SEP 2017 **PENDAI PENDAI Bulletin** FOOD, NUTRITION & SAFETY MAGAZINE

THE IMPORTANCE OF PROTEIN NACTIVE, HEALTHY AGING



Fat Ingredients in Food Products & Child Nutrition

PROTEIN FOODS AND NUTRITION DEVELOPMENT ASSOCIATION OF INDIA **Report on** Nutrition Awareness Activity 2017 - Mumbai

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EDITORIAL

Due to lifestyle changes along with the changes in diets, many Indians are now facing the problems of obesity, cardiovascular diseases and diabetes among other problems. Not only has our energy output come down drastically due to easier means of transport, lack of sports facilities and interest in electronic entertainment. We have also been eating increasing quantities of foods as well as more of high calorie food products either at home or outside.nt.

This has generated tremendous opportunities for developing newer products that would have solution to above problems at least from diet point of view. Many ingredients are now available with higher proteins and dietary fibre which will provide not only higher satiety so food consumption may be curtailed but also will have some benefits for diabetics as they will allow slower rise in blood sugar levels.

There are many food products with artificial sweeteners and higher contents of dietary fibres as well as ingredients and processes used to produce products with lower calories and with lower glycemic index. These products will certainly help those who want to control their caloric intake as well as their appetite.

Some of the marketers of these products however are advertising in such a manner that consumers get an impression that they can consume any amount of these products without either worrying about their weight gain or the blood sugar.

It should be realised that overconsumption of any food product will cause obesity. People can get weight gain even with food products with the most balanced nutrients. Of course proteins and dietary fibres will help give you signals of fullness but if one quickly consumes food or while watching TV they there is overconsumption.

Low glycemic foods are also helpful to some extent for diabetics. If one consumes too much of these foods the glycemic load will be high and will cause blood sugar level to rise too high. So such foods should be used as useful tools in controlling diet and not for indulgence.

Even the earlier Guidelines given by FSSAI in 2009 named Code of Self Regulation in Food Advertisement wrote "Advertisements should not encourage excessive consumption or inappropriately large portions of any particular food. They should not undermine the importance of healthy lifestyles. Advertisements should rather try to promote moderation in consumption and the need to consume in suggested portion sizes."

It must be remembered that if self regulation does not work then the strict regulations would come. That would be more difficult to handle. We urge industry to use the guidelines properly to promote the health of their consumers along with the growth of the market.

Prof. Jagadish S. Pai, Executive Director executivedirector@pfndai.org

THE IMPORTANCE OF PROTEIN N ACTIVE HEALTHY AGING



Indranil Chatterjee, Regional Product Line Manager -Protein Solutions, South Asia and South East Asia, DuPont Nutrition & Health

According to the United Nations, the global population aged 60 years or over has increased substantially in recent years and that growth is projected to continue to accelerate in the coming decades.

Bv

Between 2015 and 2030, the number of people in the world 60 years or over is projected to grow by 56 percent, from 901 million to 1.4 billion, and by 2050, the global population of older persons is projected to more than double its 2015 size, reaching nearly 2.1 billion.

The growth of our aging population is not specific to one single country or region; rather, it is a global trend. Over the next 15 years, the number of people, aged 60 and above, is expected to grow fastest in Latin America and the Caribbean with a projected 71 percent increase in population, followed by Asia (66 percent), Africa (64 percent), Oceania (47 percent), North America (41 percent) and Europe (23 percent). Globally, the number of older persons is growing faster than the number of people in any other age group, and the share of older persons in the total population is increasing virtually everywhere. (World Population Ageing, United Nations, 2015)

As these trends evolve, new nutritional solutions, as well as public health policies, will be required to support the special needs of thispopulation. Adequate nutrition and healthcare, access to physical activity and social interaction are all important in helping the aging population lead productive, active and healthy lifestyles. One of the critical challenges facing aging populations is adequate nutrition. Educating older adults and caregivers on the importance of choosing the best nutrition is an important component of healthy aging. Consuming adequate calories, and the quality of calories consumed, are often issues with aging consumers, with many not meeting their basic nutrient needs with current food choices.

In this article, we will explore some of the common nutritional concerns of aging populations, and how protein in general -- and soy proteinin particular -- can address these concerns and challenges.

The Importance of Protein Quality

Many aging consumers are at risk for losing muscle mass as they age, and at risk of developing

COVER STORY



sarcopenia, debilitating age-related muscle mass loss. Protein is important in maintaining and preserving lean muscle mass.

When considering protein, not all proteins are the same. High-quality proteins supply the essential amino acids – the building blocks of protein -- in the proper ratio to support muscle growth in children and maintenance in adults, whereas lower quality proteins are lacking in one or more of these essential amino acids.

Animal-based proteins, such as dairy, egg and meat are generally considered high-quality proteins. However, they often contain high



levels of fat, saturated fat and cholesterol. On the other hand, plant-protein sources are generally low in saturated fat and free of cholesterolbut are often lacking in one or more of the essential amino acids, making them lower in protein

quality compared to animal-based sources.

Soy protein is a notable exception in the world of plant proteins. Unlike other plant sources of protein, soy protein is a high-quality protein, containing all the essential amino acids in the proper ratio to be considered a high-quality protein. However, because soy protein is a plant-based protein, it is naturally low in fat and saturated fat, and free of cholesterol and lactose.

Protein Digestibility-Corrected Amino Acid Score (PDCAAS) is a worldwide accepted method of analyzing the quality of food proteins, which considers a protein's digestibility and essential amino acid profile. Using this methodology, soy protein has a PDCAAS of 1.0, the highest score attainable, placing it on par with dairy and egg protein, in terms of its protein quality. (Figure 1)

Weight Management Needs of Older Consumers

The prevalence of overweight and obesity is increasing globally. The World Health Organization (WHO) predicts there were 1.9 billion overweight adults in the world in 2016, with more than 650 million of them obese. The worldwide prevalence of obesity has nearly tripled between 1975 and 2016.(WHO Obesity and Overweight Factsheet, October 2017)Overweight individuals are at greater risk for developing chronic disease, such as cardiovascular disease and diabetes. Aging is also associated with body composition changes, with a tendency toward increased fat mass and decreased lean body mass.

FIGURE 1: Protein Digestibility-Corrected Amino Acid Scores (PDCAAS) of Select Food Sources

SUPRO [®] Isolated Soy Protein (ISP)		(1.00		
Milk (Casein)		1.00		
Egg White		1.00		
Beef		0.92		
Pea Protein Concentrate		0.73		
Kidney Beans		0.68		
Pinto Beans		0.63		
Rolled Oats	0.57			
Rice	0.53	PDCAAS is the globally recognized method for determining protein quality		
Peanut Meal	0.52			
Whole Wheat 0.40		based on amino acid profile		
Wheat Gluten 0.25		and digestibility		
Almonds 0.23				

PDCAAS values of selected foods. PDCAAS values from published sources or calculated using publicly available amino acid and digestibility values. A score of 1.00 is the highest attainable score and is based on the amino acid reference pattern for 2-5 year olds.

Adapted from Hughes, et al. J Ag Food Chem, 2011





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

Recent survey suggests that 73% of Indian diets are protein-deficient*. Part of the reason lies in the insufficiency of protein content in conventional protein sources such as eggs, lentils, meat, milk etc. Moreover, the steep cost (per 100 gms of protein) of these sources further makes it difficult for families to fulfil their daily protein need. We at Ruchi Soya; the makers of Nutrela Soya Chunks & Mini Chunks and Soya Granules, help consumers bridge this gap by providing the richest source of protein at the most affordable price. Soya contains 52% protein which is significantly above the protein content in eggs, lentils & milk all put together. We urge you to make soya an integral part of your diet recommendations. Let us join hands to help India say a GOODBYE to protein-deficiency!



F000	Approx Protein% /100gm	Approx Price/100gm	
NUTRELA SOYA CHUNKS	52	9	
DAL.	25	10	
MEAT	22	45	
PANEER	19	32	
EGG	14	12	



COVER STORY

A healthy diet containing adequate protein may help reduce energy intake, and during weight loss, protein can help preserve muscle mass. Both epidemiological and clinical studies provide compelling evidence that diets high in protein increase satiety more than highcarbohydrate diets, thereby curbing food intake and aiding weight loss and maintenance.1-2 The evidence also suggests that high-protein diets tend to preserve more lean body mass than high-carbohydrate diets during weight loss.

Like other high-quality proteins, soy protein can help promote satiety, or manage hunger, as part of a weight loss or maintenance program. Soy protein may help improve body weight and facilitate fat loss while preserving lean mass, when used as part of a calorie-restricted or controlled diet. Soy protein may also help improve risk factors related to blood sugar regulation and cardiovascular health during weight loss.

Cardiovascular Health and Older Populations

Cardiovascular diseases (CVDs) are a group of disorders of the heart and blood vessels. An estimated 17.7 million people died from CVDs in 2015, representing 31 percent of all global deaths (Cardiovascular Disease Fact Sheet, WHO, May 2017). Lifestyle and diet often play a role in the progression and management of cardiovascular disease. Elevated cholesterol levels are one risk factor that has long been associated with increasing cardiovascular disease risk.

Cholesterol concentrations in the blood tend to increase with age. Reducing cholesterol to achieve "optimal" concentrations can reduce the development of atherosclerosis and progressive heart disease in aging populations.

The heart health benefits of soy

protein have been studied extensively for over 50 years. More human clinical studies have been conducted to assess the cholesterollowering effects of soy protein than any other cholesterol-lowering food ingredient. Multiple meta-analyses have been published confirming the cholesterol-lowering efficacy of soy protein, as part of a diet low in saturated fat and cholesterol.3-5 This body of research suggests that soy protein lowers cholesterol by two mechanisms: 1) by an intrinsic property of the protein itself through a pathway that has not yet been identified and 2) by an extrinsic property achieved when soy protein displaces animal-derived protein sources in the diet.6

Collectively, this research has led to the approval of heart health claims linking soy protein consumption to reduced cardiovascular disease risk in 13 countries around the globe. For the most part, regulations in place defining the parameters by which food marketers can use these claims on food packages, require that food deliver at least 6.25 grams of soy protein per serving, and base the claim on the ingestion of 25 grams of soy protein daily. The magnitude of cholesterol reduction associated with the consumption of 25 grams of soy protein per day is similar to the effects observed with phytosterols, oat beta-glucan or psyllium fiber.

Protein's Relationship to Muscle Health and Physical Performance Decreased protein intake resulting from overall lower food intake is often observed in aging individuals and contributes to negative changes in body composition. Body weight tends to increase until age 60-65 and thereafter, in most cases, declines. Much of the weight loss is due to losses in lean or muscle tissue, and a net gain in fat mass.

Muscle mass peaks around age 30 and then starts to decline from that point forward. Physically inactive people are at event greater risk for muscle loss, and can lose as much as 3-5 percent of their muscle mass each decade after age 30. Loss of muscle mass in aging is common, and can become debilitating, resulting in a condition known as sarcopenia. Physical frailty is closely tied to sarcopenia. While resistance exercise is perhaps the most critical step in reducing sarcopenia or slowing its progression, increasing protein intake, paired with exercise, is essential to maintain or improve muscle mass and function.

Studies done on younger, exercising populations have found that a supplement based on blend of soy and dairy proteins, consumed after exercise, extended the amino acid delivery to muscle tissue longer than whey protein alone.7-8 Longer-term studies on similar populations suggested that subjects consuming a soy-dairy blend experienced greater muscle gains through the course of the study than those consuming either whey protein alone or a carbohydrate placebo.9 Studies on an older population suggested that use of a soy-dairy protein blend may be a useful nutritional strategy for maintaining muscle mass and function during aging, while reducing the disability associated with sarcopenia.10



Soy Protein as a Tool in Developing Healthy Foods for Aging Populations

As a protein ingredient, soy protein is quite versatile in adding protein to a wide variety of food and beverage products. Its applications are quite broad, ranging from meat and meat alternative products to proteinfortified beverages, cereals and snack products. Soy protein is also used extensively in clinical nutrition products, designed to address specific health conditions, nutritional needs or feeding challenges.

Soy proteins are valued for the nutritional, economic and functional benefits they deliver in food products. They contribute high-quality, plant-based protein, that is low in fat and saturated fat. and cholesterol- and lactose-free. They offer economic advantages cost, supply and price stability compared to dairy-based proteins and many other plant-based proteins. Through manufacturing technology, soy proteins can be designed to deliver applicationspecific functionality, which allows them to deliver the taste and textural attributes desired in many very different and diverse applications.

Designing nutritional solutions for aging consumers require a focus on their nutritional content and affordability, as well as their taste and textural characteristics. With increasing focus on the importance of protein in the aging process, a variety of food and beverage formats designed for aging individuals are certain to also be targets for protein fortification.

In Summary: The Benefits of Soy Protein in Healthy Aging Establishing healthy lifestyle behaviors early in life is important in the aging process. Important contributors include diet, physical activity, adequate rest, effective stress management and regular health screenings. Educating aging adults about the importance of choosing foods designed with their specific nutritional needs and developing foods to meet those needs will continue to be a growth opportunity for the food industry. Soy protein, with its nutrition, health, economic and functional benefits, it certain to be an important tool for food developers in meeting the needs of aging individuals:

• Soy protein is a high-quality, plant-based protein, equivalent in protein quality to dairy and egg proteins. High-quality protein is important to meet the protein needs of aging individuals.

• As a high-quality protein, soy protein increases satiety and decreases short-term energy intake, which can help aging consumers struggling with weight loss. Proteincontaining diets also preserve lean body mass during weight loss. • Soy protein has distinct benefits in reducing elevated cholesterol levels, which can reduce cardiovascular disease risk. Health claims established in 13 countries around the globe affirm this benefit. • Soy protein can support muscle health and function in aging individuals, and may be an important tool in developing nutritional interventions targeting age-related muscle loss. • As an ingredient that can be used to protein-fortify foods, soy protein

offers unique health and nutrition benefits, economic benefits compared to dairy proteins and range of functional attributes that make it appropriate for use in many diverse food and beverage applications.

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^{By} Dr K D Yadav, - Sr VP (Technical)-AAK KAMANI PVT LTD

India is one of the highest ranking countries

in the world for the number of children suffering from malnutrition. Most of the population in India is below the

poverty line and the prevalence of underweight children in India is among the highest in the world.

Child Undernutrition 48

for children below five years of age. As per National Family Health Survey (NFHS) - 4, 2015-16, 35.7% children under 5 years of age are underweight and 38.4% are stunted indicating a reduction from data captured in NFHS - 3, 2005-06,

Why and when is nutrition important?

Several researches in the past 3 decades show that nutrition in early life-specifically the 1st 1,000 days has a very significant impact on the health and overall wellbeing of an



individua 1 later in life. 1st day of pregnanc y until 2 vears of age, the so-called "first 1.000

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nage

38.4 19.8 21 Wasting Stunting

There exist

two types of malnutrition - undernutrition and over nutrition. Poverty is one of the major causes of malnutrition (under-nutrition) as the people falling under this population have limited access to nutritious foods and their diet lacks both quality and quantity. In India, especially in the rural and semi urban areas, women lack the knowledge of proper feeding, hence new born infants are not able to get sufficient amount of nutrition from their mothers.

Figure 1 compares the primary indicators of child under-nutrition stunting, wasting and underweight,

which reported 42.5% as underweight and 48% stunted (Fig 1)(1).

