with existing clinical studies showing that Testofen has positive effects on anabolic and androgenic performance in adult males and adds to the body of literature on the product.

“These significant and positive results show that Testofen may be an effective ergogenic aid for those wanting to rapidly improve their exercise performance and body composition above and beyond exercise training only,” says Chase Shryoc, Vice President of Sales and Business Development. “We look forward to incorporating Testofen into the next sports nutrition product.” Earlier this year, Gencor gained four Canadian health claims for its ingredient derived from fenugreek extract, Libifem, for women’s healthy aging. Libifem products in Canada can now claim that they “help increase women’s sexual desire,” “help support

women’s healthy sex drive and libido,” “help promote women’s sexual arousal” and “may help reduce menopausal symptoms, such as hot flashes and night sweats.” Libifem is part of Gencor’s portfolio of healthy ingredients for women, each of which is backed by scientific studies and based on the various stages of a woman’s life.

Other natural testosterone-promoting ingredients include saw palmetto, a palm berry whose phytonutrient profile is rich in fatty acids and sterols. Its extracts are used for men’s health, including urinary tract health and prostate function normalization. Recent technology in microencapsulation of saw palmetto by Valensa International provides flavourless dosing of the extract, thereby facilitating ease-of-use in meeting the daily recommended dose for prostate health.

Edited by Missy Green

Bioavailability crucial for ingredient success in nutraceutical market, says industry

15 Apr 2020 Nutrition Insight

Bioavailability can make or break ingredient formulations due to its crucial role in determining dosage effectiveness and quality. These factors combined are of key concern to formulators, who strive to deliver potent ingredients quickly absorbed by the body to sustain consumer appeal. NutritionInsight speaks with nutraceutical players active in this space on what challenges low bioavailability bring, how they are overcome and how increasing consumer awareness is shaping industry. Bioavailability is defined by the percentage of a nutrient that is

absorbed into the circulating bloodstream after consumption and is able to offer a functional benefit in the body, according to Stephane Vouche, Marketing Manager at Lonza.

“A higher bioavailability percentage would suggest that a greater proportion of a nutrient can be absorbed, therefore offering enhanced efficacy and performance once in the bloodstream.” “Key factors that influence bioavailability are the physical properties, such as its hydrophobicity and solubility, the formulation or galenic form and whether the formulation is administered in a fed or fasted state gastric emptying rate,” adds Alberto Espinel, Head of R&D, Pharmactive.

The buzz on bioavailability

The effective bioavailability of ingredients is a tool to sustain company sales through customer retention and long-term brand building, according to Maja Orešnik, Science & Research Director at PharmaLinea. “It switches [the focus] from ‘how much of this ingredient will we put



in the product’ to ‘how much of this ingredient will the consumer actually receive and be able to readily use.’ The journey of an ingredient and its associated benefits to the consumer is long and bioavailability is a key step in that journey,” she affirms.

Over at Naturex, part of Givaudan, Pascale Fanca-Berthon, Category Technical Leader in Health Ingredients, knows that increasing the quantities of a particular active does not immediately translate to increased benefits if they aren't presented in a bioavailable form. "By increasing bioavailability, we can decrease the amount needed for an effective dose. Low effective doses make compliance easier for the consumer and can reduce cost-in-use for end-product manufacturers," she explains. Lonza's proprietary research shows that in France, over 70 percent of consumers in the Millennial and Boomer age groups would like more clinical proof that the nutrients in the supplements they take are being fully absorbed by their bodies. This figure rises to 78 percent for older consumers, Vouche underlines.

A big pill to swallow

In the nutraceutical world, low bioavailability can have serious long-term consequences, says Eric Meppem, Co-Founder and Commercial Director at Pharmako Biotechnologies. These include poor efficacy, low repeat purchase and consumer compliance and consequently brand distrust. "Moreover, higher doses require larger pills to swallow and, ultimately, less opportunity for synergistic formulations." Pharmako specializes in improving the bioavailability of lipophilic ingredients. Its customizable, self-micro-emulsifying delivery system AquaCelle is specifically designed and clinically proven to optimize bioavailability while maintaining product stability, the company states. "AquaCelle can facilitate increased absorption, while at the same time reducing or eliminating the effect of food on the absorption of these now bioactive compounds. By including AquaCelle into the formulation, formulators can make smaller doses which can increase compliance and tolerance. It's easier to swallow a small capsule once a day versus many large capsules

several times a day."

In the case of collagen peptides, Rousselot is conscious that low bioavailability can hinder the effective digestion and absorption of nutraceutical or nutricosmetic ingredients. Janne Prawitt, Scientific Director Health and Nutrition, identifies the high bioavailability of pure collagen peptides as a "prerequisite" to guarantee the biological efficacy of small bioactive peptides. "Collagen's native form is hard to digest. It needs to be processed into collagen peptides to become highly bioavailable. This is known as hydrolysis and involves the separation of individual collagen strands and the breakdown of long amino acid chains into smaller peptides, which can easily be digested and absorbed by the body," she explains.

Orešnik at PharmaLinea also highlights that preserving added-value ingredients throughout its shelf-life is a "more difficult" challenge. To prevent deterioration, it is necessary to create environments to ensure "sometimes very complex combinations of substances remain bioavailable and ingredients do not interact or undergo any change that might make them less bioavailable," she explains. In terms of delivery formats that best facilitate high bioavailability, Espinel of Pharmactive states that generally, coated galenic forms can better preserve actives in ingredients. Moreover, solubilised formulas, such as effervescent tablets and some soft-gels, can favour the absorption at the intestine.

Turmeric: A textbook example

A textbook example of poor bioavailability is turmeric, which is known for being poorly absorbed by the body. However, nutraceutical companies have found different solutions for this R&D headache. Naturex developed TurmiPure Gold, a patented colloidal suspension turmeric in a 100 percent

natural formulation, which enhances bioavailability and water dispersibility of curcuminoids. "With TurmiPure Gold, there's no need to take a high daily dose of turmeric. A dosage of 300 mg of TurmiPure Gold delivers the same amount of curcuminoids as an effective high dose of market standards," explains Fanca-Berthon. Meanwhile, by partnering with NovaSOL Curcumin in its latest applications, Lonza has been able to bring this highly bioavailable liquid form together with its liquid-filled, hard Licaps capsules. "Licaps capsules are hermetically sealed with a proprietary fusion sealing technology, which ensures that they can safely and securely deliver a wide variety of potential high bioavailability liquid fills. In fact, two Licaps capsules with the patented, dissolved NovaSOL Curcumin offer equivalent benefits to 27 standard curcumin tablets," Vouche notes.

Industry impacted by increased consumer awareness

Just as responsible consumers have driven demand for the plant-based, clean label supplements, they have also encouraged the need for high-quality, sustainable supplement solutions, which are efficacious and backed by science. "As such, we work with our partners to help them prepare for a future in which bioavailability is an even bigger priority for the modern consumer," adds Vouche. Meanwhile, Fanca-Berthon says that Naturex's customers are also well aware of the issues surrounding bioavailability. "Beyond the notion of bioavailability, bio-equivalence is becoming the new go-to measure for determining product performance because it can be used to compare bioavailability across products. Bio-equivalence is when two products can be equivalent for a specific effect, for example the amount of curcuminoids that is absorbed by the body. In the case of TurmiPure Gold, you would need to take 1922

mg of standard turmeric extract to reach the same level of curcuminoids in blood as just 300 mg of TurmiPure Gold,” she explains.

Despite business awareness of the topic growing, Meppem affirms that many consumers are still confused about bioavailability. The real challenge is supporting brand customers with published, credible data to inform and convince consumers about enhanced bioavailability. “Clinical results are more meaningful for consumers and companies need to provide credible evidence on enhanced absorption. Comparisons of a bioavailable nutrient to another from studies with different controls only exacerbate this confusion,” he emphasizes. Tackling this, Pharmako relies on comparing absolute measures, such as the actual measure of an active in nanograms per ml of blood plasma.

Both Prawitt of Rousselot and Pharmactive’s Espinel rally behind the clinical studies banner. “After studying Peptan, Rousselot has invested further in fundamental research that analyzes Peptan’s bioavailability, taking a first step towards explaining the mechanism of action behind the health benefits of collagen peptides,” Prawitt notes. Pharmactive also prioritizes the “proper communication” of the results of its pharmacokinetic studies. “Should any factor affect one of our ingredients, we recommend to our clients which formulations or formulas should be used. [It is important to] educate the final consumer and show information about the ingredient on the packaging,” adds Espinel.

Regardless of the progress made in challenging industry to improve ingredient absorption and better inform end-consumers, Orešnik from PharmaLinea concludes that delivering ingredients in the promised amount and state is far from easy and still not highlighted

enough in the industry. “We have a dual role. Not only do we continue investing in our expertise in stable product development, we also keep educating the industry’s NPDs and business development managers.” In the meantime, education through the media and trade shows is gradually picking up momentum and slowly but surely clarifying “the entire story of bioavailability.”

By Anni Schleicher

Researchers advocate vitamin D supplementation for vulnerable COVID-19 groups

10 Apr 2020 Nutrition Insight

Conscious that no single supplement, vitamin or food can treat or prevent COVID-19, global scientists are exploring the role that vitamin D supplementation can play in reducing the risk of respiratory infection, in general.

Because vitamin D deficiency (VDD) is associated with increased risk of acute viral respiratory infection, it may offer an extra avenue of increasing resistance, with some researchers now calling for “urgent supplementation” in vulnerable groups. NutritionInsight explores to what extent recent research may present opportunities for the sunshine vitamin. A recently published review in the *Nutrients* journal observes that the outbreak occurred in winter in the Northern Hemisphere. “[This is] a time when 25-hydroxyvitamin D (25(OH)D) concentrations are lowest and the number of [COVID-19] cases in the Southern Hemisphere near the end of summer are low.” Vitamin D deficiency has been found to contribute to acute respiratory distress syndrome and case-fatality rates increase with age and with chronic disease comorbidity. Both are associated with lower 25(OH) D

concentration.”

Another review, published in *The Irish Medical Journal*, highlights that the molecular virulence mechanism dipeptidyl peptidase-4 receptor (DPP-4/CD26) binding has been identified in the closely-related COVID-MERS virus. “Human DPP-4/CD26 has recently been shown to interact with the S1



domain of the COVID-19 spike glycoprotein, indicating that it may also be an important virulence factor in COVID-19 infection,” the review highlights. “Critically in this regard, DPP4/CD26 receptor expression has been shown to be significantly reduced in vivo upon correction of VDD,” the paper reads. Therefore, the Irish researchers are calling for “all older adults, hospital inpatients, nursing home residents and other vulnerable groups be urgently supplemented with 20-50µg/d of vitamin D to enhance their resistance to COVID-19.” They advocate for this advice to be “quickly extended” to the general adult population.

Independent assessment of the papers

Unaffiliated with either studies, Dr. Peter Bergman, Senior Physician at the Immuno-deficiency Unit of the Karolinska University Hospital, Sweden, tells NutritionInsight that “the data in these review-papers do not support a conclusion that vitamin D will work or can prevent the coronavirus epidemic.”

Ultimately, he affirms that vitamin D will most likely have no effect if given to very sick patients, as the “true” benefit will be in the preventive phase. “Vitamin D could provide some sort of immune-boosting in susceptible individuals. The key elements to prevent the coronavirus pandemic will never be vitamin D, but rather social distancing and quarantine-measures,” he warns.

However, even “the most hardcore critic could not deny” that there is a “solid rationale” to perform studies for vitamin D supplementation in risk-groups, such as elderly and obese people, as well as people with darker skin tones, he maintains. “[The papers] make a point that there is mechanistic evidence from in vitro experiments that vitamin D inhibits viral replication for other respiratory viruses. There is epidemiological evidence proving people with viral infections have lower serum levels of vitamin D than controls. There is also some randomized control trial (RCT) support that supplementation can prevent respiratory tract infections (RTIs) caused by other respiratory viruses, such as RS-virus, rhinovirus and influenza,” he comments.

Dr. Bergman further encourages in vitro testing to observe if vitamin D can prevent viral replication in respiratory epithelial cells or reduce inflammation in the coronavirus-context. In his previous work, he analyzed vitamin D’s protective effect against RTIs, published in PLOS One and investigated how vitamin D supplementation can reduce disease burden in patients with frequent RTIs, published in the British Medical Journal. “Given the many potential benefits and the few risks, my conclusion is that it would be good advice to follow the Irish paper, which I found most reasonable with regard to dosing. Since vitamin D is cheap, accessible and safe, it could be a good idea to supplement groups at risk,” he emphasizes. Both aforementioned

COVID-19-related papers affirm that randomized clinical trials are now direly needed to confirm these hypotheses and substantiate the benefits of micronutrient supplementation against infection. Other micronutrients boasting strong evidence for immune support are vitamin C and zinc.

Effective supplementation formats

Meeting recommended vitamin D needs may be more challenging to meet in food alone, Yasi Ansari, Registered Dietitian at the Academy of Nutrition and Dietetics, US, tells NutritionInsight.

“Vitamin D can be found in fatty fish, such as tuna, salmon and sardines, cow’s milk, egg yolks, sun exposed-mushrooms, in addition to breakfast cereals and 100 percent juices that are fortified with vitamin D. Ansari acknowledges that the research to support vitamin D’s role in disease prevention and immune health exists. Nevertheless, she highlights the importance of discussing with a dietitian how individuals’ ability to absorb enough vitamin D may be affected by environmental factors, malabsorption issues, medication use, genetics, metabolism and overall dietary intake.

The general public should aim to get at least the Recommended Dietary Allowances (RDAs) for vitamin D of ~600 IU per day and ~800 IU for ages 70+, according to the Dietary Guidelines for Americans. “There is research to support adults vitamin D needs to be higher than the RDAs. I recommend meeting at least the RDAs and connecting with a physician to assess deficiency risk and add a supplement if needed,” Ansari asserts.

An example of industry’s take on fortifying foods with vitamin D has recently been evidenced by PLT Health Solutions. The company has received a license from the Natural Health Products (NHP) Directorate

of Health Canada to market its Earthlight Whole Food Vitamin D powder as a help to “maintain/support immune health” and “helps with immune function.” “Although we may not be able to fully prevent or treat an illness, it is still important to focus on daily eating patterns that are nutrient-rich with foods high in vitamins C and D, in addition to healthy lifestyle practices, such as practicing food safety, washing hands, staying active, getting enough sleep and taking care of one’s mental health to help support the immune system,” Ansari concludes.

By Anni Schleicher



Personalized blood tests can aid immunity by revealing nutritional deficiencies, notes study

10 Apr 2020 Nutrition Insight

Blood tests can reveal micronutrient and antioxidant deficiencies and allow a personalized way to bolster immunity and protect the body’s cells.