On the other hand over-nutrition has its own consequences. In India, obesity is becoming a major concern especially childhood obesity. Obesity causes several noncommunicable diseases such as cardiovascular diseases, diabetes, etc.

World Health Organization says "Child growth is internationally recognized as an important indicator of nutritional status and health in populations"

days" all organs and tissues are being formed. During this time nutrition plays an important role to develop long-term health and child's ability to learn and grow. Hence it is very essential that pregnant mothers get the right nutrition through this time. Malnutrition or improper nutrition during this period can have its own repercussions on the child's brain development and overall physical growth leading to susceptibility to infectious diseases. This will also put an additional economic burden because of healthcare costs and loss in productivity due to poor health.

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The Value Adding Partnership The Co-Development Company Much of this can be taken care of or avoided if we focus on proper nutrition intake during the first 1000 days to promote normal growth & development, facilitate academic & physical performance and help prevent obesity, heart disease, cancer & other degenerative diseases in adulthood.

OILS AND FATS

Oils and Fats are an essential part of healthy diet. They are especially important during pregnancy because some of the oils support baby's brain and eye development – before and after birth. They also help the placenta and other tissues to grow. Monounsaturated fats (MUFA) for eg. canola, groundnut, olive oils help to lower bad cholesterol LDL.

Polyunsaturated fats (PUFA) contain Omega 3 & Omega 6 fatty acids (Soya, Corn, SFO, Flaxseed, Fish oils). They are also known as Essential fatty acids. Saturated fats (SAFA) for e.g Red meat, lard, butter, etc have to be consumed less and to be limited to less than 7% of the total energy. Partially Hydrogenated Vegetable Oils/fats which are known to contain trans fats have to be avoided as much as possible as they tend to raise bad cholesterol (LDL - Low density Lipoprotein). Trans fats intake have to be limited to less than 1% of the total daily energy intake.

Essential fatty acids (EFAs) EFAs are not synthesized by the body and need to be supplied through external diet. Examples -Linoleic acid (18:2, n-6, omega-6,

6) & Linolenic (18:3, n3, omega-3,

3) or ALA (Alpha Linolenic acid). The recommended ratio of 6: 3 should be 5:1 to 10:1. Nutritional importance of EFAsPrecursors for important biological components –for eg. Omega 3 fatty acids like EPA, DHA, ARA(Long chain poly unsaturated fatty acids or LC PUFA). For vegetarians ALA becomes the source to obtain DHA.
Important structural components of cell membranes & therefore essential to the formation of new tissues.

• Vital for the development of the foetus.

 EFAs are particularly important for neural development & growth.
 Brain grows most rapidly during the 3rd trimester & in early infancy & consequently, the concentration of DHA in the brain & retina of the foetus increases steadily during the last trimester. UFA's [Docosahexaenoic acid (DHA, 6, C 22:6), Eicosapentaenoic acid

(EPA, 3, C 20:5), Arachidonic

acid (ARA, -6, C 20:4)]

It is getting more and more common to add LCPUFA to infant formulas and it is now allowed as per the EU directive 2006/141. LC PUFA can be converted from the essential fatty acids alpha-linolenic acid (ALA) and linoleic acid through enzymatic chain elongation and desaturation in the human body. LC PUFA does not need to be added in infant formulas for the child to grow and develop normally but research show that addition of LC PUFA supports optimal development. In the body, DHA is found in high concentrations in the brain and in the retina, and both DHA and ARA are active membrane components. Studies show that addition of DHA and ARA to the infant formula supports: Visual development, Brain development and Cognitive development.

According to EC legislation, for LC PUFA in infant formula (2); • The maximum level including other -3 LC PUFA is limited to 1 %.

• EPA needs to be lower than the content of DHA.

• The -6 LC PUFA content is limited to 2 % of which ARA can be maximum 1 %.

• The content of ARA needs to be equal or higher than of the DHA

STRUCTURED TRIGLYCERIDES

Mimicking Human Milk Fat Human Milk or breast milk is considered to be the best food for infants and they have to be breastfed exclusively for the first 6 months..The fat content of human milk is only about 3-4%, but it provides about 50-60% of the energy of intake of the infant, making this one of the most important nutrients in human milk. Palmitic acid (C 16:0) is the most pre-dominant fatty acid amongst the saturated fatty acid (20-25%) and 40-60% of it is esterified at the SN 2 position whereas in regular palm oil it is only 11%. The SN 1 and SN 3 are predominantly unsaturated fatty acids. In human milk the lipase action results in unsaturated fatty acids being cleaved at SN 1 and SN 3 positions leaving 2monopalmitate. All these are better absorbed by the infant. (3)

Due to some physiological conditions some mothers are unable to provide sufficient nutrients for the healthy development of their babies and here is where vegetable oils and fats would play a major role. AAK has a patented technology to develop Human milk fat substitute through enzyme interesterification of oils and fats where the palmitic acid is predominantly at the SN 2 position. Health benefits perceived when infants were fed with infant formulae containing this fat werebetter energy uptake, less constipation, improved calcium absorption.



Medium chain triglycerides Medium Chain Triglycerides (MCTs) are a unique form of dietary fat that impart a wide range of positive health benefits. MCTs are composed of 6 to 10 carbon chain and because of their shorter chain length, MCTs have a number of unique properties which give them advantages over the more common LCTs (Long chain triglycerides). MCTs provide about ten percent fewer calories than LCTs – 8.3 calories per gram for MCTs versus 9 calories per gram for LCTs. MCTs are more rapidly absorbed by the body and more quickly metabolized as fuel. Instead of being stored as fat, the calories contained in MCTs are converted into fuel for immediate use by organs and muscles. MCT has been reported to be useful for feeding of new-born infants, to assist their initial growth and to contribute to their physiological development. The absorption of calcium and

magnesium appears to be enhanced when the diet contains MCTs, particularly in infants (4).It may also help in maintaining the body temperature of the pre term infants. MCTs should not be the only type of fat present in formula. It should be also supplemented with essential fatty acids. MCT finds its use in Infant nutrition, sports nutrition, and dietary supplements.

Nutrition for toddlers and kids

Toddler needs fat in his diet to ensure proper growth and brain development. Dietary fat serves a number of important functions and the main function is providing energy. It also helps the child absorb fat soluble vitamins. Children of 1-3 years old should have 30-40% of their total calories coming from fats. Foods containing healthy fats i.e. mono- unsaturated and polyunsaturated fats are preferred. Full-fat dairy products are high in saturated fat but adding a moderate amount of saturated fat to an underweight child's diet will probably not be harmful and it provides the required protein and calcium.

In conclusion, good eating habits at an early age, leads to healthy eating habits and kids grow up to become healthier adults.

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Food Processing Industry Conclave 2018

January 4-6, 2018 Sri Sesha Sai Kalyana Vedika, Vijayawada M: 8008 700 258 E: girijapathi@ftapcci.com

India Food Forum

January 17-19, 2018 Bombay Exhibition Centre, Goregaon, Mumbai T: 97175 44226 E: sarikagautam@imagesgroup.in

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Panacea

8th Natural Products Expo India February 7-9, 2017 World Trade Centre, Mumbai T: 022-28410164 W:

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PFNDAI Regulatory Meet

Protein Foods & Nutrition Development Association of India March 7, 2018 Hotel Kohinoor Continental Andheri Kurla Road, Andheri East T: 022-2353 8858/8998 E: foodscientist@pfndai.org

20th International conference on Nutrition, Food Science and Technology April 16-17, 2018 Location: Dubai, UAE E: foodtechnology@ nutritionalconference.com

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REPORT ON NUTRITION AWARENESS ACTIVITY 2017–MUMBAI

Protein Foods & Nutrition Development Association of India had organized Nutrition Awareness Activity in collaboration with Nirmala Niketan College of Home Science on Monday, 18th September 2017.

Nutrition Competitions for Food & Nutrition Students from colleges in Mumbai were held in the morning session, wherein students of Food Science and Nutrition from various colleges like, Ballarpur Institute of Technology Ballarpur, SVT College, P.N. Doshi College, P.V. Polytechnic, and Nirmala Niketan College participated.

Recipe Competition was conducted, wherein the students had prepared



Ms. Anuja Rawool, Food Scientist, PFNDAI

'Quick-fix Fusion Foods'. The participants made a very good attempt to come up with creative, innovative, delicious, yet nutritious recipes.

Intercollegiate Digital Communication Competition was conducted for the students, where students had prepared 2 min video. And the theme given for preparing the video was "Nutribytes- an insight into health and wellness"

In the afternoon session Seminar on 'Better Child Nutrition: Optimal' wherein there was participation of students and teachers of Food Science& Nutrition, health professionals including nutritionists, dieticians, and food industry professionals. The event was sponsored by Mead Johnson Nutrition and AAK Kamani and Kelloggs India.

Following is the brief report of the presentations during the seminar.

Mrs. Sheetal Joshi introduced the delegates about PFNDAI and its activities. She also stated the importance of exercise for health, along with nutritious food. It is important that the youth understands the importance of balanced diet and how can the nutrient requirement be fulfilled.

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Dr. Geeta Ibrahim, Principal, Nirmala Niketan College, in her welcome remarks stated that Nutrition Awareness programs, not only create an awareness of healthy eating and healthy living but also bring academia and industry together. Today it is very important to have such interactions as it provides an insight into the commercial perspective to the students and makes them aware of how the industry thinks, what are the latest in technologies, regulatory and the global scenario on health, wellness and nutrition

The first speaker was Mrs. Shilpa Joshi – Consultant Dietitian & Diabetic Educator spoke on Psychology of food choices, food purchase and eating behaviour wherein she spoke on higher risk of developing obesity, genetic and environmental factors are important in the etiology of obesity.

Experimental studies on food consumption among adolescents routinely find that caloric information or nutrition is not a major consideration in food selection. Taste, hunger, peer preferences and other factors appear to be more important.

The second speaker was Dr. K.D. Yadav Sr. VP (Technical), AAK Kamani. His topic was



"Fat Ingredients in food products & Child Nutrition" in which Dr. Yadav spoke about Nutrition Imbalance and about nutrition important for child growth . He also spoke about oils and fats as they are an essential part of healthy diet. Dr. Yadav also highlighted about the RDA and also about conversion of



ALA to DHA, requirements of LC PUFA and also spoke about the Food safety issue.

Mr. Abhas Verma – Marketing Manager, (Infant & Child Nutrition Brand) – Mead Johnson Nutrition spoke about Recent Development in Children Nutrition. He spoke about nutrition status being an important indicator of a country's health.

Nutrition awareness among the people is important to ensure wellness. He highlighted about the role of energy and proteins on physical growth are well-established & also about recent studies have stressed on the importance of micronutrients in enhancing the full growth potential. He spoke about DHA supplementation as early in life is associated with increased scores on global cognitive development.

The seminar was followed by prize distribution to the student winners of the both competitions. The prizes were given away by speakers and other dignitaries. The programme ended with vote of thanks given by Mrs. Sheetal Joshi. Protein Foods & Nutrition Development Association of India

Report on Nutrition Awareness Activity 2017 - Mumbal



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Speaker





Protein Foods & Nutrition Development Association of India

REGULATORY ROUND UP

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

The last Regulatory round up of 2017. The only big-ticket regulation on "Labelling" is very eagerly awaited. Hope 2018 will dawn with this regulation. Draft regulation on "Claims and Advertisement" is already out inviting comments from the stakeholders. Hope you have sent in your comments. Keep a close watch on the new additives that are permitted.

Standards

<u>Final notification on the standards</u> <u>of identity of different additives</u>. Specification for different additives like preservative, emulsifiers, natural colours, stabilizers are stated.

Final notification on amending the standards for fruit and vegetable products like tomato juice, jam,

marmalade, etc.

<u>A draft regulation deleting the pH</u> requirement in the standards of identity of Iron Fortified Salt.

A draft regulation related to standards of Rice, Basmati Rice, Chia Seeds, Gari (Cassava product), Edible Cassava Flour, Roasted Bengal Gram Flour - Chana Sattu, Ragi Flour, Almond Kernels, Coconut Milk Powder (Non Dairy), Mixed Masala Powder, Spice Oleoresins, Tejpat, Star Anise and Phytostanol. It has standards of identity for new ingredients like coconut milk powder and spice oleoresins which did not find a place earlier. In case of spice oleoresins, the draft regulation specifies the requirement of volatile oil content of different oleoresins, lists the solvents that can be used. their residual levels in the final product.

FSSAI through a draft regulation now requires common salt which is sold as such or used as an ingredient in other foods, must be iodized. In the past, common salt sold as such was required to be iodized.

Draft Notification related to standards of all pulses, whole and decorticated Pearl Millet grains, Degermed Maize flour and Maize Grit, Couscous, Tempe, Textured Soy Protein, Sago flour, Honey, Bee Wax & Royal Jelly and Steviol glycoside.

First draft amendment to import regulation. It states that custom shall not clear any article of food unless the product has a valid shelf life of not less than sixty per cent or three months before expiry whichever is less at the time of import. Three months prior to expiry is a new introduction.



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For details, please contact our India partner VR Food Tech Private Limited, Mumbai. Dr. Ashlesha Parchure: ashlesha.parchure@vrfoodtech.com







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categories of food. Indian food industry cannot ask for more at least in case of food additives

Draft regulation related to tolerance limit of antibiotics, pharmacology active substances and veterinary drug residues in fish and fishery products, edible animal issue, fats derived from animal tissues and milk. Compliance to this regulation

FAR

would be a challenge as it would be near impossible to remove it from food. Presence of these substances need to be controlled at the farm level

General

Extension of Labelling exemptions for instant noodles and seasonings FSSAI vide an order permits the use of packaging material with old name or manufacturing address on certain conditions.

FSSAI extends the use of staple

pins in tea bags till 30th of June 2019

Fortification regulation prescribes the level of Vitamin A and D in edible oil if claimed to be fortified. The old packing material may carry lower values of Vitamin A and D in the nutrition fact table. FSSAI in its order permits the use of such packing material provided the product is fortified with Vitamin A and D as required by the regulation

Green tea ingredient may ameliorate memory impairment, brain insulin resistance, and obesity Science Daily July 28, 2017

New research identifies potential therapeutic intervention for memory impairment, neuroinflammation, and brain insulin resistance induced by high-fat, high-fructose diet

A study published online in The FASEB Journal, involving mice, suggests that EGCG (epigallocatechin-3-gallate), the most abundant catechin and biologically active component in green tea, could alleviate high-fat and high-fructose (HFFD)-induced insulin resistance and cognitive impairment. Previous

research pointed to the potential of EGCG to treat a variety of human diseases, yet until now, EGCG's impact on insulin resistance and cognitive deficits triggered in the brain by a Western diet remained unclear.

"Green tea is the second most consumed beverage in the world after water, and is grown in at least 30 countries," said Xuebo Liu, Ph.D., a researcher at the College of Food Science and Engineering, Northwest A&F University, in Yangling, China. "The ancient habit of drinking green tea may be a more acceptable alternative to medicine when it comes to combating obesity, insulin resistance, and memory impairment."

Liu and colleagues divided 3-month-

old male C57BL/6J mice into three groups based on diet: 1) a control group fed with a standard diet. 2) a group fed with an HFFD diet, and 3) a group fed with an HFFD diet and 2 grams of EGCG per liter of drinking water.

Image C iStock.com

For 16 weeks, researchers monitored the mice and found that those fed with HFFD had a higher final body weight than the control mice, and a significantly higher final body weight than the HFFD+EGCG mice. In performing a Morris water maze test, researchers found that mice in the HFFD group took longer to find the platform compared to mice in the control group. The HFFD+EGCG group had a significantly lower escape latency and escape distance

than the HFFD group on each test day. When the hidden platform was removed to perform a probe trial, HFFD-treated mice spent less time in the target quadrant when compared with control mice, with fewer platform crossings. The HFFD+EGCG group exhibited a significant increase in the average time spent in the target quadrant and had greater numbers of platform crossings, showing that EGCG could improve HFFDinduced memory impairment.

"Many reports, anecdotal and to some extent research-based, are now greatly strengthened by this more penetrating study," said Thoru Pederson, Ph.D., Editor-in-Chief of The FASEB Journal.

Diet quality matters not just quantity in mid-tolate-adulthood

Science Daily July 26, 2017

A new study in Obesity investigated the impact of diet quality in mid-to-late-adulthood on visceral and liver fat not solely relying on Body Mass Index (BMI).

Four different measures of diet quality were used to evaluate dietary intake of the multiethnic population over a twenty-year span. Maintaining a high quality diet during mid-to-late adulthood may prevent adverse metabolic consequences related to visceral adipose tissue (VAT) and nonalcoholic fatty liver (NAFL).

The study examined close to 2,000 participants of the Multiethnic Cohort living in Hawaii and Los Angeles from five ethnic groups (White, African American, Native Hawaiian, Japanese American and Latino). The participants completed food frequency questionnaires at cohort entry from 1993-96 and at clinic visits in 20132016. Participants also underwent whole-body DXA and abdominal MRI scans. All four science-based diet quality scores predicted lower VAT and NAFL. Individuals with the best (highest) diet quality scores were 35-59% less likely to have high VAT and were also 22-43% less likely to have NAFL than those with the lowest scores after accounting for total body fat.

A long term healthy, quality diet can reduce the risk of cardiometabolic conditions. Gertraud Maskarinec, MD, PhD, Professor of Epidemiology at University of Hawaii Cancer Center said, "The message that diet quality, not just quantity, matters is important for everyone who wants to maintain both a healthy body weight and a healthy metabolism."

TOS Spokesperson Catherine M. Champagne, PhD, RDN, LDN, FADA, FAND, FTOS, Professor and Chief Nutritional Epidemiology/Dietary Assessment and Nutrition Counseling at Pennington Biomedical Research Center LSU said, "All healthcare providers should care about this research if their goal is to improve the health status of their patient population. There is benefit associated with both long term adherence to a healthy diet and to encouraging individuals with poor diets to adapt a healthier diet."

Overall, the management of excess body weight suggests that body fat distribution beyond BMI is a critical feature to consider when advising individuals with overweight about the health effects of their regular diets, as the metabolic consequences of visceral adiposity may lead to chronic conditions.





Research in Health & Nutrition

Mediterranean-style diets linked to better brain function in older adults Science Daily July 25, 2017

Eating foods included in two healthy diets -- the Mediterranean or the MIND diet -- is linked to a lower risk for memory difficulties in older adults, according to a study published in the Journal of the American Geriatrics Society.

The Mediterranean diet is rich in fruits, vegetables, whole grains, beans, potatoes, nuts, olive oil and fish. Processed foods, fried and fast foods, snack foods, red meat, poultry and whole-fat dairy foods are infrequently eaten on the Mediterranean diet.

The MIND diet is a version of the Mediterranean diet that includes 15 types of foods. Ten are considered "brain-healthy:" green leafy vegetables, other vegetables, nuts, berries, beans, whole grains, seafood, poultry, olive oil, and wine. Five are considered unhealthy: red meat, butter and stick margarine, cheese, pastries, sweets and fried/fast foods.

Researchers examined information from 5,907 older adults who participated in the Health and Retirement Study. The participants filled out questionnaires about their eating habits. Researchers then measured the participants' cognitive abilities – mostly on their memory

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and attention skills. The researchers compared the diets of participants to their performance on the cognitive tests.

They found that older people who ate Mediterranean and MIND-style diets scored significantly better on the cognitive function tests than those who ate less healthy diets. In fact, older people who ate a Mediterranean-style diet had 35% lower risk of scoring poorly on cognitive tests. Even those who ate a moderate Mediterranean-style diet had 15% lower risk of doing poorly on cognitive tests. The researchers noted similar results for people who ate MIND-style diets.

This study suggests that eating Mediterranean and MIND-style diets is linked to better overall cognitive function in older adults, said the researchers. What's more, older adults who followed these healthy diets had lower risks for having cognitive impairment in later life, noted the researchers.

Lutein, found in leafy greens, may counter cognitive aging Science Daily July 25, 2017

Spinach and kale are favourites of those looking to stay physically fit, but they also could keep consumers cognitively fit, according to a new study from University of Illinois researchers.

The study, which included 60 adults aged 25 to 45, found that middleaged participants with higher levels of lutein -- a nutrient found in green leafy vegetables such as spinach and kale, as well as avocados and eggs --

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had neural responses that were more on par with younger individuals than with their peers. The findings were published in the journal Frontiers in Aging Neuroscience.

"Now there's an additional reason to eat nutrient-rich foods such as green leafy vegetables, eggs and avocados," said Naiman Khan, a professor of kinesiology and community health at Illinois. "We know these foods are related to other health benefits, but these data indicate that there may be cognitive benefits as well."

Most other studies have focused on older adults, after there has already been a period of decline. The Illinois researchers chose to focus on young to middle-aged adults to see whether there was a notable difference between those with higher and lower lutein levels.

"As people get older, they experience typical decline. However, research has shown that this process can start earlier than expected. You can even start to see some differences in the 30s," said Anne Walk, a postdoctoral scholar and first author of the paper. "We want to understand how diet impacts cognition throughout the lifespan. If lutein can protect against decline, we should encourage people to consume lutein-rich foods at a point in their lives when it has maximum benefit."

Lutein is a nutrient that the body can't make on its own, so it must be acquired through diet. Lutein accumulates in brain tissues, but also accumulates in the eye, which allows researchers to measure levels without relying on invasive techniques.

The Illinois researchers measured lutein in the study participants' eyes by having participants look into a scope and respond to a flickering light. Then, using electrodes on the scalp, the researchers measured neural activity in the brain while the participants performed a task that tested attention.

"The neuro-electrical signature of older participants with higher levels of lutein looked much more like their younger counterparts than their peers with less lutein," Walk said. "Lutein appears to have some protective role, since the data suggest that those with more lutein were able to engage more cognitive resources to complete the task."

Next, Khan's group is running intervention trials, aiming to understand how increased dietary consumption of lutein may increase lutein in the eye, and how closely the levels relate to changes in cognitive performance. "In this study we focused on attention, but we also would like to understand the effects of lutein on learning and memory. There's a lot we are very curious about," Khan said.



Taste and health affect consumer choices for milk and nondairy beverages Science Daily July 20, 2017

Education on nutritional value and correcting misconceptions should be a focus of the dairy industry

In recent years, retail sales of fluid milk have experiencedsignificant change and per capita consumption has decreased at a rate of 830 mL per year since 1975. Between 2011 and 2014, sales of fluid milk have decreased 3.8% but the amount of nondairy, plant-based beverages sold increased 30% between 2010 and 2015. To learn more about what affects consumer decisions regarding fluid milk purchases, researchers from North Carolina State University used surveys, conjoint analysis, and meansend-chain analysis to uncover the underlying values among dairy milk and nondairy beverage consumers. The results of the study highlighted the most important factors for both milk and nondairy beverages, which were the same: they must be healthy and taste good.

No previous work directly studied values held by consumers and how those attitudes influence milk purchases. To assess this, a survey was completed by 999 primary shoppers between 25 and 70 years old, 78% female and 22% male, who reported purchasing dairy milk, nondairy beverage, or both at least two to three times per month. Most consumers (87.8%) did not follow a specific diet or claim to be lactose intolerant (88.4%). Twenty-seven percent of consumers purchased one or both beverages more than once a week, 47.0% purchased one or both beverages once a week, and 25.0% purchased one or both beverages two to three times per month.

Consumers ranked fat as the most important attribute in dairy milk, whereas sugar level was most important for nondairy beverages. Dairy milk consumers reported a preference for 2% or 1% fat, and almost 70% of dairy milk sales in 2014 were reduced or fat-free milk. Nondairy consumers preferred plant beverages that were naturally sweetened or had no added sugar. Almond beverage was the most desirable plant-derived beverage, representing more than 65.0% of nondairy beverages sold in 2014. Protein had universal appeal for both milk and nondairy beverages, with higher utility scores for higher levels of protein content.

"We found that consumers choose milk based on habit or because they like the flavor. Milk that is appealing in flavor could convince nondairy beverage drinkers to consumer more dairy milk; likewise, lactose-free milk or milk from grass-fed cows might also be appealing," lead author Kara McCarthy said. "By further focusing consumer education on trust building as well as nutrition, farm practice, and animal welfare, the appeal of dairy milk could be broadened."

With the results of this study in mind, along with the many features attractive to consumers of both dairy milk and nondairy beverages, the dairy industry can more effectively market and position milk as well as dispel any misconceptions.

Nutrition advice aimed at children also improves parents' diets Science Daily July 20, 2017

Nutrition advice aimed at children also improves parents' diets, according to research published today in the European Journal of Preventive Cardiology.

"Diets high in unsaturated fat and low in saturated fat have been associated with a reduced risk of cardiovascular events and death in adults," said lead author Dr Johanna Jaakkola, a postdoctoral researcher at the University of Turku, Finland. "Very little is known about the longterm effects of nutrition advice for children on the diets and health of parents."

The longitudinal randomised Special Turku Coronary Risk Factor Intervention Project (STRIP) decreased the saturated fat intake and improved the cardiovascular health of children by recommending foods rich in unsaturated, instead of saturated, fat.

The current study examined whether the long-term dietary

intervention focused on children was also associated with parental dietary intake and cardiometabolic risk factors over two decades of follow-up.

The primary results of the STRIP study have been previously reported. Briefly, the study included 1 107 infants and their parents who were recruited from well baby clinics in Turku, Finland, between 1989 and 1992. Families were randomly assigned to the dietary intervention (562) or control (545) groups.

The intervention group received dietary counselling at least once a year by a nutritionist from the child's age of eight months to the age of 20 years. Counselling was first given only to the parents, and from the age of seven years, the children were also met alone. The main focus of the dietary intervention was to reduce the child's intake of saturated fat and concomitantly increase the child's unsaturated fat intake.

As previously reported, the repeated dietary counselling led to decreased saturated fat intake in the intervention children, and lower serum low-density lipoprotein (LDL) cholesterol concentration from infancy until 19 years of age.

For the current study, parental dietary intake was assessed by a one-day food record biennially from the child's age of nine to 19 years. Weight, height, blood pressure, serum lipids, glucose and insulin of the parents were measured repeatedly

from the child's age of seven months until 20 years. The investigators found that the childoriented dietary counselling increased the intake of polyunsaturated and monounsaturated fats and decreased the saturated fat intake of intervention mothers and fathers compared to control parents between the child's ages of nine and 19 years. In addition, the child-oriented dietary counselling tended to decrease serum total and LDL concentrations in intervention mothers compared to control mothers. There was a similar trend in fathers but it was not statistically significant.

Dr Jaakkola said: "The child-oriented dietary intervention contributed advantageously to the parental diet in the long-term and tended to reflect lipid concentrations, particularly in mothers. Presumably all family members eat the same foods and thus child-oriented dietary counselling also affects parents' diets."

"Dietary intake may have been more strongly associated with maternal than paternal serum lipids because mothers might have more actively participated in the study and complied better with the diet," she continued. "There is also the possibility that the improvement in the fathers' diets was not strong enough to cause a statistically significant difference in serum lipids."

Dr Jaakkola concluded: "Our study emphasises that long-term dietary counselling directed at children may be an efficient way to also improve the diets of parents. These findings could be used to plan public health counselling programmes."

Meal frequency and timing linked to BMI

Science Daily July 20, 2017

New information on how the timing of meals impacts weight



gain or loss

A study by researchers from Loma Linda University School of Public Health and the Czech Republic has found that timing and frequency of meals play a role in predicting weight loss or gain. Using information gleaned from more than 50,000 participants in the Adventist Health Study-2 (AHS-2), the researchers discovered four factors associated with a decrease in body mass index: eating only one or two meals per day; maintaining an overnight fast of up to 18 hours; eating breakfast instead of skipping it; and making breakfast or lunch the largest meal of the day. Making breakfast the largest meal yielded a more significant decrease in BMI than did lunch.

The two factors associated with higher BMI were eating more than three meals per day -- snacks were counted as extra meals -- and making supper the largest meal of the day. As a practical weightmanagement strategy, Hana Kahleova, MD, PhD, recommends eating breakfast and lunch, skipping supper, avoiding snacks, making breakfast the largest meal of the day and fasting overnight for up to 18 hours. A postdoctoral research fellow at LLUSPH when the study was conducted. Kahleova is now director of clinical research for the Physicians Committee for Responsible Medicine in Washington, DC, and is currently on sabbatical from the Institute for Clinical and Experimental Medicine in Prague, Czech Republic, as a postdoctoral research fellow and diabetes consultant physician.

> Kahleova says the findings confirm an ancient nutritional maxim: "Eat breakfast like a king, lunch like a prince, and dinner like a pauper." Titled "Meal frequency and timing are

associated with Body Mass Index in the Adventist Health Study-2," the study was co-written by Gary Fraser, MBChB, PhD, a professor at LLU Schools of Medicine and Public Health, and director of AHS-2. It was published as an online advance on July 12 and will appear in the Sept. 2017 edition of the Journal of Nutrition.

Fraser said that irrespective of meal pattern, there was, on average, an increase in weight gain year by year until participants reached the age of 60. After age 60, most participants experienced a weight loss each year. "Before age 60 years, those eating calories earlier in the day had less weight gain," Fraser said, adding that after age 60, the same behavior tended to produce a larger rate of weight loss than average. "Over decades, the total effect would be very important." The team employed a technique called linear regression analysis and adjusted their findings to exclude demographic and lifestyle factors that might skew the results.

Moderate exercise and dieting reduces risk of Cesarean section and diabetes in pregnancy Science Daily July 19, 2017 Image © iStock.com, michaeljung

Pregnant women who have a healthy diet and regular moderate exercise are less likely to have a caesarean section, gain excessive weight, or develop diabetes in pregnancy, according to a study led by Queen Mary University of London (QMUL) using data from over 12,000 women. The study, published in The BMJ, is the largest research project in the world looking at lifestyle interventions in pregnancy, involving more than 50 researchers from 41 institutions. Its results were recently used by the UK Chief Medical Officers in the Department of Health's infographics on physical activity in pregnancy, which recommended at least 150 minutes of moderate intensity activity every week.

Half of all women of childbearing age worldwide are overweight or obese, which puts both mother and offspring at risk in pregnancy and later life. Previous studies have found that diet and physical activity have an overall benefit on limiting weight gain during pregnancy, but findings have varied for their protective effect on maternal and offspring outcomes.

Professor Shakila Thangaratinam from QMUL's Barts Research Centre for Women's Health said: "Our findings are important because it is often thought that pregnant women shouldn't exercise because it may harm the baby. But we show that the babies are not affected by physical activity or dieting, and that there are additional benefits including a reduction in maternal weight gain, diabetes in pregnancy, and the risk of requiring a caesarean section.