This is according to a new study from Cell Science Systems, a device manufacturer specializing in preventive medical lab tests that measure how the immune system responds to foods, nutrients and other substances to create a personalized diet and health plan. This “great news for prevention”

comes at a time when global focus on immunity, catalyzed by the coronavirus outbreak, is the strongest it's ever been in recent memory. "We are seeing tremendous interest in our new cellular nutrition assays, as well as our food sensitivity testing, as people become more aware of the need to bolster and balance their immunity. The immune system requires nutrients to function," Roger Deutsch, CEO of Cell Science Systems, tells NutritionInsight.

The findings of the study, which appears in the current issue of the journal *Functional Foods in Health and Disease*, explains how laboratory testing can be used to precisely determine which exact foods or supplements are needed to prevent inflammation, boost T-cell immunity and protect the body from oxidative stress, which can be caused by infections. The company states that in severe cases, COVID-19 can induce dramatic and potentially fatal oxidative stress, called a cytokine storm. "Personalization of diet, according to scientific testing, reduces chronic inflammatory conditions and confers a healthier immune state," notes Deutsch. "This is not something we're proposing as a cure for someone already infected; but, it's potentially great news for prevention."

The study also highlights new research on how food sensitivities, as well as nutrient deficiencies, may play a vital role in keeping people healthy. Further, it reports that people with more food sensitivities and an unhealthy diet and lifestyle have more nutrient deficiencies and are less able to resist oxidative stress. Additionally, food sensitivity is associated with a lower immune redox status (protection from oxidative damage).

Unpacking the immune system

Deutsch explains that the adaptive immune system cells (T and B

lymphocytes) are quite specialized and if they are "naive" to the pathogen, they will undergo differentiation to address that specific threat, thus requiring energy (nutrients). If they have previously encountered the pathogen, "memory" cells clone themselves when confronted with re-appearance of a previously encountered pathogen. New cells that have the same structure and function of the mother cell are thus created using nutrients, he states. "In our testing, we induce this process using a mitogen – called a mitosis generator – and then add an array of various nutrients into individual cell cultures and measure the ability of the lymphocytes to divide. Enhanced proliferation indicates a functional deficiency of the nutrient," notes Deutsch.

According to Deutsch, many factors, including normal metabolism, can induce oxidation stress. Additionally, the body has many enzymes that protect from oxidative stress, such as super oxide dismutase, catalase and glutathione, as well as many dietary antioxidants including vitamins C and E. "However, the largest generator of oxidative stress is activated phagocytic immune cells, which purposely generate free radicals to kill pathogens. Sometimes the immune system responds to food molecules as it does to pathogens and these reactions are unique to each individual. If you can identify exactly which those foods are and avoid them, then you avoid the excessive generation of free radicals and the inflammation they are associated with," he adds.

Immunity has been a major spotlight in recent weeks, with John Quilter, Vice President and General Manager at Kerry, telling NutritionInsight how the COVID-19 pandemic will lead to "long-lasting" changes in popular attitudes surrounding immune health. Certain ingredients touted for their immune-bolstering properties such

as zinc and vitamin C have also seen increasing consumer interest.

Personalization blossoms

Cell Science Systems is tapping into the lucrative market for personalized nutrition, which is increasingly filled with various technological devices to curate consumers' diet plans and lifestyles. Earlier this year, Baze received approval from the US Food and Drug Administration (FDA) for its at-home blood collection process, which allows customers to assess their blood nutrient status. Mako Medical Laboratories recently launched a genetic test targeted at nutrition performance and customized meal plans, created to help consumers know exactly what their body needs and what foods should be eaten in order to optimize performance. Meanwhile, February saw Kaigo announce a US\$3 million round of seed funding to be channelled toward the company's proprietary and patent-pending tailored nutrition technology.

Deutsch states that this personalization movement stems from a 1956 book by Roger Williams entitled *Biochemical Individuality*. "It spawned a movement that has led us to the now widely recognized need to personalize diet. Many approaches are offered involving genetics. However, they are disappointing because there are many – sometimes thousands – of genes associated with each metabolic function. Additionally, what we now know from epigenetics is that genes might not even be expressed."

He continues that an alternative is to take a functional response approach. "Therefore, if the addition of a specific food or micronutrient induces an immune cell response that clearly indicates a benefit or a detriment for that specific individual, that provides the most conclusive information about what is the best diet for that person. This is regardless of factors such as pathways and genes."

This is also a hot topic in sports nutrition, which is seeing COVID-19 spur personalization. However, last month NutritionInsight reported that despite increased consumer demand for tailored nutrition, the sector is mostly experiencing segmentation with products that cover wide-ranging needs.

By Katherine Durrell

COVID-19 drives sports nutrition personalization in crowded market

08 Apr 2020 Nutrition Insight

COVID-19 is spurring the rapid personalization of sports nutrition as gyms around the world are increasingly shut and sporting gatherings are banned.

This could provide an extra opportunity for companies to stand out from the crowd, which is crucial as the mainstreaming of sports nutrition has led to heightened competition within the sector. In this first part of NutritionInsight's Special Report, key movers in the industry detail the "massive transformation" of what was once considered a niche category, and why differentiation has never been more important.

"Personalization has dropped itself on our doorstep in an unexpected way through the global COVID-19 pandemic. Exercise enthusiasts once dedicated to regular gym or group exercise have had to adjust to their own very personal techniques and routines. Both physical activity and active nutrition will likely be affected in ways that could impact the industry for the next few years, but those effects are yet to be determined," says Niki Kennedy, Senior Strategic Insights & Analytics Manager, Glanbia Nutritionals. "It is natural and encouraging that sports nutrition consumers are looking for ways to supplement their diet and maintain active lifestyles. The European Specialist Sport Nutrition Alliance (ESSNA) has also spoken up about

sports nutrition in the context of COVID-19. By taking the right sports nutrition products, combined

combined with a healthy diet and exercise, you can successfully maintain a healthy lifestyle, which may help to strengthen your immune system." However, the organization notes that some companies and individuals in the sector are making unfounded claims about their products, which is very likely to be non-compliant with the law. Across the Atlantic, the US Food and Drug Administration (FDA) is continuing to warn businesses for selling products claiming to prevent or treat COVID-19.

Long-term mainstreaming

Regardless of the current tumultuous economic conditions resulting from the pandemic, sports nutrition has seen major growth in recent years. However, an important difference is arising within the sector, according to Elsa Trotier, Product Manager for Nutrition at Ingredia. "We can differentiate between sports nutrition – which is used to improve athletic performance, and active or lifestyle nutrition – which is used with the primary objective of staying fit or active," she explains.

This nuance within the category is a result of its massive mainstreaming. "The industry has changed in a number of ways. Some decades ago, the sports nutrition sector mainly targeted bodybuilders and sports professionals. However, today, a wider range of consumers are focusing on the importance of being fit and healthy. From amateur sportspeople and weekend warriors to healthy agers, many people seek targeted nutritional supplementation for support before, during or after a workout, and to help support an active lifestyle," states Andie Long, Marketing & Sales Manager of AstaReal.



"Recent years have seen a massive transformation of the consumer base and a shift from the niche to the mainstream. Sports nutrition products used to be targeted at serious athletes, sportsmen and women and bodybuilders, but as the category has grown it has attracted more casual consumers. Many of them may not take part in much – or any – sport, but they see products like protein drinks and bars as a quick and easy way to improve their health or provide satiety on-the-go," chimes in Joe Katterfield, Sales Development Manager for Sports Nutrition and Health Foods, Arla Foods Ingredients.

Market saturation

As a result of the rising popularity of sports nutrition and years of strong growth, the sector is increasingly competitive, according to Katterfield. He adds that this results in greater choice, with companies being forced to become more innovative. This sentiment is reflected by Elsa Trotier, Product Manager Nutrition of Ingredia. She notes that the sector is very competitive with numerous actors. "It also includes a range of different offerings, including ready-to-drink (RTD) products, bars, gels and powders. There are more women practicing sports and more recreational athletes and more seniors who want to stay healthy during the aging process and avoid sarcopenia. These new active people and recreational athletes turn more and more toward fitness and endurance sports, such as triathlons and trail running," she states.