"This should be part of routine advice in pregnancy, given by practitioners as well as midwives. Now that we're able to link the advice to why it's beneficial for mothers-to-be, we hope mothers are more likely to adopt these lifestyle changes."

The research looked at the individual participant data for 12,526 pregnant women across 36 previous trials in 16 countries, which compared the effects of dieting (including restriction of sugar sweetened beverages, promoting low-fat dairy products, increase in fruits and vegetables) and physical activity (moderate intensity including aerobic classes and stationary cycling, and resistance training for muscle groups).

Dieting combined with physical activity significantly reduced the mother's weight gain during pregnancy by an average of 0.7 kg compared to the control group and lowered the odds of the mother having a caesarean section by about 10 per cent. UK caesarean rates are around 25 per cent and can carry risks such as infections for the mother and breathing difficulties for the baby.

Professor Thangaratinam said: "For every 40 mothers who follow the healthy diet and moderate exercise, one less woman will end up with a caesarean section."

Changes in lifestyle reduced the risk of diabetes in pregnancy by 24 per cent, which normally affects over 1 in 10 mothers in pregnancy, and increases risks of complications in mother and baby. Currently in the UK, only obese women are offered access to a dietician and specific antenatal classes for advice on diet and lifestyle, to minimise their weight gain.

Professor Thangaratinam added: "Often with interventions like these, certain groups benefit more than others, but we've shown that diet and physical activity has a beneficial effect across all groups, irrespective of your body mass index (BMI), age or ethnicity; so these interventions have the potential to benefit a huge number of people."

There was no strong evidence that the interventions affected offspring outcomes such as stillbirth, underweight or overweight births, or admission to a neonatal intensive care unit. The lack of adverse effects should reassure mothers who have traditionally been advised not to

undertake structured exercise or manage their diet in pregnancy.

The study is limited in that the researchers were only able to broadly classify the ethnicity of women as Caucasian or non-Caucasian, and the vast majority of the population in the study had a medium-to-high education, a factor favouring compliance with interventions.

The study was funded by The National Institute for Health Research (NIHR) Health Technology Assessment (HTA) programme.

Young adult obesity: A neglected, yet essential focus to reverse the obesity epidemic Science Daily July 18, 2017

The overall burden of the U.S. obesity epidemic continues to require new thinking.

Prevention of obesity in young adults, while largely ignored as a target for prevention and study, will be critical to reversing the epidemic, says William Dietz, MD, PhD, Chair of the Sumner M. Redstone Global Center for Prevention and Wellness at the Milken Institute School of Public Health at the George Washington University. In an editorial expanding upon the findings of a paper by Zheng and colleagues in the latest issue of JAMA, Dietz describes the data to support his

observations:

a public health focus on this period of high risk -- for not only the development of obesity, but also for excessive weight gain -- could have a significant impact on U.S. rates of obesity, additional obesity-related diseases, costs, and premature death, and "should be accorded a high priority."

Dietz notes that prevention efforts have focused primarily on children and adolescents, yet the prevalence of obesity roughly doubles between preadolescence (17 percent among 6 to 11-year old children) and young adulthood (34 percent among 20- to 39-year old adults). Because young adults are often parents or soon-to-be parents, prevention of obesity in this age group may also reduce the prevalence of obesity in their children.

He also highlights data showing that excessive weight gain, defined as approximately 45 pounds or more, occurs most frequently during young adulthood. Furthermore, racial and ethnic disparities become more pronounced at this stage, yet very little is known about why the development of obesity and excessive weight gain occur. "Successful prevention will require more information on the timing, demographics, behaviors, and lifecourse transitions that could contribute to excessive weight gain in this group," he writes.

No other age is associated with as many life transitions that could affect the development of obesity and excessive weight gain as in young adulthood. These transitions include living independently, the first full-time job, marriage, starting a family, and divorce. Pregnancy and childbirth may be major periods of risk Dietz notes, because excessive weight gain during pregnancy and weight retention after childbirth may account for why excessive weight gain among women is greater than that among men.

The potential impact of developing interventions that focus on young adult parents is supported by research showing that obesity spreads along social and family networks. Additionally, pediatric obesity treatments that targeted the whole family showed that children as well as their parents lost weight. These observations suggest prevention efforts that apply familybased strategies for weight control among young adults and their children offer an important opportunity for controlling the obesity epidemic.

Finally, Dietz highlights that the potential gains related to a reduction in cost and burden of diseases associated with obesity -- including diabetes, cancer, and heart disease -could be significant. Several opportunities exist to prevent obesity in young adults. Employer investments in young adult and family weight maintenance would be cost saving due to reduced absenteeism, increased productivity, and reduced disease burden. Interventions could be delivered through the supplemental nutrition for Women, Infants and Children (WIC) program, which specifically targets young families. Clinical efforts should focus on prevention of excessive weight gain in young women, with a particular focus on pregnancy and post partum weight retention.

Not all muscle building supplements are equal Science Daily July 14, 2017

Popular muscle building supplements, known as branched-chain amino acids (BCAA) are ineffective when taken in isolation, according to new research from the University of Stirling.

The study, involving the universities of Exeter and Birmingham and published in Frontiers in Physiology, show that while BCAA supplements do stimulate the muscle building response in individuals after they lift weights, other muscle-building supplements are far more effective.

Other supplements that contain all necessary amino acids stimulate a greater muscle growth response, which suggests that taking BCAA supplements alone is not the best way to optimize muscle growth with weight training.

The scientists also investigated how effective the supplements were at stimulating the machinery inside the muscle itself that leads to muscle growth. They found that while BCAA drinks stimulate the body's muscle building systems, they lack some essential amino acids that are necessary to support a maximal muscle growth response.

Professor Kevin Tipton, Chair in Sport, Health and Exercise Sciences at the University of Stirling, said: "Amino acids are the building blocks of proteins and the special class of amino acids, known as BCAA, stimulate the muscle growth response. These supplements are considered to be an important part of the nutrition plan for many bodybuilders, weightlifters and others seeking muscle growth.

"Our results show that the common practice of taking BCAA supplements in isolation will stimulate muscle protein synthesis --

Image © iStock.com/ayo888



the metabolic mechanism that leads to muscle growth -- but the total response will not be maximal because BCAA supplements do not provide other amino acids essential for the best response.



FRESHLY GROUND COFFEE FOR EVERY SINGLE CUP?





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"A sufficient amount of the full complement of amino acids is necessary for maximum muscle building, following exercise. Athletes interested in enhancing muscle growth with training should not rely on these BCAA supplements alone."

The BCAA supplement enhanced the muscle growth response slightly compared to a placebo, however the muscle's response was more than double when a whey protein supplement containing the equivalent amount of BCAA that included the other amino acids, was taken. A group of trained weightlifters took part in the study. They took the supplement in a dose equivalent to 20 grams of whey protein, after a resistance training session in the gym.



Diet rich in tomatoes cuts skin cancer in half in mice Science Daily July 13, 2017

Discovery builds on previous evidence of cancer-prevention benefits

Daily tomato consumption appeared to cut the development of skin cancer tumors by half in a mouse study at The Ohio State University. The new study of how nutritional interventions can alter the risk for skin cancers appeared online in the journal Scientific Reports. It found that male mice fed a diet of 10 percent tomato powder daily for 35 weeks, then exposed to ultraviolet light, experienced, on average, a 50 percent decrease in skin cancer tumors compared to mice that ate no dehydrated tomato. The theory behind the relationship between tomatoes and cancer is that dietary carotenoids, the pigmenting compounds that give tomatoes their color, may protect skin against UV light damage, said Jessica Cooperstone, co-author of the study and a research scientist in the Department of Food Science and Technology in the College of Food, Agricultural, and Environmental Sciences at Ohio State.

There were no significant differences in tumor number for the female mice in the study. Previous research has shown that male mice develop tumors earlier after UV exposure and that their tumors are more numerous, larger and more aggressive.

"This study showed us that we do need to consider sex when exploring different preventive strategies," said the study's senior author, Tatiana Oberyszyn, a professor of pathology and member of Ohio State's Comprehensive Cancer Center. "What works in men may not always work equally well in women and vice versa."

Previous human clinical trials suggest that eating tomato paste over time can dampen sunburns, perhaps thanks to carotenoids from the plants that are deposited in the skin of humans after eating, and may be able to protect against UV light damage, Cooperstone said. "Lycopene, the primary carotenoid in tomatoes, has been shown to be the most effective antioxidant of these pigments," she said.

"However, when comparing lycopene administered from a whole food (tomato) or a synthesized supplement, tomatoes appear more effective in preventing redness after UV exposure, suggesting other compounds in tomatoes may also be at play." In the new study, the Ohio State researchers found that only male mice fed dehydrated red tomatoes had reductions in tumor growth. Those fed diets with tangerine tomatoes, which have been shown to be higher in bioavailable lycopene in previous research, had fewer tumors than the control group, but the difference was not statistically significant.

Cooperstone is currently researching tomato compounds other than lycopene that may impart health benefits. Non-melanoma skin cancers are the most common of all cancers, with more new cases -- 5.4 million in 2012 -- each year than breast, prostate, lung and colon cancers combined, according to the American Cancer Society. Despite a low mortality rate, these cancers are costly, disfiguring, and their rates are increasing, according to the U.S. Department of Health and Human Services.

"Alternative methods for systemic protection, possibly through nutritional interventions to modulate risk for skin-related diseases, could provide a significant benefit," Cooperstone said. "Foods are not drugs, but they can possibly, over the lifetime of consumption, alter the development of certain diseases," she said.

Everyday chemicals linked to chronic disease in men Science Daily July 12, 2017

Chemicals found in everyday plastics materials are linked to cardiovascular disease, type-2 diabetes and high blood pressure in men, according to Australian researchers.

PENDAI Sep 2017

Image © iStock.com/

Researchers from the University of Adelaide and the South Australian Health and Medical Research Institute (SAHMRI) investigated the independent association between chronic diseases among men and concentrations of potentially harmful chemicals known as phthalates. The results of the study are now published in the international journal Environmental Research. Phthalates are a group of chemicals widely used in common consumer products, such as food packaging and wrappings, toys, medications, and even medical devices. Researchers found that of the 1500 Australian men tested. phthalates were detected in urine samples of 99.6% of those aged 35 and over.

"We found that the prevalence of cardiovascular disease, type-2 diabetes and high blood pressure increased among those men with higher total phthalate levels," says senior author Associate Professor Zumin Shi, from the University of Adelaide's Adelaide Medical School and the Freemasons Foundation Centre for Men's Health, and a member of SAHMRI's Nutrition & Metabolism theme. "While we still don't understand the exact reasons why phthalates are independently linked to disease, we do know the chemicals impact on the human endocrine system, which controls hormone release that regulate the body's growth, metabolism, and sexual development and function. "In addition to chronic diseases, higher phthalate levels were associated with increased levels of a range of inflammatory biomarkers in the body," he says.

Age and western diets are directly associated with higher concentrations of phthalates. Previous studies have shown that men who ate less fresh fruit and vegetables and more processed and packaged foods, and drank carbonated soft drinks, have higher levels of phthalates in their urine. "Importantly, while 82% of the men we tested were overweight or obese -- conditions known to be associated with chronic diseases -when we adjusted for this in our study, the significant association between high levels of phthalates and disease was not substantially altered," Associate Professor Shi says. "In addition, when we adjusted for socio-economic and lifestyle factors such as smoking and alcohol, the association between high levels of phthalates and disease was unchanged." Associate Professor Shi says that although the studies were conducted in men. the findings are also likely to be relevant to women. "While further research is required, reducing environmental phthalates exposure where possible, along with the adoption of healthier lifestyles, may help to reduce the risk of chronic disease," he says.

Heart failure is associated with loss of important gut bacteria

Science Daily July 11, 2017

In the gut of patients with heart failure, important groups of bacteria are found less frequently and the gut flora is not as diverse as in healthy individuals.

Data obtained by scientists of the German Centre for Cardiovascular Research (DZHK) provide valuable points of departure for understanding how gut colonisation is associated with the development and progress of heart failure. It has long been known that heart failure and gut health are linked. The gut, thus, has a worse blood supply in

instances of heart failure; the intestinal wall is thicker and more permeable, whereby bacteria and bacterial components may find their way into the blood. Moreover, scientists know that the composition of the gut bacteria is altered in other widespread diseases such as type 2 diabetes.

Against this backdrop, researchers at the DZHK site Hamburg/Kiel/Lübeck investigated whether and how the gut flora in patients with heart failure changes. In order to do this, they analysed the gut bacteria in stool samples of healthy individuals and patients with heart failure. The project headed by Professor Norbert Frey of the University Hospital Schleswig-Holstein, Campus Kiel, was conducted in close cooperation with Professor Andre Franke's team at the Christian-Albrechts-Universität zu Kiel, which found that the sections of the bacterial genome deciphered the distinction of the microorganism. The results showed that a significantly lower proportion of different bacteria are found in the gut in patients with heart failure than in healthy controls. Individual important families of bacteria are significantly reduced. It is still unclear whether the gut flora is altered as a result of heart failure or whether it may be a trigger for this disease.

Influential factors: diet, medication, smoking

"Of course, other factors also affect the composition of our gut bacteria. We know that the gut flora of a vegan who starts eating meat changes within three days," explains associate professor Dr. Mark Lüdde of the University Hospital Schleswig-Holstein, Campus Kiel.



For this reason, we asked the Kielbased researchers of dietary habits beforehand. Individuals with an extreme diet, such as a vegan diet, were not allowed to participate in their study. Instead, they chose individuals with a standard diet comprising both meat and vegetables for both groups.

In addition to diet, medication also affect the gut flora. It was, therefore, important that the control group also took medicinal products that patients with heart failure must take routinely. Antibiotics could not have been administered for at least three months prior. Smokers were also included in both groups. All participants were from the same region and were the same age; gender distribution and BMI were equal in both groups.

Consequence or cause of the disease?

The observed pattern of the reduced genera and families of bacteria seems very characteristic of heart failure, which is why these results may be new points of departure for therapies. The differences between healthy individuals and those with heart failure, thus, came about mainly through the loss of bacteria of the genera Blautia and Collinsella, as well as two previously unknown genera that belong to the families Erysipelotrichaceae and Ruminococcaceae.

Other research projects have shown that the occurrence of Blautia curbs inflammations. Similarly, the genus Faecalibacterium is associated with anti-inflammatory

mechanisms. It is, however, not only reduced in patients with heart failure. Since heart failure is accompanied by a chronic inflammation, one theory is that the gut flora fosters the systemic inflammation. Yet generally scientists currently believe that the gut flora changes as

a consequence of heart failure. Lüdde and his colleagues believe it is plausible that an altered bacterial profile could also be a risk factor or an early disease marker for heart failure. This is supported by the recent characterisation of trimethylamine N-oxide (TMAO), a metabolic product of gut bacteria, as an independent risk factor for the mortality rate in patients with heart failure. Further investigations are scheduled to clarify the cause and effect of altered gut flora in patients with heart failure. The scientists anticipate obtaining new knowledge on how heart failure occurs and progresses.

Moms, kids and TV: A complicated relationship that's not all bad

Science Daily July 5, 2017

Watching television sometimes gets a bad rap -- especially where children and screen time are concerned -- but not all of it is deserved.

A recent University of Michigan study of low-income mothers found that when they watch parentapproved, educational programming with their child, television is viewed as a positive tool. Moms also report largely positive experiences when managing their child's media use, which challenges negative assumptions about low-income mothers and screen time management.

In the study, 296 low-income moms

were asked about beliefs and rules regarding their 4-to-8-year-old child's television watching behavior, how they manage screen time and if they allow television during meals. The amount of screen time children should be allowed, in particular TV -- which is still the most popular electronic medium -- is a huge issue in all demographics, but perhaps even more so for low-income children, said first author Sarah Domoff. a researcher at the U-M Center for Human Growth and Development and assistant professor at Central Michigan University. That's because television watching is a risk factor for obesity, and low-income children watch more TV and have higher obesity rates than higher-income peers.

Understanding how mothers manage television for kids can foster positive, nonshaming conversations between clinicians and low-income parents about TV, which could ultimately help reduce screen time, Domoff said. Five themes emerged during questioning. Mothers said that what their children watch on television is more important than how much. To that end, they focus on restricting programming and set time limits only in extreme cases.

The mothers in the study were confident in the programming choices they make for their children and put much thought into appropriate television. This challenges the assumption that lowincome mothers experience problems managing their child's media use, Domoff said.

> Positive experiences outweigh negative ones and challenges seem to reflect specific child factors or situational stressors, such as meal or bedtime.





Moms also expressed concern about the effect of violent programming, but don't worry as much about commercials.

"That's important because we know that exposure to advertisements for fast food or sugar-sweetened beverages has been implicated as a risk factor for child obesity." Domoff

said.

Mothers said their children vary in how much television they want to watch, with some demanding more than others -- say, to fall asleep or eat. In cases where mothers worry about a child watching too much, they limit viewing time as well as restricted programming.

Researchers also found that moms enjoy the time they spend sharing quality programming with their children -- especially watching their children learn.

"That's important because for families with fewer resources, watching television was something they valued, and it appeared to be an important activity that they enjoyed," Domoff said. Finally, whether a mother allows television during meals depends on her goals. If she views meals as time for talking and family bonding, she doesn't allow television. However, if meals are viewed strictly as time for children to eat, mothers are more likely to allow television if it helps achieve that goal.

"Meals can be a very stressful time in some households," Domoff said. "The mother might need to get to a second job on time and need the child to eat quickly. Allowing television during the meal might encourage certain children to eat and help the mother accomplish her goals."

However, Domoff said that TV use during meals is also a risk factor for obesity, and other strategies to help children eat should be encouraged.



What causes food cravings? Medical News Today 16 July 2017 By Jon Johnson

A food craving is an intense desire for a specific food. This desire can seem uncontrollable, and the person's hunger may not be satisfied until they get that particular food.

Some experts believe food cravings last only about 3-5 minutes. Every person experiences cravings differently. Cravings are often for junk foods and processed foods high in sugar, salt, and fat. Food cravings are a major roadblock for people trying to maintain a healthy weight or switch to a more healthful diet. Luckily, there are some simple steps to take to handle these cravings.

Selective vs. non-selective hunger

Different people will experience different types of food cravings. Often, the craving is for foods high in sugar and fats, which can make maintaining a healthful diet difficult. It is important to understand the difference between a selective food craving and a nonselective craving. Selective cravings are cravings for specific foods, which may be a person's favourite chocolate bar, a specific burger from their favorite restaurant, or a bag of potato chips. Non-selective hunger is the desire to eat anything. It may be the result of real hunger and hunger pangs, but it can also be a sign of thirst. Drinking water may help with intense non-selective cravings.

What causes food cravings? Food cravings are caused by the regions of the brain that are responsible for memory, pleasure, and reward. An imbalance of hormones, such as leptin and serotonin, can also cause food

cravings. It is also possible that food cravings are due to endorphins that are released into the body after someone has eaten, which mirrors an addiction.

Pregnant women often experience strong cravings. This may be due to hormonal changes, which are thought to cause some food cravings. Emotions may also be involved in producing a food craving, especially if a person eats for comfort. Pregnant women experience especially strong cravings, which may be due to hormonal changes that can disrupt their taste and smell receptors. There is also the possibility of a connection between the cravings and nutrients. This is the idea that the body craves certain foods because it lacks certain nutrients.

How to reduce food cravings

There are a variety of ways to reduce unwanted food cravings. These include:

Reducing stress levels

Stress and emotional eating can influence a variety of health issues. Feeling stressed may promote emotional eating and cravings for comfort foods. One study found that stressed women are more prone to cravings for sweets than women without stress. Eating due to stress may also cause weight gain and a larger hip circumference. Stress may also cause weight gain on its own, without extra food cravings. Stress results in higher levels of cortisol, the stress hormone, which may promote belly fat.

Research in Health & Nutrition

Drinking plenty of water

Hunger and thirst can produce very similar sensations in the mind, causing it to become confused. One of the easiest ways to reduce food cravings is to make sure the body is hydrated throughout the day. Drinking plenty of water helps clean out toxins from the body, which may also benefit a person's overall well-being.

Getting enough sleep

A 2013 study found that not getting enough sleep could alter the body's hormonal balance. This imbalance contributes to overeating and weight gain. The researchers noted that when the sleep-deprived participants switched to an adequate sleep schedule, they lost weight, which indicates that their hormones were brought back into balance.

Eating enough protein

A healthful diet should contain plenty of lean sources of protein, as they may help reduce cravings. A study in the journal Obesity found that overweight men were able to reduce their cravings by up to 60 percent by getting 25 percent of their daily calorie intake from protein. The same study found that a high protein diet helped reduce the desire for night time snacks by 50 percent.

Chewing gum

Chewing gum keeps the mouth busy and may help reduce both sweet and salty cravings. One study found a small but significant difference in sweet and salty snack consumption among people who chewed gum and those who did not. Those who chewed gum rated themselves less hungry, had fewer cravings for snacks, and felt fuller than those who did not chew gum.

Changing the scenery

Changing habits, such as stopping at the park instead of picking up fast food on the way home, can help to reduce cravings in the long-term.

Replacing habits can be difficult. and some food cravings may be due to long-term habits. For instance, if someone gets fast food on their way home from work every day, this practice may reinforce their cravings. In situations like these, it is best to start new habits. This can be as easy as taking a new route home from work or stopping at the park for a quick walk instead. For cravings at home, it may help to take a walk around the block, take a shower, or even call a friend. These things may help distract a person from their craving long enough for it to subside.

Avoiding hunger

A healthful diet does not include frequent hunger pangs. In fact, under-eating can make food cravings worse. When the body is very hungry, it may crave more calorie-dense foods than usual, including fried and processed foods. Instead of waiting for intense feelings of hunger, it is better to have a regular pattern of meals and healthful snacks planned throughout the day to avoid potential cravings.

Controlling portions

For some people, completely avoiding the food they crave may make these cravings worse. This can lead to overeating or feeling miserable without that food. In this case, it may be better to satisfy the cravings with a small, portioncontrolled treat. It can help to put this treat at the end of a healthful habit, such as going for a walk or completing an exercise routine. If a person is prone to binge eating, a better option is to replace the craving altogether.

How to replace cravings

In some cases, people can easily satisfy their food cravings by choosing a more nutritious option. Alternatives for some of the most common foods that people crave include:

Potato chips: To avoid potato chips, replace them with a salty snack that is higher in healthy fats and protein, such as cashews and walnuts. Nuts are high in calories, however, and people should eat them in moderation. Popcorn is also a good replacement for potato chips.

Chocolate: Cravings for chocolate may be a need for magnesium, and some people find they can satisfy the craving by eating magnesiumrich foods, such as almonds. If nothing but chocolate will do, opt for dark, milk-free chocolate that contains at least 70 percent cocoa. The intensity of dark chocolate makes it easier to feel satisfied with less.

Candy or pastries: Sugar cravings can be easily satisfied with whole fruits, such as peaches, cherries, or melon. Keeping dried fruits, such as prunes or raisins, on hand may also be helpful for combating cravings on the go.

Soda: Sparkling water with a squeeze of fruit juice or a slice of orange can replace a craving for soda. It provides a similar feeling to soda but has fewer calories and no caffeine.

Cheese: Cheese cravings may be helped beforehand by purchasing low-fat and low-sodium cheeses. Some people also like nutritional yeast on their food, which has a savoury, cheesy flavour and fewer calories than cheese. Nutritional yeast is rich in B-complex vitamins and folic acid, and is often fortified with vitamin B12.



Bone metabolism in women of reproductive age affected by vitamin D deficiency

By Cheryl Tay Nutra Ingredients - Asia 25 July 2017

Vitamin D deficiency interferes with the bone metabolism of healthy women of childbearing age in Beijing, according to a study by Capital Medical University.

The study involved 100 healthy female Beining residents between the ages 23 and 30, all of whom worked indoors. As skin exposure to sunlight is the main source of vitamin D, their vitamin D levels were measured during summer and winter, alongside their bone metabolism indicators. It was found that during the summer. only 30% of the subjects had adequate levels of vitamin D, while in the winter, none of them did, with 11% displaying vitamin D deficiency. There was also a "significant negative correlation between serum concentrations of 25-hydroxyvitamin D (23-OH D) and the parathyroid hormone (PTH)", which is secreted by the parathyroid gland and is vital to the resorption and rebuilding of bone tissue.

Vitamin D deficiency is linked to diabetes, neuromuscular disorders, and immune, skin, renal and cardiovascular diseases. It is also detrimental to pregnant women and has "long-term adverse effects on their infants". This is especially worrying for the Chinese, as vitamin D deficiency is widespread in China. Beijing in particular receives limited sunlight during winter, due to its geographical location. Furthermore, the city's high air pollution levels tend to limit its residents' outdoor activity and in turn, their sun exposure.

Rickets Concern

Sun exposure aside, the typical Chinese diet consists largely of vegetable- and grain-based foods. which contain very little vitamin D. The subsequent low blood calcium leads to an increase in PTH concentration and a high concentration of alkaline phosphatase in the blood, eventually leading to defective bone calcification or rickets, which is especially harmful to infants. Additionally, the study found "moderate and positive correlations between maternal and neonatal 25 OH D concentrations", and discovered that in Beijing and some other parts of China, expectant mothers and newborns lacked vitamin D. This meant the foetuses did not receive enough vitamin D in utero, which could lead to rickets. The study concluded that women of childbearing age should "actively pursue outdoor activities and increase their dietary intake of vitamin D, calcium, phosphorus and protein in order to achieve optimum bone metabolism status".

Coffee Consumption May Protect Against Sarcopenia: A Population-Based Study TAP Integrative 10/24/2017

Sarcopenia is defined as an age-related decline in muscle mass and muscle strength.

One proposed mechanism of sarcopenia pathophysiology is a decrease in autophagy—a process that degrades and recycles cellular components to maintain cellular health. Studies have shown that autophagy is deficient in aging muscle cells and that deficient autophagy may lead to mitochondrial dysfunction and oxidative damage. Coffee contains phenolic compounds with antioxidant, anti-inflammatory, and pro-autophagy effects. One study found that coffee attenuated agerelated muscle loss and stimulated regeneration of muscle in mice. Little is known about the effects of coffee on the development or progression of sarcopenia in humans. An epidemiological study. published by Chung et al in 2017, aimed to evaluate the association between coffee consumption and sarcopenia in a population of aging Korean men. This cross-sectional study included 1781 men (aged 60 years or older), enrolled in the Korea National Health and Nutrition Examination Survey (KNHANES). Sarcopenia was defined as appendicular skeletal muscle mass divided by height squared (kg/m2) that was 2 standard deviations below the value of a healthy adult. Coffee consumption was evaluated with a food frequency questionnaire.

The overall prevalence of sarcopenia in the study population was 7.5%. The unadjusted prevalence of sarcopenia in men who drank less than 1 cup of coffee per day was 9%, 1 cup per day was 7%, 2 cups per day was 5%, and more than 3 cups per day was 4%. Compared with men without sarcopenia, men with sarcopenia were more likely to be older, more likely to be current smokers, and more likely to report no exercise.



After adjusting for these and other confounding factors, men who drank 3 or more cups of coffee per day had a 56% decreased odds of sarcopenia (adjusted OR=0.44; 95% CI, 0.21-0.94; p=.04) than the group consuming less than 1 cup per day. Previous studies have found that increased consumption of fruits and vegetables, adequate vitamin D status, and exercise may lower the risk of sarcopenia. The results of the study reviewed here suggest that consumption of 3 or more cups of coffee per day may also confer some protection against sarcopenia.

Ginseng and anti-obesity: Does Asian variety offer greater weight loss hope? By Gary Scattergood

04-Apr-2017 - NutraIngredients Asia

Studies comparing the differing anti-obesity effects of Asian and American ginseng are urgently needed, it has been claimed, not least because they are thought to have opposite medical effects in Traditional Chinese Medicine (TCM).

Writing in a review in the Journal of Nutritional Biochemistry, scientists from Tennessee State University said a number of investigations had been conducted on ginseng in preventing and treating of obesity. However, the effect and the relevant mechanisms behind how ginseng works as an anti-obesity treatment are still controversial, they added, and the issue is clouded by the differing uses of American and Asian ginseng in TCM.

The former is used to treat yin manifestations of Qi (life energy), while the latter tackle yang manifestations. Therefore, Asian ginseng has often been used to help treat, fatigue, poor appetite, diarrhoea, breath shortness, feeble pulse, spontaneous perspiration, febrile diseases, amnesia, insomnia and impotence. On the other hand, American ginseng is used to treat diseases such as cough, blood sputum, dysphoria, fatigue and thirst.

"Although the potential anti-obesity effect of Asian ginseng has been investigated in mice and humans in Asia in the last several decades, the anti-obesity effect and mechanism of ginseng are still not fully understood, especially in humans," wrote the researchers. Moreover, high-quality studies of the effects of ginseng in the United States are rare, particularly whether and how American ginseng prevents obesity is almost blank."

They said this was area ripe for further investigation, and pointed to their own unpublished data which showed that while Asian ginseng significantly inhibited fat accumulation in 3T3-L1 cells, American ginseng has no such effect at the same concentration (1 mg/ml).

They suggest this could be due increased fat accumulation caused by one of the major ginsenosides in American ginseng that is not detectable in Asian ginseng "The different anti-obesity effect between American ginseng and Asian ginseng may also result from the different profiles of other ginsenosides," they added.

The researchers also said highquality clinical trials of anti-obesity effect of ginseng and ginsenosides were very limited. "There is only one study showing that Asian ginseng extract intake exerted a weight loss effect in obese women," they wrote. " American ginseng extract or whole plant/berry has not been investigated for antiobesity in humans. In addition, there is no report using human primary cells investigating the antiobesity effect of ginseng and ginsenosides."

They argue that standardised ginseng production is sorely needed to overcome the fact that the results of existing studies "are controversial". "These controversial results at least partly come from the variety of the quality of ginseng, especially the whole extract and juice. The quantity and composition of ginsenosides in ginseng plants are dramatically influenced by species, age, and part of the plant, cultivation methods, harvesting season, preservation methods and geographical distribution," they state. "However, almost all ginsenosides or extracts in these studies were prepared in the individual labs or from different companies, it is almost impossible to keep the quality at the same level, particularly the whole extract."

The authors concluded; "Although Asian and American ginsengs have similar profiles of active ingredients, the different percentage of crude saponins (4.8%–5.2% in Asian ginseng vs. 7.0%–7.3% in American ginseng) and the specific ginsenoside (Rf only in Asian ginseng, F11 only in American ginseng) may contribute to the different functions of these two ginsengs. Therefore, it is very important to compare the medical effects using modern scientific approaches."