Lucie Lingrand, Product Manager of Marketing and Communications at Lallemand Health Solutions, divides active people into three categories. The first – core performers – train five to seven times per week and represent 36 percent of the market. Next, active athletes represent 21 percent of the market and train three to four times a week.

Lastly, occasional users represent 25 percent of the market and train one to two times a week. “Occasional users are moderately active people. They perceive sport as a leisure activity and so they have limited knowledge and interest in dietary food supplements and sports nutrition. They are driven by price, convenience and availability, therefore are not brand-loyal.”

Meanwhile, active athletes participate in competitions and do possess good knowledge and show interest about dietary food supplements and sports nutrition. They are driven by convenience, flavor, branding and packaging. They like to try and test different products and are influenced by their teammates and idols, therefore are not very brand-loyal, she explains.

Finally, the core performers are early adopters and trendsetters whom the active athletes look up to and follow. “Extremely active people, they exercise more than ten hours per week. They are, of course, fully committed to dietary food supplements and sports nutrition. They are also driven by specialized products with scientifically backed claims. Once they find the perfect product to fit their needs, they are exceptionally brand loyal and become major customers,” notes Lingrand.

Personalization involves taking the traditional key aspects of sports nutrition and supplementing them to fill in more niche benefit gaps.

Kennedy of Glanbia notes that the

diversification of sports nutrition consumers has brought forth new ingredients. “In the beginning, a handful of key ingredients, for the most part, fulfilled the needs of the consumers’ active in this category. However, as the category has expanded and the needs of consumers multiplied, we are seeing a major shift in consumers focusing on macro-ingredients and moving toward micro-ingredients. These help offer that general sense of well-being but also bring different benefits like endurance, sleep, joint health and mental performance.”

Long of Astareal adds that consumers are no longer just looking to build muscle. “There is much more of an interest in supporting several areas at once, for example energy, focus, performance and recovery. This is a more holistic way of looking at sports nutrition.”

Looking ahead, Kennedy also expects that personalization will continue to grow. “This involves taking the traditional key aspects of sports nutrition and supplementing them to fill in more niche benefit gaps. For example, a pre-workout product supplemented with collagen for joint health while also delivering a skin health benefit that many lifestyle consumers seek.”

Victoire Visseaux, Technical Sales & Marketing Manager at Lactalis Ingredients, also highlights the importance of personalization. “Customization is the next craze, where consumers can have a product developed just for their needs and goals. On this note, it is leading to the segmentation of offerings and in-depth categories, which are being created. One example is the intensity of activity for the dedicated active consumer versus the casual consumer. We can also split up demographics, with emerging categories including male, female, teens and healthy aging,”

she concludes.

Other key themes in sports nutrition include a splintered target market, with regionality emerging as a key consideration. Additionally, ingredient quality is more important than ever before – both in the stalwart of protein, as well as emerging ingredient astaxanthin.

By Katherine Durrell

Ashwagandha takes centre stage: Mood-boosting herb spotlighted among holistic trends

08 Apr 2020 Nutrition Insight

Mental well-being and its connection to nutrition is fast becoming a top consumer focus. Science is flagging the gut-brain axis link, while ayurvedic tradition is making its way into the food industry, targeting consumers who seek a holistic approach to nourishment.

A trending ingredient in the space is ashwagandha, which is taking over the market with innovative applications within the functional foods genre. Moreover, industry experts also underscored ashwagandha’s health-boosting synergy with ingredients like curcumin. “Ayurveda, with its focus on holistic cures, had always been aware of adaptogens, even before they were recognised widely. Ashwagandha is a time-tested ayurvedic ingredient that has been in use for thousands of years and has been increasingly sought after by consumers recently,” Dr. Benny Antony, Joint Managing Director of Arjuna, tells NutritionInsight.



Innova Market Insights reports that physical and mental health are now equally important to consumers.

Product launches with nootropics are having a moment, reflected by an average annual growth of 70 percent in product launches (Global, CAGR 2015-2019).

Moreover, a 2018 Innova Market Insights survey also found that eight out of ten consumers agreed that mental health is as important as physical health to their overall well-being, rising to nine out of ten respondents in China, US and Brazil.

Focus on ashwagandha

Ashwagandha is an ancient medicinal herb, classified as an adaptogen, which means that it can help the body manage stress. Ashwagandha also provides numerous other benefits for the body and brain, as it can boost brain function, lower blood sugar and cortisol levels, and help fight symptoms of anxiety and depression.

“Traditionally ashwagandha has been used in areas of stress or focus, sexual health and sleep, for example. If you look at the issue of well-being, one can see that factors such as stress and lack of sleep wreak havoc on the physical body and vice versa. Therefore ashwagandha forms a key component for any formula to restore full health,” Dr. Antony notes.

According to Innova Market Insights data, ashwagandha is increasingly growing in applications, with a 40 percent average annual growth of F&B launches. According to Innova Market Insights data, ashwagandha is increasingly growing in applications, with a 40 percent average annual growth of F&B launches, including supplements tracked with ashwagandha (Global, CAGR 2015-2019).

Top market categories of food and beverage launches tracked with ashwagandha (Global, 2015 vs. 2019) include Supplements, Sports Nutrition, Hot Drinks and Soft Drinks. The fastest growing subcategory with a 77 percent growth in product launches with ashwagandha are Sports Powders (Global, CAGR 2015-2019), the market researcher reports.

In this sphere, Arjuna has released an ashwagandha extract called Shoden, which has high potency and is touted as being “the world’s most bio available ashwagandha,” according to Dr. Antony.

“For the supplement manufacturer, the higher potency translates into lower single doses which gives them an opportunity to combine with other ingredients. For the consumer, the higher potency, reliability and the Arjuna brand assures repeatability, consistent quality and research backing, as well as purity,” he highlights.

Other key players in the space, include Sabinsa with its Shagandha Ashwagandha Root Extract 2.5 percent, which was recently found to comply with the US Pharmacopoeia-National Formulary (USP-NF) monograph, confirming its authenticity. Ashwagandha’s growing popularity makes caution in sourcing crucial to guard against the adulteration that often follows rapid growth in demand for a herb, according to Sabinsa Founder, Dr. Muhammed Majeed.

NPD and curcumin synergy

Ashwagandha is enjoying popularity in beverage applications and in light of its functional benefits, the Rebbl brand launched a line of drinks infused with the ayurvedic ingredient. In addition, Remedy Organics, a US producer of functional wellness drinks, also unveiled Golden Mind, a ready-to-drink beverage blend.

The drinks include almond milk,

DHA omega 3, MCT oil, turmeric, ginger, maca and ashwagandha. Marketed as being made with certified organic ingredients, the products offer an innovative take on the ancient ayurvedic Turmeric Golden Milk.

Within ayurvedic tradition, warm milk is a common remedy for insomnia, and Moon Milk is a popular recipe that features milk, ashwagandha and turmeric among others. The combination is also spotlighted for its beneficial health and mood-related properties.

According to Dr. Antony this is an interesting synergy, as the company also has a turmeric extract in its portfolio, BCM-95 Curcugreen. “A bioavailable curcumin can do wonders for the body. For healthy living one needs both a healthy brain and mind. The cognitive support is only one aspect; it is well-known that stress relief works wonders for the body, so this is a perfect marriage in more ways than one,” he notes.