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FOOD SCIENCE INDUSTRY NEW

Australian researchers develop golden bananas high in pro-vitamin A IFT Weekly July 12, 2017

Researchers at Queensland University of Technology (QUT) have used genetic engineering to develop a golden-orange fleshed banana that is rich in pro-vitamin Α.

The decade-long research, recently published in Plant Biotechnology Journal, involved extensive laboratory tests at QUT as well as field trials in north Queensland, Australia.

Lead researcher, Professor James Dale, said the genetic modification process had resulted in the identification and selection of banana genes that could be used to enhance pro-vitamin A in banana fruit. Backed with close to \$10 million from the Bill & Melinda Gates Foundation, the research ultimately aims to improve the nutritional content of bananas in Uganda, where the fruit is the major staple food in their daily diet.

"What we've done is take a gene from a banana that originated in Papua New Guinea and is naturally very high in pro-vitamin A but has

small bunches, and inserted it into a Cavendish banana," said Dale. "Over the years, we've been able to develop a banana that has achieved excellent pro-vitamin A levels, hence the golden-orange rather than cream-colored flesh."

Scientists develop GE technique to produce high antioxidant purple rice IFT Weekly July 5, 2017

A study published in Molecular Plant reveals how scientists in China have developed a genetic engineering technique that is capable of delivering many genes at once and used it to make rice endosperm-seed tissue that provides nutrients to the

developing plant embryo-produ ce high levels of antioxidantboosting pigments called anthocyanins.

Although anthocyanins are naturally abundant in some black and red rice

varieties, they are absent in polished rice grains because the husk, bran, and germ have been removed, leaving only the endosperm. Previous attempts to engineer anthocyanin production in rice have failed because the underlying biosynthesis pathway is highly complex, and it has been difficult to efficiently transfer many genes into plants.

To address this challenge, the researchers first set out to identify the genes required to engineer anthocyanin production in the rice endosperm. To do so, they analyzed sequences of anthocyanin pathway genes in different rice varieties and pinpointed the defective genes in Japonica and Indica subspecies that do not produce anthocyanins.



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Food Science & Industry News

Protein Foods & Nutrition Development Association of India



Based on this analysis, they developed a transgene stacking strategy for expressing eight anthocyanin pathway genes specifically in the endosperm of the Japonica and Indica rice varieties. The resulting purple endosperm rice had high anthocyanin levels and antioxidant activity in the endosperm.

The researchers plan to evaluate the safety of purple endosperm rice as biofortified food. They will also try to engineer the biosynthesis of anthocyanins in other crops to produce more purple endosperm cereals.

Soybean meal's nutritional value varies by country, says report

25 July 2017 Nutrition Insight

The nutritional value of soybean meal produced in different places may be affected by genetic differences among different varieties of soybeans, as well as differences in growing

conditions and processing, according to research from the University of Illinois (U of I).

An experiment to compare the nutritional composition and amino acid digestibility by pigs using soybean meal produced in the five major soybeanproducing countries was conducted by Hans H. Stein, professor of nutrition in the Department of Animal Sciences at U of I.

The largest producers of soybean meal in the world are China, Argentina, Brazil, the US and India. In many swine-producing countries around the

world, soybean meal is imported from one of these five countries and buyers can choose among them. Until Stein's experiment, however, there had been limited data to compare the compositional and nutritional value to pigs of soybean meal produced in different countries.

Stein and Ph.D. student Vanessa Lagos conducted their study by collecting five different sources of soybean meal each from China, Argentina, Brazil and the US, and four sources from India. They then fed diets containing the 24 soybean meal sources to growing barrows.

"Our data indicate that the amount of digestible protein and amino acids were greater in soybean meal from the United States, India and Brazil than in soybean meal from Argentina or China," Stein reports.

Soybean meal from Brazil and India had the greatest concentration of crude protein and amino acids, he says. However, the standardized ileal digestibility of crude protein and amino acids was greatest in soybean meal from the US.

Stein says that in the global economy, feed ingredients may be sourced from a number of different sources.

"It's important to know that the nutritional value of soybean meal produced in different countries may be different, and to take those differences into account when making decisions about purchasing and diet formulations," Stein argues.

"Results of this experiment indicating that the concentration of digestible amino acids is less in soybean meal sourced from Argentina or China than in soybean meal from the United States gives international buyers increased information to base purchasing decisions on."

"Since it is true that there is variability in the digestibility of amino acids among countries and even within countries, I would think that further research could be focused on accurately identifying the factors that generate this variability," Lagos tells NutritionInsight when asked about the further research that needs to be done in the area.

Lagos also has other suggestions:

identifying markers that can be used to easily predict the nutritional value of a batch of soybean meal; research into differences in energy or phosphorus digestibility among soybean meal obtained from different countries; and evaluating the different varieties of soybean meal as they are developed to ensure updated and accurate data.

PENDAI Sep 2017



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9.8g-10.9g **Dietary Fibre**

26 Vitamins & Minerals

N9

ILY VITAMIN

WITH EACH SERVE

Healthy meal in 1 minute

*Compared to an average Indian meal. *As per RDA (ICMR, 2010)





Active

Food Science & Industry News

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"The values for

digestibility reported in the paper can be used in diet formulation and may result in a more accurate prediction of the nutritional value of diets," Lagos says of the findings' potential commercial applications.

"Thus, by using these values, swine production may become more efficient, and nitrogen excretion in the manure

may be reduced. The differences in protein quality among different sources of soybean meal that were observed likely will also exist in different sources of soy protein used for human consumption, but research to confirm this hypothesis has not been conducted."

iStock.

US Soybean Export Council (USSEC) chairman Jim Miller says the results of this study support USSEC's strategy of building a preference for US soy around the world.

"We have boots on the ground in six global regions to educate our customers on the intrinsic and extrinsic advantages of US soy using the latest research and information," he explains.

"US farmers have always believed that our product is very consistent, and Dr. Stein's study proves that soybean meal from the US has less variability in both composition and digestibility."

The USSEC and the Indiana Soybean Alliance provided funding for the study. The paper, Chemical composition and amino acid digestibility of soybean meal produced in the United States, China, Argentina, Brazil, or India, is published in the Journal of Animal Science.

Asia scoops ice cream growth boost as West turns to East for flavours by: RJ Whitehead, William Reed Business Media 10-Jul-2017

Food historians credit China with inventing ice cream and Marco Polo for bringing it to Italy.

Skip forward to the 21st century, and the rate at which Western ice-cream makers are looking to the East for inspiration promises to see renewed momentum—with India at the helm.

While ice-cream sales have largely been dominated by Western markets in recent years, India is now at the head of global growth, followed by other Asian nations. World sales reached 13bn litres in 2016, with India, Indonesia and Vietnam among the fastest growing markets, according to new research by Mintel.

Following annual growth of 13% over the past five years, this year volumes in India are set to overtake those of more established markets. Indeed, ice-cream sales there are forecast to reach 382m litres—and 657m litres in 2021.

India's strong annual growth is closely followed by Indonesia (11%), Vietnam (9%), Turkey (9%) and Malaysia (8%). Meanwhile, sales in Western markets have been flakey, with Switzerland having witnessed an annual drop of -3% over the past five years, followed by, Denmark (-2%), Britain (-2%) and America (-1%). Thailand also saw a fall of -2%.

Currently the world's biggest icecream market, China had sales estimated at 4.3bn litres in 2016, followed by the America (2.7bn litres) and Japan (756m litres).

In terms of individual consumption, Mintel found that Norwegian consumers are the biggest ice-cream eaters, consuming 9.8 litres per capita in 2016, followed by Australia (9.4) and Sweden (8.9).

"The rapidity with which India's ice-cream market is expanding is worth noting. The low per-capita consumption of retail ice cream in India demonstrates the exciting potential, though competition from street vendors should not be underestimated," said Alex Beckett, a Mintel global food and drink analyst.

With the East's love of ice cream thickening, one in three ice cream products were launched in Asia-Pacific in 2016, up from a quarter in 2013. Meanwhile, the share of ice cream products launched in North America fell from 19% to 14% over the same time period.

Clearly keen to get a scoop of the product innovation action, Western consumers are increasingly looking to try ice cream products with more Eastern-inspired flavours. Nearly of Canadians would be interested in ethnic-inspired lines, such as green tea or mango, while slightly fewer would be tempted by internationally inspired ice cream formats, such as Japanese mochi ice cream or Indian kulfi.

In Europe too, ice cream eaters are acquiring a taste for the exotic. As many as 20% of Italian, 17% of Polish and 16% of French consumers would be interested in trying ice cream with ethnicinspired ingredients, such as wasabi, green tea or saffron.

"In the US, mochi ice cream, Japanese-style frozen rice dough around an ice cream filling, is set to continue growing in profile in 2017," said Beckett. "Meanwhile, Thai-style rolled ice cream also continues to gain food press headlines in North America, often pitched as the next big thing in desserts."

The Middle East also promises to become more influential in terms of innovation. In particular, booza, a traditional ice cream from Syria and Lebanon, has the advantage that it is very slow to melt.

India to become world's largest producer of milk by 2026

By Mary Ellen Shoup 10-Jul-2017 - Food Navigator Asia

Milk production is expected to accelerate worldwide especially in India where it will grow 49% by 2026, contrasting with the steady decline of milk consumption in developed markets like the US, according to the OECD-FAO Agricultural Outlook 2017-2026.

'Nano-scare': Scientists blast Friends of the Earth for 'facile' infant formula claims By Gary Scattergood 02-Jul-2017 – Food Navigator Asia Reports that some infant formula products on sale in Australia and New Zealand contain potentially 'dangerous' nano-scale particles have been dismissed by regulators and scientists — with one branding it blatant 'scaremongering'.

Fresh dairy consumption showed the most notable growth out of all commodities measured, hitting a record high per capita consumption rate in developing countries. "Projected growth rates for fresh dairy for the coming decade are higher than those experienced over the past ten years, driven by increasing per capita demand in developing countries, most notably India," the report stated.

The world's population will increase from 7.3bn to 8.2bn over the nine-year period, with India accounting for 56% of that growth, overtaking China as the world's most populous country, according to the report. This growth is the driving factor behind the increase of milk production in India and accounts for the increased demand for fresh dairy products (54%). By contrast, per capita consumption of fresh dairy products will remain much lower in China and in Sub-Saharan Africa as well as many developed markets.

Processed dairy consumption and trade contracts

Despite renewed interest in consumption of butter and dairy fat in developed countries and more positive health assessments of dairy fat in recent years, the growth in global consumption of processed dairy products is expected to slow down in the next decade to 1.7% annually.

Over the course of the outlook period, the production of processed dairy products is expected to grow between 1.4% per year for cheese and 2.3% annually for skim milk powder (SMP). While the bulk of production of SMP and cheese will occur in developed countries, India will remain the top producer of butter; however it will not be a top player in the export market.

Processed dairy products per capita consumption will remain much lower in Oceania (excluding Australia and New Zealand) and Asia in particular, the report predicted. "Trade of fresh dairy products will remain limited and, as a result, growth in consumption will have a limited impact on world dairy markets," the report said.

However, overall, agricultural commodities tend to be the more resilient to economic fluctuations and as a result milk powders remain the most traded agricultural commodities and fresh dairy products will continue to be among the least traded.

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China approves two GM crops for import IFT Weekly July 19, 2017

According to Reuters, China has approved two genetically modified (GM) crops for import for a three-year period:

Syngenta's 5307 insect-resistant corn sold under the Agrisure Duracade brand and Monsanto's 87427 glyphosate-resistant corn sold under the Roundup Ready brand. Two other GM products—Dow Chemical's Enlist corn and Monsanto's Vistive Gold soybeans—were approved for import in June.

The approvals come after China promised to speed up a review of pending import applications as part of the 100-day trade talks with the United States. China doesn't permit planting of GM food crops, but does allow GM imports such as soybeans and corn for use in its animal feed industry. The country is the top export market for U.S. agricultural products.

There are four GM products that remain on the waiting list pending approval. The products include DuPont's Pioneer insect-resistant corn, Dow's Enlist soybeans, and two alfalfa products developed by Monsanto. Beijing has in the past held back approvals of imported GM products amid concerns about anti-GM sentiment in the country.

REGUILATORY NEWS

Higher GST for supplements in India will 'hit consumer health and market expansion' By Cheryl Tay 04-Jul-2017 - NutraIngredients Asia

Officials behind India's new goods and services tax (GST) have been accused of a major oversight for failing to set a dedicated rate for supplements, which means they are now subject to more tax than the industry had anticipated.

Before 1 July, there were concerns that food supplements and nutraceuticals would become significantly more expensive due to the impending new GST structure, which includes a maximum GST rate of 28%. As it stands nutraceuticals as well as health and fitness supplements, are now subject to 18% GST (the second highest tax rate), an increase from the previous 12% tax rate. Meanwhile, the tax on pharmaceutical products has risen from 5% to 12%. In the top tier of the new GST structure are coffee and protein concentrates — among others — which are now taxed at 28%.

Major oversight

Sandeep Gupta, vice chairman of the Indian Drug Manufacturers' Association's (IDMA) national nutraceutical committee, believes supplements comprise a "major sector missed out by the GST Council", since they do not fall under any existing category or classification with regards to the new GST structure. Criticising the lack of clarity from the GST Council, he said: "This could create chaos and gross violations due to wrongful interpretations by regulatory authorities. The industry is left with no option other than to follow Akin Rule 4.'





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The rule in question dictates that goods that cannot be classified in accordance with existing government rules "shall be classified under the heading appropriate to the goods to which they are most akin", which in this case is packaged and ready-to-eat foods.

While most nutraceutical products are indeed packaged and ready-toeat, Gupta believes it is necessary for them to be placed under a specific classification in the new GST system, and be subjected to 12% GST, as opposed to the current 18%.

Taxation expectations He revealed that the industry had expected nutraceuticals to be taxed at the lower rate of 12%, "since these products are beneficial to human health, and may prevent numerous illnesses diseases that could be life threatening". He pointed to the prevalent issue of malnutrition in India, saying that "nutraceuticals, and health and dietary supplements can make a large difference".

So far, the IDMA has written to India's finance minister Arun Jaitley, as well as the prime minister's office, Ministry of Health, Ministry of Food Processing Industries, and Food Safety and Standards Authority of India (FSSAI) in the hopes of having the 18% GST rate on nutraceuticals revised down to 12%. Gupta believes increased taxation on nutraceuticals will "limit the entry of new players or startups" into the market, and slow down market growth, with established nutraceutical companies likely to put expansion plans on hold. He

also said that the higher GST rates "would mean serious impact on affordability to consumers", and would severely limit consumer accessibility to nutraceuticals and supplements.

Appealing to the authorities The IDMA, alongside several other nutraceutical organisations and committees, are at present trying to arrange an appointment with the Ministry of Finance and the GST Council.

Gupta said the association wants to convene a meeting with its members to help the sector seek support to reduce the GST on nutraceuticals to at least 12%, and preferably 5% This, he believes, "will foster accessibility and affordability", which will in turn benefit the country's population in terms of health and nutrition.

Local drinks firms to use juice to get round new GST hike By RJ Whitehead 24-Jul-2017 - Food Navigator Asia

Hundreds of Indian beverage manufacturers are preparing to start adding fruit juice to their carbonated beverages in a bid to game the newly implemented GST regime. By doing so, they believe their products will attract the 12% tax slab for beverages based on fruit pulp or juice, rather than the 40% band reserved for sweetened aerated beverages including Coke and Pepsi. According to Times of India , the lower rate has been applied to fruit-based drinks in a bid to increase sourcing from Indian farmers—a priority under Prime Minister Narendra Modi, who in 2014 urged multinational beverage companies to add 5% Indian natural fruit juice to their products.

Adding fruit juice or pulp to locally manufactured fizzy drinks would help local players sustain their lower prices compared to multinational manufacturers in a fragmented market, one manufacturer told the paper. Though this is unlikely to be done in colas, it could spur local brands to increase manufacturing fruit-flavoured beverages.

Smaller manufacturers have been watching their market share grow in India's INR140bn (US\$2.2bn) soft drinks market by undercutting the majors to the tune of 30-40%.

"It could prove to be a good move, especially since colas have been hammered across the world over health concerns," Deloitte India's Rajat Wahi told Times of India . Local players would get a boost by providing a new-found "health angle " to their fizzy drinks, he added.

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India drafting front-ofpack health labelling scheme

By RJ Whitehead 24-Jul-2017 - Food Navigator Asia

India's food regulator is considering a mandatory benchmarking system to provide guidance on a product's fat, sugar and salt content.

The Food Safety and Standards Authority of India is currently working on a draft requirement to replace the current practice of printing nutritional values of individual components on the back of packs. The new system could be similar to the health star labelling displayed on the front of some packaged foods in Australia.

The scheme was introduced there in 2014 to rate supermarket foods from 0.5 to 5 stars based on their kilojoule and saturated fat, sugar, sodium, protein, fibre and fruit and vegetable content. These ratings are designed to show a score relative to healthy consumption limits in a symbolic and easy-to-understand format.

Also under consideration is a "traffic light" system that shows different colours depending on the nutritional safety of a product, and one that advises of the percentage of a product's ingredients relative to daily requirements. Once it has completed a draft proposal, the FSSAI will then invite stakeholder opinions before it becomes policy.

'Nano-scare': Scientists blast Friends of the Earth for 'facile' infant formula claims By Gary Scattergood 02-Jul-2017 - Food Navigator Asia

Reports that some infant formula products on sale in Australia and New Zealand contain potentially 'dangerous' nano-scale particles have been dismissed by regulators and scientists — with one branding it blatant 'scaremongering'.

The report, commissioned by Friends of the Earth (FoE), said seven off-the-shelf baby formula products were tested and that two — Nestle's NAN HA 1 Gold and Nature's Way Kids Smart 1 contained "needle-shaped hydroxyapatite nano-particles". "It should certainly not be in infant formula," FoE's Jeremy Tager told the Sydney Morning Herald.

"Babies are particularly vulnerable to food safety risks since their immune systems are still developing and often infant formula is the only food an infant receives."

FoE is calling on regulator Food Standards Australia and New Zealand (FSANZ) to recall the products and undertake further tests to ensure consumer safety.

No evidence

But FSANZ has insisted the products are safe, while leading scientists have criticised FoE for creating unnecessary concern. "FSANZ has reviewed the available information and concluded it does not contain any new evidence to suggest these products pose a risk to infant health and safety," stated the regulator. "Carers of infants should not be alarmed by this report or concerned about the safety of these products."

FSANZ noted that hydroxyapatite is soluble in acidic environments such as the stomach, so small amounts in food are likely to dissolve to release calcium and phosphate. "These are essential minerals that are required to be in infant formula product," it added.

Dr Ian Musgrave, a senior lecturer in the Faculty of Medicine at the University of Adelaide, said the FoE report failed to put nanoparticles in their natural biological

Image © iStock.com/ffolas

context, or provide any significant support that particles detected in milk are engineered nano-materials. "Nano-particles have become the latest boogeyman, despite nanoparticles occurring naturally," he said. "Infant formula is based on milk, which naturally contains calcium and phosphorus (as phosphates). The calcium and phosphates are in a complex balance between soluble and protein-bound forms.

No health implications "One of the forms of calcium phosphate in milk is hydroxyapatite. So it is unsurprising that hydroxyapatite is found in dried infant formula which is predominantly dried milk powder. Experiments with drying milk have found that nano-metre-sized particles of calcium phosphate form naturally. The health effects of hydroxyapatite nano-particles have been studied in animals with no toxicity at levels well above those present in milk. There are no significant public health implications for the finding small crystals of naturally occurring calcium phosphates in milk-based products."

Adjunct Professor Andrew Bartholomaeus, a consultant toxicologist with appointments at the University of Canberra and the University of Queensland, said the report was "unexciting and facile". Bartholomaeus, who was previously been the chief toxicologist for the Therapeutic Goods Administration and the general manager of the Risk Assessment Branch of FSANZ, added: "One would hope that Friends of the Earth have sufficient moral compass to not seek to exploit the natural concern of mothers for the health of their children to further their corporate objectives by scaremongering analytical findings of no special significance."

Study: China could improve traceability by focusing on six principles By RJ Whitehead 02-Jul-2017 -Food Navigator Asia

A team of international researchers has called on Beijing to give more teeth to how traceability laws are implemented in China.

The current rules, they say, are not sufficient to track provenance along the entire supply chain. Indeed, the traceability systems in place face challenges from the chain's scale, diversity and complexity. Neither do means of supply allow data to be captured, linked and shared effectively, and are often seen as barriers by food companies because of their high costs and a lack of skilled staff to implement them, they added.

The researchers, from the universities of Portsmouth and Bedfordshire in England, and the China Agricultural University in Beijing, had been working together to devise a framework that the Chinese government and food companies could use to boost food traceability systems. Portsmouth University's Mark Xu, one of the co-authors, said proper provenance protocols can be used to identify, single out and remove unsafe

roducts promptly. "Information quality is particularly important due to the chain-based nature of traceability systems," he said. "Food companies are also obliged to take social responsibility by fully complying with food safety standards, food safety policies, and implementing procedures and traceability systems. Willingness to pay for traceable products by consumers will ultimately drive the proliferation and implementation of successful traceability systems," Prof. Xu added.

The researchers compiled a list of 32 critical success factors that were relevant to information systems. These were then tested through a factor-analysis method using survey data collected from 83 food companies in China.

The researchers have published their results in the journal The Information Society. Three of the six areas of their framework were related to environmental traceability, two came from organisational factors, but only one was related to information and system quality. "This shows that the main obstacle for successful and efficient implementation of traceability in food product chains is organisational, not technical," Prof. Xu said. "Our findings show the complexity in measuring traceability system success. Food companies are profit driven, whereas the government is mainly concerned with food safety and stability."

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HEALTHBITES

Rice: Nutrition facts and health effects Medical News Today 31 July 2017 By Dr. Atli Arnarson

One of the oldest cereal grains, rice (Oryza sativa) is believed to have been grown for at least 5000 years. It is a staple food for more than half of the world's population, particularly those living in southern and eastern Asia.

White rice is the most commonly consumed type, but brown (whole grain) rice is becoming increasingly popular in some Western countries due to its health benefits. Various products are made from rice. These include rice flour, rice syrup, rice bran oil, and rice milk. It is usually white in color, but brown rice can come in a variety of shades; brown, reddish, purplish, or black.

Nutrition Facts

Rice is composed of carbs, with small amounts of protein and virtually no fat. The table below contains detailed information on all

	Amount
Calories	130
Water	69 %
Protein	2.4 g
Carbs	28.7 g
Sugar	~
Fibre	~
Fat	0.2 g
Saturated	0.05 g
Monounsaturated	0.06 g
Polyunsaturated	0.05 g
Omega-3	0.01 g
Omega-6	0.04 g
Trans fat	~

of the nutrients in 100 grams of short-grain, cooked white rice. Carbs

Rice is primarily composed of carbs. Carbs in rice are mainly in the form of starch, accounting for up to 90% of the total dry weight and 87% of the total caloric content. Starch is the most common form of carbohydrates in foods. made up of long chains of glucose known as amylose and amylopectin. Amylose and amylopectin have different properties that may contribute to both the texture and digestibility of rice. Rice that is high in amylose, such as basmati rice, does not stick together after cooking. Amylose also slows down the digestion of starch and is often associated with so-called resistant starch, a type of healthy fibre. On the other hand, rice that is low in amylose and high in amylopectin is sticky after cooking. Perfect for risottos and rice puddings, sticky rice (glutinous rice) is also preferred in Asian cooking because it is easy to eat with chopsticks. High digestibility is one of the downsides of the carbs in sticky rice. For a high-carb food, good digestibility is not always favourable because it may cause an unhealthy spike in blood sugar, especially among diabetics.

Bottom Line: Rice is mainly composed of carbohydrates. Some types may cause unhealthy spikes in blood sugar, making them unsuitable for diabetics.

Fibre

Brown rice contains a fair amount of fibre (1.8%), while white rice is very low in fibre (0.3%). One cup of boiled brown rice (195 grams) contains approximately 3.5 grams of fibre. Varying amounts of resistant starch are also found in both white and brown rice. Resistant starch helps feed the beneficial bacteria in the gut, stimulating their growth. In the colon, resistant starch leads to the formation of short-chain fatty acids, such as butyrate, which may improve colon health and cut the risk of colon cancer. Aside from resistant starch, the fibre is concentrated in the bran, which has been stripped from white rice. The bran is mainly composed of insoluble fibres, such as hemicellulose, and contains virtually no soluble fibre. Bottom Line: White rice contains virtually no fibre, whereas brown rice is a good source. Both types may also contain varying amounts of resistant starch, which may promote colon health.

Vitamins and Minerals

The nutrient value of rice depends on the variety and cooking method. Many vitamins and minerals are concentrated in the bran and germ, which are components of brown rice, but not white.

• Manganese: A trace mineral found in most foods, especially whole grains. It is essential for metabolism, growth, development, and the body's antioxidant system. • Selenium: A mineral that is a component of selenoproteins, which have various important functions in the body. • Thiamin: Also known as vitamin B1, thiamin is essential for metabolism and the function of the heart, muscles, and nervous system. Niacin: Also known as vitamin B3, niacin in rice is mostly in the form of nicotinic acid. Soaking rice in water before cooking may increase its absorption.

• Magnesium: Found in brown rice, magnesium is an important dietary mineral. It has been suggested that low magnesium levels may contribute to a number of chronic diseases.

• Copper: Often found in whole grains, copper is low in the Western diet. Poor copper status may have adverse effects on heart health. **Bottom Line:** Rice is generally a poor source of vitamins and minerals. However, considerable amounts may be concentrated in the bran of brown rice.

Other Plant Compounds

A number of plant compounds are found in rice, some of which are linked with potential health benefits. Pigmented rice, such as red-grained varieties, have been found to be particularly rich in antioxidants.

• Phytic acid: An antioxidant found in brown rice, phytic acid (phytate) impairs the absorption of dietary minerals, such as iron and zinc. It can be reduced by soaking, sprouting, and fermenting the rice before cooking.

• Lignans: Found in rice bran, lignans are converted to enterolactone by gut bacteria. Enterolactone is an isoflavone (phytoestrogen) that may have several health benefits.

Ferulic acid: A strong antioxidant found in rice bran. May protect against various chronic diseases, such as cancer, diabetes, and cardiovascular disease.
2-acetyl 1-pyrroline (2AP): An aromatic substance, responsible for

the taste and smell of scented rice, such as jasmine and basmati rice.

Bottom Line: White rice is a poor source of antioxidants and other plant compounds. However, the bran of brown rice may be a good source of ferulic acid, lignans, and phytic acid.

White vs. Brown Rice

White rice is highly refined, polished, and stripped of its bran (seed coat) and germ (embryo). This

is done to increase its cooking quality, shelf life, and tastiness, but unfortunately, it comes at the cost of reduced nutritional value. Brown rice is an intact whole grain, containing both the bran and the germ. For this reason, brown rice contains substantially more fibre than white rice. Being the most nutritious parts of the grain, the bran and germ are rich in fiber and several vitamins, minerals, and antioxidants. However, the bran is also a source of antinutrients, such as phytic acid, and may contain high levels of heavy metals if grown in polluted areas. Eating white rice may have an adverse effect on blood sugar balance, and should be avoided by people with diabetes. On the other hand, brown rice is generally regarded as a lowglycemic food, with beneficial effects on blood sugar control. Brown rice is clearly a winner when it comes to nutritional quality and health benefits.

Bottom Line: Brown rice is generally considered much healthier than white.

Health Benefits of Brown Rice

Aside from providing energy and basic nutrients, refined white rice does not have any health benefits. On the other hand, regular consumption of brown (whole grain) rice can be beneficial.

Heart Health

Heart disease includes heart attacks and strokes, and is one of the leading causes of death worldwide. Observational studies have linked the consumption of whole grains with reduced risk of death from heart disease. One study followed 86,190 men for 5.5 years. Those who consumed one serving or more of whole-grain breakfast cereals every day had 20% lower risk of death from cardiovascular disease than those who never or rarely consumed whole grains. Another study followed 75,521 women for 10 years. High whole grain intake was found to be linked with a 30% reduction in cardiovascular disease

risk compared to low intake. Whole grains may also have beneficial effects on body weight and diabetes, effects that are closely associated with cardiovascular disease. Keep in mind that all of these studies are observational. They show an association between whole grains and health, but cannot prove causation. One thing is clear, whole grain brown rice contains a number of heart healthy components, such as minerals, antioxidants, lignans, and dietary fibre.

A randomized controlled trial in 21 Korean men and women, half of which were obese, studied the effect of high-fibre rice on risk factors for cardiovascular disease. Eating highfibre rice as a substitute for white rice led to weight loss, accompanied with a decrease in cholesterol in the obese subjects. Taken together, eating brown rice and other whole grain cereals may have beneficial effects on heart health. **Bottom Line:** Brown rice contains several heart-healthy nutrients, so it may help prevent heart disease.

Adverse Effects and Individual Concerns

Eating rice regularly may be of concern for some people, especially if it accounts for a large proportion of the daily food intake.

Type 2 Diabetes

Type 2 diabetes is a common condition, characterized by high levels of blood sugar. High consumption of white rice has been linked with increased risk of diabetes in both Asia and the US. One study in 64,227 Chinese women found that those who consumed 300 grams of rice per day had a 1.8 fold greater risk of becoming diabetic than those who consumed 200 grams per day. This adverse effect is thought to be due to the high glycemic index of certain types of rice, such as sticky rice, which is common in Asian cooking.

Image © iStock.com/vm2002

The glycemic index is a measure of how foods affect the rise in blood sugar after a meal. Studies indicate that high-glycemic foods increase the risk of type 2 diabetes. In contrast, many observational studies have found a link between whole grains, such as brown rice. and reduced risk of diabetes. One study in over 150 thousand men and women suggests that eating brown rice rather than white rice may cut the risk of becoming diabetic. These effects are believed to be due to the fibre content of brown rice. Taken together, eating white rice regularly may have adverse effects on blood sugar control, especially if you are diabetic. On the other hand, eating fibre-rich whole grains instead of refined grains, may have substantial health benefits.

Bottom Line: High consumption of sticky white rice may raise the risk of type 2 diabetes.

Heavy Metals

Food contamination by heavy metals has become a serious concern worldwide. Heavy metals tend to accumulate in the body over time, leading to adverse effects on health. Many studies have reported excessive amounts of heavy metals in rice from a number of countries a particular concern where rice makes up a significant portion of people's diet. These are mainly cadmium, chromium, lead, mercury, and arsenic. Heavy metals are concentrated in the bran. For this reason, brown rice contains higher levels of heavy metals than white rice.