Innova Market Insights data also shows that the fastest growing positionings tracked in product launches with ashwagandha include insomnia with an 81 percent growth (Global, CAGR 2015-2019). Antony goes on to underscore that ayurvedic ingredients are generally growing in popularity. “While the numbers are always not easy to specify, publically available data suggests that the global ayurvedic market is expected to reach US\$14.9 billion by 2026.

This is an impressive growth percentage by any standards. A key reason is that the tradition of ayurveda stretches back thousands of years and today we are only refining ancient science by modern scientific methods,” he concludes. NutritionInsight has previously reported on ayurvedic ingredients and adaptogens, with input from leading players in the space.

By Kristiana Lalou



The health benefits of fermented soy products

IFTNEXT April 23, 2020

While investigating the link between consumption of soy products and all-cause mortality, researchers in Japan found that a higher intake of fermented soy products, such as natto and miso, was associated with a lower risk of mortality. The results of the study were published in The BMJ.

The researchers' findings were based on the results of an observational study of more than 42,000 men and 50,000 women in 11 of Japan's public health centers. After responding to questionnaires about diet, lifestyle, and health status during a nearly 15-year follow-up period, it was found that participants with higher intakes of fermented soy products had a 10% lower risk of all-cause mortality. In contrast, total soy product consumption was not linked with all-cause mortality.

Lower risk of cardiovascular-related death was also experienced by both men and women who ate natto. The results remained the same, even after adjustments were made for vegetable intake, which was higher for participants whose natto intake was greater. One explanation for the positive associations seen in fermented soy products is their higher levels of fiber, potassium, and bioactive components as compared with non-fermented soy products.

Although the study results are

compelling, the researchers conclude that because of the study's observational nature, "findings should be interpreted with caution because the significant association of fermented soy products could be attenuated by unadjusted residual confounding." Further exploration is needed, added the researchers, to better establish the association between fermented soy intake and health outcomes, and to help inform the development of healthier and more palatable products.

Filtered coffee may be safer than unfiltered for cardiovascular health

DAILY NEWS April 23, 2020

A study published in the European Journal of Preventive Cardiology examines the links between coffee brewing methods and risks of heart attacks and death and suggests that filtered coffee is safest.

"Our study provides strong and convincing evidence of a link between coffee brewing methods, heart attacks, and longevity," said study author Dag S. Thelle of the University of Gothenburg, Sweden, in a press release. "Unfiltered coffee contains substances which increase blood cholesterol. Using a filter removes these and makes heart attacks and premature death less likely." Previous research has shown that drinking coffee is linked with raised total cholesterol and LDL cholesterol. Experiments identified the culprit substances in coffee and found that they could be removed using a filter. A cup of unfiltered coffee contains about 30 times the concentration of the lipid-raising substances compared with filtered coffee.

"We wondered whether this effect on cholesterol would result in more heart attacks and death from heart disease," said Thelle. "But it was unethical to do a trial randomizing people to drink coffee or not. So, we

set up a large population study, and several decades later, we are reporting the results."

Between 1985 and 2003, the study enrolled a representative sample of the Norwegian population: 508,747 healthy men and women aged 20–79. Participants completed a questionnaire on the amount and type of coffee consumed. Data was also collected on variables—such as smoking, education, physical activity, height, weight, blood pressure, and cholesterol—that could influence both coffee consumption and heart diseases.



Participants were followed for an average of 20 years. A total of 46,341 participants died. Of those, 12,621 deaths were due to cardiovascular disease. Of the cardiovascular deaths, 6,202 were caused by a heart attack.

The researchers found that

drinking filtered coffee was safer than drinking no coffee at all. Compared with no coffee, filtered brew was linked with a 15% reduced risk of death from any cause during the follow-up period. For death from cardiovascular disease, filtered brew was associated with a 12% decreased risk of death in men and a 20% lowered risk of death in women compared with no coffee. The lowest mortality was among consumers of 1 to 4 cups of filtered coffee per day.

Filtered brew was also less risky than the unfiltered beverage for death from any cause, death due to cardiovascular disease, and deaths from heart attacks. "Our analysis shows that this was partly because of the cholesterol-increasing effect of unfiltered coffee," said Thelle.

Coconut and COVID-19: Philippines studying antiviral properties of coconut oil as potential treatment

By Guan Yu Lim 11-Mar-2020 - NutraIngredients Asia

The Philippines is looking to study virgin coconut oil (VCO) as a potential treatment for the novel coronavirus (COVID-19) which has since infected more than 80,000 people and killed more than 2,800 worldwide.

There is currently no vaccine or specific antiviral treatment for COVID-19. Now researchers in The Philippines are testing VCO, according to Dr Jaime Montoya, executive director of the Philippine Council on Health Research and Development of the Department of Science and Technology (PCHRD-DOST). The PCHRD-DOST had announced on February 7 that it would test a “functional food” in infected patients with COVID-19 which Dr. Montoya confirmed in late February was coconut oil. Dr. Montoya told NutraIngredientsAsia that coconut oil and its derivatives have been studied previously for its antiviral properties. He said the VCO has yet to be tested against COVID-19, but they plan on starting clinical trials soon.

In a formal statement published by Ateneo de Manila University (The Philippines), Dr Fabian Dayrit from the university and Dr Mary Newport of Spring Hill Neonatology (USA) had also proposed the potential of coconut oil as a safe agent against COVID-19. In a paper published in late January, they explained that coconut oil and its derivatives have been shown to be safe and effective antiviral compounds in both humans and animals.

Coconut oil contains lauric acid and monolaurin, which researchers believe the potential mechanisms behind its antiviral activity include,

“First, they cause disintegration of the virus envelope; second, they can inhibit late maturation stage in the virus replicative cycle; and third, they can prevent the binding of viral proteins to the host cell membrane.”

Coconut oil has also been studied in several clinical trials for its anti-HIV properties. Patients on the coconut oil treatment tend to show higher levels of CD4, CD8 and T lymphocyte counts compared to the control group. The researchers said they support the potential of coconut oil, lauric acid and its derivatives as effective and safe agents against a virus like COVID-19.

“Given the considerable scientific evidence for the antiviral activity of coconut oil, lauric acid and its derivatives and their general safety, and the absence of a cure for nCoV-2019 (now COVID-19), we urge that clinical studies be conducted among patients who have been infected with nCoV-2019.” If the study is successful, both researchers claimed: “This treatment is affordable and virtually risk-free, and the potential benefits are enormous.”

The researchers even proposed a clinical trial and study design. The study design are as follows, control and standard care (Group 1), standard care and virgin coconut oil (Group 2), standard care and monolaurin (Group 3), standard care and monolaurin (Group 4), and standard care and sodium lauryl sulfate (Group 5). Cabinet Secretary Karlo Nograles told CNN Philippines that the treatment (virgin coconut oil) will be carried out by the National University of Singapore (NUS) as a prophylactic

against COVID-19.

NutraIngredients-Asia reached out to NUS, which declined to comment.

In China, the epicentre of the outbreak, there has been posts on the country conducting clinical trials of high dosages vitamin C infusion on infected patients. Elsewhere in the world, there have been bogus posts by “wellness gurus and influencers” claiming that eating garlic, applying sesame oil on the skin, consuming a high intake of vitamins, would prevent COVID-19 infection.



In Singapore, the Health Sciences Authority (HSA) said in a formal statement, “There is currently no evidence that any health supplement, Chinese proprietary medicine, traditional medicine, herb or “clip-on” product can boost the immune system specifically to help prevent, protect against or treat COVID-19.”

The authority advised consumers against purchasing any health products locally or online that claim to prevent or treat COVID-19. The HAS has warned that many of these products carry advertising claims of “scientific evidence”, but “such claims often lack a robust scientific basis and cannot be verified, especially where emerging diseases such as COVID-19 are concerned.”

Sugar and fat suppression: Suntory releases new functional beverages as part of 100-year life project

By Guan Yu Lim 14-Apr-2020 - NutraIngredients Asia

Japan's Suntory has launched a new beverage approved under the food with function claim (FFC) scheme, which is said to suppress the post-meal absorption of carbohydrates, particularly sugar.

The company is also rebranding its black oolong tea which has been on the market since 2006, with a food for specified health uses (FOSHU) claim, said to reduce fat absorption after meals.

The new FFC product is a green tea-based beverage, called lemon plus (carbohydrates), which has been launched in March, while the rebranded black oolong tea was unveiled in February. Last year, Suntory also launched a lemon plus drink to control cholesterol. The launches are all part of Suntory's 100-year life project which began in 2018, and aims to contribute to extending the healthy life expectancy of the Japanese population through its functional beverages.

According to the company, while the average life expectancy in Japan has been extended, the number of

people suffering from lifestyle-related diseases such as diabetes and obesity is climbing.

Naoko Kushima from the communication division at Suntory Beverage and Food Limited added that work styles and lifestyles are becoming increasingly diverse, contributing to these diseases. Suntory's lemon plus (carbohydrate) contains indigestible dextrin, a form of dietary fibre which has been reported in suppressing the absorption of sugar post-meals.

For its black oolong tea, Kushima said it is rich in oolong tea polymerised polyphenols (OTPP) and "is a FOSHU that suppresses the absorption of fat ingested from meals and increase their excretion, so that the rise in blood triglyceride after meals is suppressed and the body is less likely to get fat."

She told NutraIngredients-Asia the beverage contains 70mg of OTPP per 350mL. Specified health foods (Tokuho/FOSHU) are foods that have been scientifically proven to help maintain and improve health and have been approved by the Consumer Affairs Agency.

In order to receive the FOSHU approval, food and beverages have to submit scientific evidence of proven health benefits. In one study, the black oolong tea was found to significantly reduce total fat and

visceral fat compared to the placebo group. In addition, body weight, body mass index, body fat ratio, waist size, hip size and skinfold thickness were significantly reduced in the oolong tea group. Researchers said the findings indicated that the intake of oolong tea together with a meal could be effective for the prevention of metabolic syndrome. The drink was available nationwide since February 18.

The company said the drink is targeted for, "those who tend to eat a high-fat diet, those who have high blood triglycerides, and those who are worried about body fat." Apart from the black oolong tea, Suntory has 10 other beverages that are FOSHU approved, ranging from its Boss coffee, to Pepsi Special Zero.

Kushima said the upcoming Tokyo Olympics and Paralympics Games will be "an opportunity to showcase Japanese soft drink brands to the many tourists that will come from overseas, with high quality beverages."

We will be shining the spotlight on the extensive food, nutrition and beverage opportunities that are being created by the region's rapidly ageing population, and a growing interest in health and wellness across the board, at our Healthy Ageing APAC Summit in Singapore this November.





& FOOD SCIENCE INDUSTRY NEWS

Understanding how compounds in chili peppers fluctuate during ripening

IFTNEXT March 27, 2020

New research into the accumulation of two important compounds in chili peppers may help plant breeders understand what contributes to the increasing and decreasing levels of these compounds as chili peppers develop and could also provide insights into the development of food ingredients.

Capsaicinoids are responsible for the heat in chili peppers, while related compounds called capsinoids are much less pungent. Previous research has found that both may have important health benefits.

The team of researchers from Spain and Mexico analyzed the levels of capsaicinoids and capsinoids in three types of chili peppers: chiltepin and tampiqueño 74 (two spicy chili peppers from Mexico) and bhut jolokia (an extremely hot chili pepper from India). They grew the chili pepper plants and collected the chili peppers at different stages of the peppers' development. They

found that the levels of capsinoids in the three chili pepper varieties increased and decreased similarly over the course of the testing period. The increase and decrease of capsaicinoid levels of the chiltepin and tampiqueño 74 peppers followed a similar pattern as the capsinoids, but the actual levels of the capsaicinoids were greater. The capsaicinoids in the bhut jolokia peppers began to accumulate earlier in the testing period compared with the other two peppers.

As coronavirus spreads, fresh produce becomes tougher to get to consumers

DAILY NEWS March 27, 2020

According to Reuters, fresh fruit and vegetables will become increasingly scarce in Europe as the coronavirus pandemic hampers the global movement of produce and of the people needed to gather crops.

According to

Reuters, fresh fruit and vegetables will become increasingly scarce in Europe as the coronavirus pandemic hampers the global movement of produce and of the people needed to gather crops. Governments are looking at ways to ease any shortage, including "green lanes" to allow fresh produce to move quickly across European Union (EU) borders, recruiting a "shadow army" of harvesters, and loosening travel rules for migrant workers.

In Kenya, a major supplier of green beans and peas to Europe, half of the workers in the sector have been sent home on mandatory leave because of the industry's inability to ship orders, even as demand from European retailers surges.



Meanwhile, shipments from South Africa are becoming more challenging, with the country on a 21-day lockdown, which began on March 27.

A shortage of migrant and seasonal workers also threatens to disrupt production for several top European suppliers as borders shut down, preventing workers from traveling to where they are needed. There are additional challenges in moving the workers from accommodation to farms while maintaining social distancing. Border restrictions introduced to stem the spread of the virus also disrupt the movement of produce within the EU, with traffic jams of up to 18 hours at some border points. The European Commission has urged the 27 EU countries to adopt measures to ensure the free flow of freight along "green lanes," with border crossings lasting no more than 15 minutes.

Boosting 'Make in India' food strategy hitting nation's hopes of regional free trade agreements

By Pearly Neo 07-Apr-2020 - Food Navigator Asia

India recently announced import tariff increases for many food and agricultural products in hopes of encouraging local trade, but the same move is likely to push it even further away from the possibility of entering free trade agreements within the APAC region.

During the recent tabling of the country's Budget 2020/2021, Finance Minister Nirmala Sitharaman revealed that the tariff increases would apply to a wide range of food and beverage products, including dairy products, nuts, edible vegetable oils, soy products, fruit juices, soft drink concentrates and more. For example, the custom duty for cheese was raised by a whopping 10% from 30% to 40%, whereas isolated soya protein will be taxed 30%, a 20%

increase from its previous 10%. Even more significant was the custom duty for walnuts kernels, which rose sharply to 100% from its previous 30%. "India's Make in India policy is giving dividends - We're making world-class products and exporting them," Sitharaman said. "[These] changes in customs duties [are meant to] create a level playing field for Micro, Small & Medium Enterprises (MSMEs) [in the country], create a level playing field for domestic producers [and] further promote Make in India."

Although these changes would undoubtedly spell good news for local food and beverage producers and manufacturers, it also represents a further step back by the country in terms of signing any free trade agreements (FTAs) within the region, with its previous high tariffs already a cause of concern during prior discussions. One of the FTAs in question is the planned Regional



Comprehensive Economic Partnership (RCEP), an initiative which was supposed to cover 16 countries and some 40% of the global economy – so definitely a very significant trade discussion. The RCEP's proposed member states initially included all ten ASEAN countries, Australia, China, Japan, New Zealand, South Korea and India.

India made headlines last year when it opted out of RCEP negotiations

after participating in some seven years of discussion, citing concerns that its economy would suffer from an influx of overseas goods. "When I measure the RCEP Agreement with respect to the interests of all Indians, I do not get a positive answer," Indian Prime Minister Narendra Modi said in a speech.