Compared to other common food crops grown in polluted areas, rice accumulates higher amounts of mercury and arsenic. Arsenic is easily taken up by all types of cereal grains, but its accumulation seems to be greater in rice compared to other grains, such as wheat and barley. The main sources of heavy metal pollution in soil and water are human activities; heavy industry, mining operations, car traffic, waste incineration, and use of fertilizers and pesticides. Over time, excessive intake of heavy metals from contaminated food may have adverse health effects. Eating rice grown near heavily polluted industrial or mining areas should be avoided. This also applies to other food crops, such as vegetables. Bottom Line: Consumption of rice from polluted areas should be avoided. It may accumulate high levels of heavy metals, such as arsenic.

Antinutrients in Brown Rice

Brown rice is high in phytic acid (phytate), an antioxidant that impairs the absorption of iron and zinc from the digestive tract. For this reason, phytic acid is often referred to as an antinutrient. Phytic acid is found in all edible seeds, such as legumes, nuts, and whole grain cereals. Eating high-phytate foods with most meals may contribute to mineral deficiencies over time. However, this is rarely a concern in well balanced diets or for those who eat meat regularly. On the other hand, it may be a problem among vegetarians and in developing countries where diets are largely composed of high-phytate foods. Several effective methods can be used to reduce the phytic acid content. These include soaking, sprouting, and fermenting the grains.

Bottom Line: Brown rice contains phytic acid, an antinutrient that impairs the absorption of iron and zinc from the same meal.

Summary

Rice is a popular cereal worldwide, especially in Asia. White rice is the most commonly eaten type, but brown rice is becoming more common as a healthier alternative. As a good source of several healthy minerals and antioxidants, brown rice may help prevent heart disease. On the other hand, high consumption of white rice (especially sticky rice) has been associated with increased risk of type 2 diabetes.

Written by Dr. Atli Arnarson

Seven health benefits of psyllium Medical News Today 31 July 2017 By Arlene Semeco, MS, RD

Psyllium is a type of fibre commonly used as a gentle, bulkforming laxative. Being a soluble fibre, psyllium is able to pass through your digestive system without being completely broken down or absorbed.

Instead, it absorbs water and becomes a viscous compound that benefits constipation, diarrhea, blood sugar, blood pressure, cholesterol and weight loss. This article tells you all you need to know about psyllium, including 7 ways it can benefit your health.

What Is Psyllium?

Psyllium is a soluble fibre derived from the seeds of Plantago ovata, an herb mainly grown in India. It's used as a dietary supplement and is usually found in the form of husk, granules, capsules or powder. However, it can also be obtained through fortified breakfast cereals and baked goods. Psyllium husk is the main active ingredient in Metamucil, a fibre supplement often used to reduce constipation. Because of its excellent water solubility, psyllium can absorb water and become a thick, viscous compound that resists digestion in the small intestine. Its resistance to digestion allows it to help regulate high cholesterol, triglycerides and blood sugar levels. It can also aid weight management and relieve diarrhea and constipation. Moreover, unlike some other potent sources of fibre, psyllium is well tolerated.



Bottom Line: Psyllium is a fibre extracted from an herb called Plantago ovata. It can be found in various forms and has many health benefits.

1. Psyllium Relieves Constipation

Psyllium is used as a bulk-forming laxative. It works by increasing stool size and therefore helps relieve constipation. Initially, it works by binding to partially digested food that's passing from the stomach into the small intestine. It then helps with the absorption of water, which increases the size and moisture of stools. The end product is bigger and more easily passable stools. One study found that psyllium had a greater effect than wheat bran on the moisture, total weight and texture of stools. Another study showed that taking 5.1 grams twice a day for two weeks significantly increased the water content and weight of stools, as well as the total number of bowel movements, in 170 individuals with chronic constipation. For these reasons, taking psyllium supplements promotes regularity.

Bottom Line: Psyllium is known as a bulk-forming laxative that helps relieve constipation and promote regularity.

2. It May Help Treat Diarrhea

Psyllium has also been shown to relieve diarrhea. It does this by acting as a water-absorbing agent, which can increase stool thickness and slow down its passage through the colon. One study showed psyllium husk significantly decreased diarrhea in 30 cancer patients undergoing radiation therapy. Another study treated eight people who had lactulose-induced diarrhea with 3.5 grams, three times daily. Doing so increased their stomach emptying time from 69 to 87 minutes, which meant fewer bowel movements. So psyllium can both prevent constipation and reduce diarrhea, effectively helping to normalize your bowel movements if you are having problems.

Bottom Line: Psyllium can help treat diarrhea by increasing stool size and slowing its passage through the intestinal tract.

3. It Can Lower Blood Sugar Levels

Fibre supplementation has been shown to control glycemic response to a meal and reduce insulin and blood sugar levels. This is particularly the case with watersoluble fibres like psyllium. In fact, psyllium works better than other fibres like bran. This is because its gel-forming fibres can slow down the digestion of food, which helps regulate blood sugar levels. One study treated 56 diabetic men with 5.1 grams of psyllium twice per day for eight weeks. It reduced their daily blood sugar levels by 11%. In another study in people with type 2 diabetes, a higher daily dose (five grams consumed three times per day) for six weeks resulted in a 29% reduction in blood sugar levels within the first two weeks. Because psyllium is able to slow down the digestion of food, it's recommended to take it with food, rather than on its own, so it has a greater effect on your blood sugar levels. It seems that a daily dose of at least 10.2 grams can promote lower blood sugar levels.

Bottom Line: Psyllium is able to delay food digestion, which helps regulate blood sugar levels. A daily dose of 10.2 grams ingested with meals appears to significantly affect blood sugar levels.

4. It May Boost Satiety and Aid Weight Loss

Scales, a Fork, a Knife and a Measuring Tape

Fibres like psyllium that form viscous compounds can help control appetite and aid weight loss. One study had 12 healthy participants consume 10.8 grams of psyllium immediately before a meal.

They experienced significantly delayed stomach emptying from the third hour after the meal and prolonged sensations of satiety six hours after the meal. Another study explored the effects of two, 20-gram doses in 17 healthy participants. One dose was consumed three hours before a meal, while the other dose was consumed immediately before a meal. The results indicated increased feelings of fullness one hour after the meal and reduced total fat intake during the day. compared to the placebo. However, studies investigating a direct relationship between psyllium and weight loss seem to show mixed results. One study found that 16 weeks of a calorie-restricted diet paired with three grams of psyllium either twice or three times daily resulted in an average weight loss of 9.9 pounds (4.52 kg) and 10.12 pounds (4.60 kg), respectively. Furthermore, another study showed that psyllium supplementation on its own, as well as paired with a fibre-rich diet, resulted in a significant reduction of weight, body mass index and percentage of body fat. In contrast, other studies did not report significant effects on body weight.

Bottom Line: Psyllium aids appetite control by slowing down stomach emptying and reducing appetite. Decreased appetite and calorie intake may support weight loss.

5. It Can Also Lower Cholesterol Levels

Psyllium is able to bind to fat and bile acids, which promotes their excretion from your body. In the process of replacing these lost bile acids, the liver uses cholesterol to produce more. As a result, blood cholesterol levels decrease. One study reported an increase in bile acid synthesis and lowered LDL ("bad") cholesterol in 20 individuals treated with 15 grams of psyllium daily for 40 days. In another study, 47 healthy participants experienced a 6% reduction in LDL cholesterol after taking 6 grams each day for six weeks. Furthermore, psyllium can help increase HDL ("good")

cholesterol levels. For instance, taking 5.1 grams twice a day for eight weeks resulted in a decrease in total and LDL cholesterol, as well as an increase in HDL levels in 49 patients with type 2 diabetes. Lastly, one study treated 125 type 2 diabetics with 5-gram doses of psyllium three times a day for six weeks. Participants experienced increases in HDL cholesterol up to 45.7%. Interestingly, a review of 21 studies reported that reductions in total and LDL cholesterol are dose dependent. This means greater results were observed with treatments of 20.4 grams of psyllium per day than 3 grams per day.

Bottom Line: Psyllium can lower total cholesterol levels by promoting the removal of bile acids from the body. It has been shown to lower LDL cholesterol and increase HDL cholesterol significantly.

6. It Seems to Be Good for Your Heart

Adding water-soluble fibres like psyllium to your diet might reduce blood triglycerides, blood pressure and the risk of heart disease. One study confirmed that 5 grams of psyllium three times daily for six weeks reduced triglycerides by 26%, compared to the placebo. Moreover, in 40 patients with type 2 diabetes, triglyceride levels were significantly reduced after two months of treatment with psyllium fibre. Furthermore, a diet with an additional 12 grams of fibre from psyllium supplementation reduced systolic blood pressure by 5.9 mmHg in 36 people with high blood pressure. Lastly, another study in obese individuals showed that a 7gram daily dose for 12 weeks led to a seven percent decrease in blood pressure in the first six weeks of treatment

Bottom Line: Regular intake of psyllium fibre has been linked to reduced blood pressure, lowered triglycerides levels and reduced risk of heart disease.

7. It Has Prebiotic Effects

Prebiotics are non-digestible compounds that nourish intestinal bacteria and help them grow. Psyllium is considered to have prebiotic effects. Although psyllium is somewhat resistant to fermentation, a small portion of psyllium fibres can be fermented by intestinal bacteria. This fermentation can produce shortchain fatty acids (SCFA), which have been linked to health benefits. One study showed that 10 grams twice a day for 12 months increased the production of the SCFA butyrate. Also, because it ferments more slowly than other fibres, it doesn't increase gas and digestive discomfort. In fact, treatment with psyllium for four months helped reduce digestive symptoms by 69% in patients with ulcerative colitis (UC). Furthermore, a combination of psyllium and probiotics seems to be particularly effective at treating ulcerative colitis and Crohn's disease.

Bottom Line: Psyllium is considered a prebiotic fibre. It can promote short-chain fatty acid production and decrease digestive discomfort in patients with ulcerative colitis and Crohn's disease.

Safety and Side Effects

Psyllium appears to be well tolerated by most people. Doses of 5-10 grams taken three times per day are not linked to serious side effects. However, some cramping, gas or bloating may occur. Also, psyllium could delay the absorption of certain medications. Therefore, it's not recommended to take it with any other medicines. Although uncommon, some allergic reactions like rashes, itching or trouble breathing can result from ingesting or handling psyllium. Bottom Line: Psyllium does not seem to have many side effects and is well tolerated. However, some allergic reactions may occur in those sensitive to fibre.

Take Home Message Psyllium is commonly used as a

laxative. However, it can also relieve diarrhea and help reduce triglycerides, cholesterol, blood sugar and blood pressure levels. This fibre supplement can be included in your nutrition regimen and consumed regularly as part of a healthy diet.

Written by Arlene Semeco, MS, RD

15 health benefits of pomegranate juice

Medical News Today 12 July 2017 By Mandy Ferreira

Fresh juice doesn't have to be green or full of spinach to be healthy. Pomegranate juice contains more than 100 phytochemicals.

The pomegranate fruit has been used for thousands of years as medicine. Today, pomegranate juice is being studied for its many health benefits. It may help with cancer prevention, immune support, and fertility. Pomegranates have been eaten throughout history for their health benefits. Nowadays, the juice of this fruit is a popular part of healthy diets.

Benefits of Pomegranate

Here are some of the potential benefits of pomegranate. 1. Antioxidants Pomegranate seeds get their vibrant



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red hue from polyphenols. These chemicals are powerful antioxidants. Pomegranate juice contains higher levels of antioxidants than most other fruit juices. It also has three times more antioxidants than red wine and green tea. The antioxidants in pomegranate juice can help remove free radicals, protect cells from damage, and reduce inflammation. 2. Vitamin C

The juice of a single pomegranate has more than 40 percent of your daily requirement of vitamin C. Vitamin C can be broken down when pasteurized, so opt for homemade or fresh pomegranate juice to get the most of the nutrient. 3. Cancer prevention

Pomegranate juice recently made a splash when researchers found that it may help stop the growth of prostate cancer cells. Despite multiple studies on the effects of the juice on prostate cancer, results are still preliminary. While there haven't been long-term studies with humans that prove that pomegranate juice prevents cancer or reduces the risk, adding it to your diet certainly can't hurt. There have been encouraging results in studies so far, and bigger studies are now being done. 4. Alzheimer's disease protection

The antioxidants in the juice and their high concentration are believed to stall the progress of Alzheimer disease and protect memory.

5. Digestion

Pomegranate juice can reduce inflammation in the gut and improve digestion. It may be beneficial for people with Crohn's disease, ulcerative colitis, and other inflammatory bowel diseases. While there are conflicting beliefs and research on whether pomegranate juice helps or worsens diarrhea, most doctors recommend avoiding it until you are feeling better and your symptoms have subsided.

6. Anti-inflammatory Pomegranate juice is a powerful anti-inflammatory because of its high concentration of antioxidants. It can help reduce inflammation throughout the body and prevent oxidative stress and damage. 7. Arthritis

Flavonols in pomegranate juice may help block the inflammation that contributes to osteoarthritis and cartilage damage. The juice is currently being studied for its potential effects on osteoporosis, rheumatoid arthritis, and other types of arthritis and joint inflammation.

8. Heart disease

Pomegranate juice is in the running as the most heart-healthy juice. It appears to protect the heart and arteries. Small studies have shown that the juice improves blood flow and keeps the arteries from becoming stiff and thick. It may also slow the growth of plaque and build-up of cholesterol in the arteries. But pomegranate may react negatively with blood pressure and cholesterol medications like statins. Be sure to talk with your doctor before indulging in the juice or taking a pomegranate extract supplement.

9. Blood pressure

Drinking pomegranate juice daily may also help lower systolic blood pressure. But more studies need to be done to determine if pomegranate juice can decrease overall blood pressure in the long term.

10. Antiviral

Between the vitamin C and other immune-boosting nutrients like vitamin E, pomegranate juice can prevent illness and fight off infection. Pomegranates have also been shown to be antibacterial and antiviral in lab tests. They are being studied for their effects on common infections and viruses.

11. Vitamin-rich In addition to vitamin C and vitamin E, pomegranate juice is a good source of folate, potassium, and vitamin K. Whether you decide to add pomegranate to your daily diet or just sip on it every now and then, check the label to ensure that it is 100 percent pure pomegranate juice, without added sugar. Or, juice it fresh.

12. Memory

Drinking 8 ounces of pomegranate juice a daily may improve learning and memory, according to a recent study.

13. Sexual performance and fertility Pomegranate juice's concentration of antioxidants and ability to impact oxidative stress make it a potential fertility aid. Oxidative stress has been shown to cause sperm dysfunction and decrease fertility in women. The juice has also been shown to help reduce oxidative stress in the placenta. But researchers don't yet know the exact benefits this may provide. Drinking pomegranate juice can also increase testosterone levels in men and women, one of the main hormones behind sex drive.

14. Endurance and sports performance

Move over, tart cherry and beet juice. Pomegranate juice may be the new sport performance enhancer. The juice may help reduce soreness and improve strength recovery. It also decreases oxidative damage caused by exercise.

15. Diabetes

Pomegranate was traditionally used as a remedy for diabetes in the Middle East and India. While much is still unknown about the effects of pomegranate on diabetes, it may help decrease insulin resistance and lower blood sugar. Bottom line

Green juice isn't the only healthy option out there. Adding pomegranate juice to your diet may reduce your risk for chronic disease and inflammation. It's also a great way to get the fruit's nutrients and a boost of antioxidants. It's best to check with your doctor before drinking pomegranate juice every day, to make sure it won't interfere with any of your medications.





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