Even during the prior seven years of RCEP negotiations, challenges had already seemed fraught for the country: It faced trade deficits with many of the other countries and so was almost certainly going to be getting the short end of the stick in various cases, and its proposed tiered approach to phasing out tariffs was poorly received by the other members.

According to Foreign Policy, India was requested to commit to tariff cuts on 92% of tariff lines (products) across all countries as well as accept immediate zero tariff on over 25% of traded items once the FTA commenced – meaning that India would be among those making the largest cuts. India's recent decision to raise tariffs even further and look to local production instead is likely to push it even further away from reaching any sort of FTA in the region, but somewhat contradictorily, it has apparently not completely given up on the idea just yet. Earlier this year, Foreign Minister Subrahmanyam Jaishankar rekindled the probability with a suggestion that India's participation in the RCEP was still possible. "We haven't closed the door on [the RCEP]," he said at the Raisina Dialogue conference, according to SCMP. "There was a substantial gap between India's demands and what was offered and that's why we took the call that we did. "The RCEP is, after all, a free-trade agreement and it has to be evaluated on its trade merits, its costs and its benefits. The bottom line was that the offers on the table did not match our requirements. "The ball is in the court of the countries concerned and whether they make it worth our while."



Ayurveda and cannabis: India's R&D-to-retail firm HempStreet set for first product launch

By Tingmin Koe 08-Apr-2020 -
NutraIngredients Asia

India's first ayurvedic cannabis "R&D-to-retail" firm HempStreet is set to launch its first set of products.

The two-year-old company has been partnering with the Indian government research body, the Council of Scientific & Industrial Research (CSIR), in developing scientifically backed products that combine cannabis and ayurveda formulations. At present, cannabis and CBD-based nutraceuticals are illegal in India, but there has been scope for research and product development in the ayurvedic medicine space. Speaking to NutraIngredients-Asia, cofounder of HempStreet Abhishek Mohan, revealed the types of ayurvedic cannabis products that the company would launch. The products will target insomnia, anxiety, and pain relief, and are only available upon prescription by ayurvedic doctors. Even before the product launch, the company has already secured a substantial distribution network by partnering a key platform that links up the ayurvedic industry. The partnering platform will exclusively distribute HempStreet's products, which allows the latter's ayurvedic cannabis products would be available to over 60,000 ayurvedic medicine practitioners spanning

across 220 clinics.

Mohan said that the network could potentially reach out to over 35 million individuals. He revealed that the company planned to launch another 17 to 18 new products in the upcoming months. On top of this, there is already another 25 products in the pipeline. The use of cannabis in ayurvedic practice is not a new concept, however, the company seeks to distinguish itself by developing scientifically backed products using standardised cannabis. "Cannabis has been used in India in ayurvedic medicine. What we did is we standardised and made it a reliable product. We took an age-old practice and gave it a modern context and the doctors are asking us for it," Mohan said. The R&D is conducted with CSIR, where the research looked at how cannabis can be used to address different ailments, such as epilepsy and arthritis. Other areas include finding out the right formulation, applications, and the method of delivery.

As for the raw materials, the company manufactures products using cannabis bought from the government which permits growing in certain regions, such as Uttarakhand. Mohan added that cannabis, being traditionally used for ayurvedic medicine which was used by about 77% of India's population, did not face the problem of cultural opposition. The company has recently secured a USD\$1m funding in the pre-series A funding round. The funding was led by Pharmacon Holdings, a US based pharma tech company, and Romain Barberis. Mohan said the company planned to use the funds for R&D purposes. "Because our distribution channels are already built, we don't really have to spend too much money on that. We will look at hiring more on the R&D side. We are only scratching the surface of the applications of cannabis. We got so much more that we can do."

To ensure that the ayurvedic cannabis products are used responsibly, the company has developed a blockchain technology to track the use of a product from seed to sale. For instance, information such as the suppliers, doctors who prescribed a particular product, and the patients who used the products would be recorded in the blockchain system. It will provide access to the government to ensure that there is no excessive prescription and that there is responsible dispensing of the medicine. "Being the first research to retail player in the whole country at this point, we have to preemptively secure the industry in terms of making sure there is no misuse of products. "We are preemptively doing a lot of things and advising the government on it, because in fact, we are preemptively regulating ourselves...We are looking to build a robust industry where we have been lucky enough to make the first step," Mohan said.

India's COVID-19 lockdown: Dabur, Pure Nutrition, and Akay weigh in on economic impacts

By Tingmin Koe 31-Mar-2020 -
NutraIngredients Asia

India's three-week lockdown has affected the nutrition and health businesses on multiple fronts, most directly on the production, supply chain, and e-commerce delivery, companies including FMCG giant and ayurvedic medicine specialist Dabur have told us.



The global COVID-19 pandemic has left several countries across the globe in an unprecedented state of lockdown and India is one of the latest to join the long list of countries which have imposed the most stringent control measures. The country entered a three-week lockdown since last Wednesday (March 25). As part of the arrangements, all industrial establishments will be closed, except for manufacturing of essential commodities and production units which require continuous process after obtaining permission from the state government. Dabur India is one of the companies affected and had to suspend several manufacturing units. However, the company told NutraIngredients-Asia that ayurvedic medicines, such as its flagship product, Chyawanprash – a cooked mixture of honey, ghee, spices, and herbs – was considered essential products and thus manufacturing would continue. “Complying with the government’s directive, we have temporarily suspended production at our manufacturing units, except for essential products like Ayurvedic medicines, Chyawanprash, hand sanitisers, hand wash in the interest of the public,” executive director-operations Shahrugh Khan said.

However, not all companies producing supplements have continued with production, as they were unclear of their business status. Health supplement firm Pure Nutrition said it has stopped production of its health supplements since the first day of the lockdown. It has since written to the government for it to be considered as an ‘essential’ business. It is expecting a confirmation from the authorities early this week, CEO and director, Sushil Khaitan said.

He said that sales of immune-boosting products such as vitamin C, curcumin, zinc, selenium, detox lungs, and probiotics products have been growing since the outbreak.

“We are trying to raise awareness in the public, through the digital and social media, giving them the information on what to do to avoid the virus. We are utilizing influencers and nutritionists to write about the importance of nutrients for stronger immunity and anti-viral purposes,” he said.

Functional spice supplier Akay Ingredients had also stopped all of its manufacturing. “We could approach the authorities for considering us as an essential commodities business, but we put the health and safety of our employees first, and will watch how the situation develop,” Emmanuel Nambusseril, chief marketing officer said. Echoing the views of the companies, an industry expert has stressed the imperative of continuing the production of nutraceuticals. Sandeep Gupta, chief founder and director of the Expert Nutraceutical Advocacy Council (ENAC) said that there has been no clarification from the authorities as to whether the supplement sector was considered an ‘essential’ commodity. “It has to be clarified by the government. The manufacturing and supply of supplements should not be disrupted, because if supplements are not supplied, it can damage the health of the nation,” he said, giving examples of how micronutrients such as astaxanthin could boost the immune system.

He has written to government units, such as the Ministry of AYUSH, Ministry of Health and Family Welfare, and the Ministry of Commerce and Industry to advocate the cause. “There could be no better time for testing and propagating the benefits of nutraceuticals and health supplements as safe health care products which help in enhancing natural immunity and works as preventive medicine,” he wrote in the letters. Financial losses from supply chain disruptions are starting to loom large for a number of firms.

Akay Ingredients said that its shipments for exports were stuck as most of the port facilities were closed, with the problem further exacerbated by a lack of information on freight services. Within India, many of the firm’s consignments were also stuck at transporting hubs. “Since March is India’s end of the fiscal year, we were planning to ship out the maximum, and geared up our production with that plan. Unfortunately, many shipments got stuck. Even finished ingredients could not be shipped out. We were not able to ship even 30% of what was planned for the month. If you estimate the shortfall in value terms, it is in excess of USD\$8m,” Nambusseril said.

The company’s remaining stocks in warehouses in the US and Germany are expected to last until end April or beginning of May. Pure Nutrition, on the other hand, said it has sufficient inventory in the US, UK and Europe through Amazon, but noted that there would be a supply gap in April. Swisse, which entered India via e-commerce earlier this month, said it would monitor the evolving situation, and proactively work to deliver its products to consumers, said Akash Bedi, chief strategy and operations officer at H&H Group – the parent company of the brand. E-commerce services in the country have also experienced repercussions.

According to surveys conducted by India’s social network platform LocalCircles, the percentage of customers who were unable to buy essential goods via e-commerce shot up from 35% to 79% between March 20 – 22 and March 23 – 24. Pure Nutrition, which has both online and offline presence in pharmacies and airports, said its e-commerce product delivery was affected as only ‘essential’ commodities could be delivered to consumers. In the pharmacy retail, there has been a shortage of its products seen due to high demand for immune products.



REGULATORY NEWS

COVID-19 in India: AYUSH Ministry seeks scientific validation of traditional medicines after initial backlash

By Guan Yu Lim 15-Apr-2020 – NutraIngredients Asia

India's Ministry of AYUSH (Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy) is aiming to put a stop to false claims for the treatment or prevention of COVID-19 by setting up a task force to evaluate products and practices.

Earlier, the Ministry of AYUSH published an advisory suggesting the use of alternative medicines can act as an immunity booster against COVID-19. Since then, the Ministry has received flak from researchers and medical practitioners who criticised this advisory for the lack of scientific data, citing it as 'inappropriate', 'misleading' and 'potentially dangerous.' Prime Minister Narendra Modi recently addressed AYUSH practitioners on the importance of fact-checking unsubstantiated claims, and insisted organisations must come together for evidence-based research. Heeding the PM's advice, the Ministry of AYUSH then issued a notification asking practitioners, research institutions and

manufacturers to contribute suggestions on therapies to boost immunity.

These will be evaluated by a task force, comprising representatives from the department of biotechnology (DBT), Council of Scientific and Industrial Research (CSIR) and AYUSH practitioners. As of April 14, there were more than 2,000 proposals submitted to the Ministry's website. Around 1,300 of these proposals were Ayurveda-related, 700 under homoeopathy, and 100 for Unani and Siddha each.

PM Modi also called for the AYUSH ministry to spread the message of India's traditional medicines and medical practices to the world, while observing WHO guidelines. He told citizens: "Follow the instructions issued by AYUSH ministry to enhance your immunity. Regularly consume warm water, (and) 'kadha'," reported the country's Press Information Bureau. Kadha is an Ayurvedic immuneboosting herbal tea made from basil, cinnamon, black pepper, dry ginger and raisin.

The Ministry of AYUSH has since issued several guidelines for boosting the immune system in particular for respiratory health. This time, with a disclaimer, "The above advisory does not claim to be

treatment for COVID-19." Among the general recommendations involved drinking warm water throughout the day, and using spices (turmeric, cumin, coriander, garlic) in cooking.

Ayurvedic measures were also recommended such as consuming Chyavanprash every morning, drinking Kadha, Golden Milk (turmeric powder), applying sesame or coconut oil or ghee in nostrils, and rinsing mouth with coconut/sesame oil.

On April 14, PM Modi said in a televised address that the government was extending the nationwide lockdown to May 3. The country has been on lockdown since March 25, where only essential businesses were allowed to operate. In light of the new extension, PM Modi said over the next week, every state and district will be evaluated in a 'litmus' test. According to him, if areas pass the 'litmus' test, it indicates they are less likely to turn into a hotspot, and necessary activities may resume. A set of guidelines pertaining to this will be issued this week. Hot-spots have increased three-fold to 150 over the past week, complicating efforts to contain the virus. Local media, LiveMint reported 100 of these districts are major manufacturing hubs, citing disruptions to supply chain.

If lockdown restrictions are eased, it might be good news for health and nutrition businesses across the country. Earlier we reported that Dabur India is suspending several manufacturing units, but keeping its flagship product, Chyawanprash manufacturing open. Health supplement firm, Pure Nutrition and functional spice supplier Akay Ingredients have stopped all production and are appealing for the authorities to be classified as essential commodities. Akay Ingredients told us financial loss runs up to USD8 million, with stock sitting in warehouses, unable to export. For Pure Nutrition which has an online and offline presence, its e-commerce business was also hit as supplements could not be delivered. Dietary supplement giant, Swisse which entered India in March via e-commerce said it is monitoring this situation closely. PM Modi had called upon AYUSH medicine producers to utilise their resources to produce essential items such as sanitisers which are in high demand now. As of April 14, India has more than 10,000 infected cases and 339 deaths.

Science shorts: COVID-19 clinical trials, Gencor's fenugreek findings and more

By Tingmin Koe 23-Apr-2020 -
NutraIngredients Asia

A curcumin and artemisinin-based oral spray has been proposed as a treatment for COVID-19 patients and a clinical trial will be conducted, ASX-listed phytocannabinoid firm MGC

Pharmaceuticals has revealed. Known as ArtemiC, the new product is jointly developed by MGC and Switzerland firm Micelle Technology based on a product originally developed by the latter. New adaptations have been made to the product in response to COVID-19. The supplement, which also contains vitamin C and *Boswellia serrata*, will be tested on COVID-19 patients in Israel's Nazareth Hospital EMMS.

A trial featuring French bioscience firm Fytexia's patented ingredient – Sinetrol – has displayed anti-obesity effects in obese Koreans. Sinetrol is mainly made up of orange and grapefruit extract. It has been approved by the South Korean food authorities in making the health claim of “help reduce body fat” among the overweight population. The trial, funded by Fytexia's exclusive South Korean business partner, pharmaceutical company RP Bio, was independently conducted by researchers from Gachon University and Sungkyunkwan University. Gencor's fenugreek extract Testofen has been found to increase strength, aerobic endurance and lean body mass in healthy, exercising men, according to new findings published in the journal *Translational Sports Medicine*.

The randomised, placebo controlled, double-blind study trial, which was funded by Gencor, was undertaken by researchers from the universities of Sydney and Queensland. They sought to examine changes in muscular

strength and endurance, body composition, functional threshold power, and sex hormones in response to an eight-week calisthenic programme with daily supplementation with Testofen (Fenugreek extract) or a placebo.

Researchers from Asia, the Middle East, and the West are now trialling omega-3, honey, and even potato resistant starch, on top of vitamins and zinc, as they race to find products that could contribute to the fight against COVID-19 and its symptoms. In China and India, there are also trials registered to study Traditional Chinese Medicine (TCM) and nutraceutical formulations.

According to one of the largest clinical trial databases, ClinicalTrials.gov from the US, there are 657 registered trials related to COVID-19 as of April 20. An analysis of the diets of nearly 3500 Australian women found high consumption of carrots, cauliflower, broccoli, pumpkin, cabbage, green beans and potatoes before conception helped women reach full term pregnancy.

The study assessed live births from the Australian Longitudinal Study on Women's Health (ALSWH) to analyse preterm birth and low birth weights (LBW) in relation to pre-pregnancy diet. It included women who were nulliparous and nonpregnant at baseline surveys and used factor analyses and the Healthy Eating Index-2015 (HEI-2015) score to derive maternal dietary patterns.





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