PFNDAI

FOOD, NUTRITION & SAFETY MAGAZINE

BULLETIN AUG 2021

DIETARY AND LIFESTYLE FACTORS IN BONE HEALTH THROUGH OUR LIFE SPAN

WHAT IS REQUIRED FOR OUR HEALTHY BONES THROUGH OUR LIFE CYCLE?

Dr Meena Godhia &
Ms Rashi Nandwani

HAVING YOUR FAVOURITE CHOCOLATE WITHOUT ANY GUILT

Ms Swechha Soni

DECLARING LICENSE NUMBER ON COMMERCIAL DOCUMENTS

Dr Joseph I Lewis

ROLE OF NUTRITION IN CANCER

Ms Girija Damle

THINGS TO CONSIDER WHILE BUILDING YOUR FOOD & BEVERAGE BRAND DIGITALLY

Ms Dolly G Soni

PROTEIN FOODS AND NUTRITION DEVELOPMENT ASSOCIATION OF INDIA

2nd Floor, Mahalaxmi Chambers, 22 Bhulabhai Desai Rd., Mumbai - 26 (India)
Phone: 022 23538858 / 23519014
Email: pfndai@pfndai.org Website: www.pfndai.org

FIBER *UP* YOUR WORLD!

Functional Ingredients for Formed Meat Products

www.jrsfood.net

Made in Germany

Follow the Fiber People!

RETTENMAIER INDIA PVT LTD

Fibers designed by Nature

A Member of the JRS Group

RETTENMAIER INDIA PVT. LTD.
816, Lodha Supremus-II, Road No. 22,
Wagle Estate, Thane (W) - Mumbai 400 604
Maharashtra - India

Contact:
meeta.raheja@jrsindia.com
rasika.nachane@jrsindia.com
Telephone- 022- 4024 3817-21
www.jrs.de

FIL
Flavours

taste stimulate the secretion of digestive juices
this pleasant experience provide mouth watering...
indication of enjoyment of food

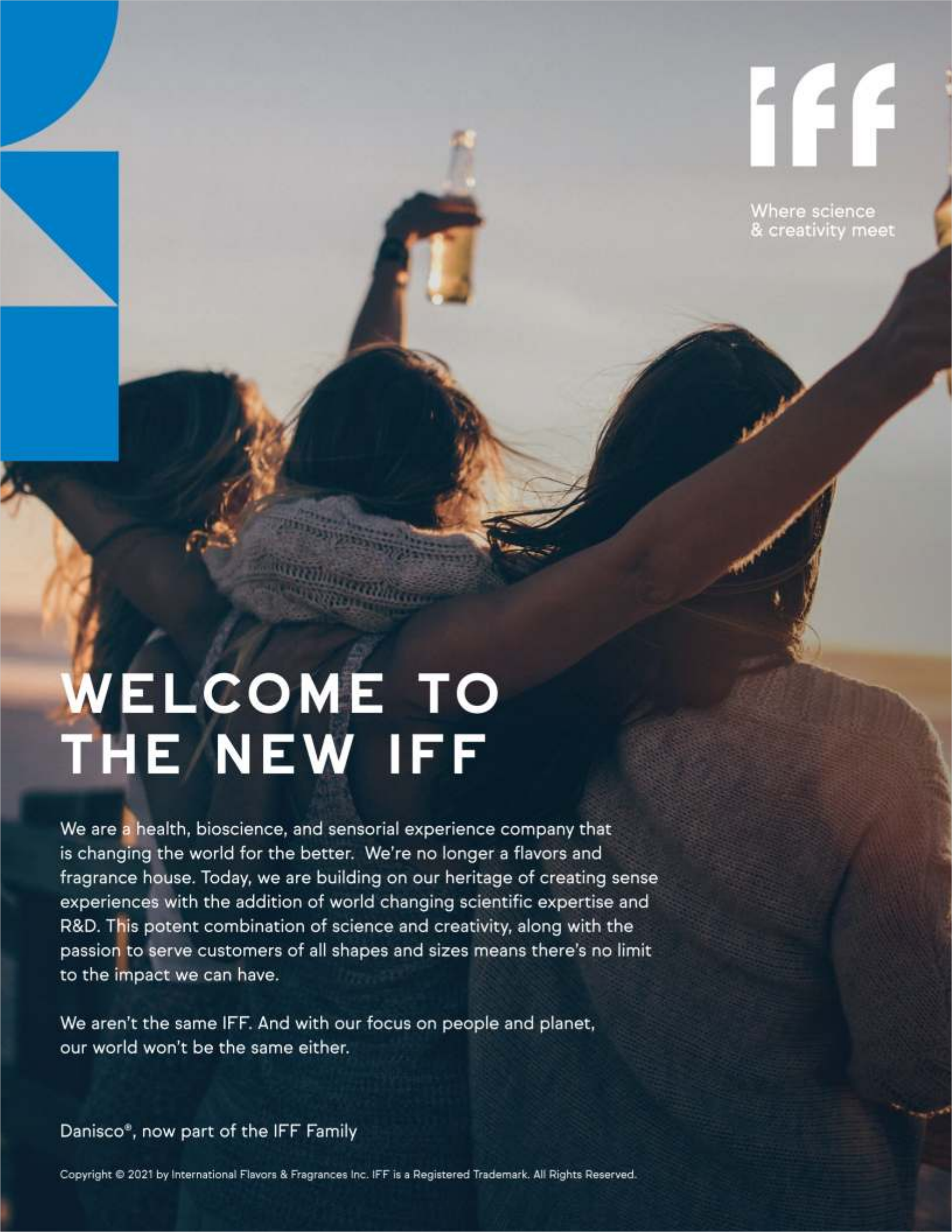
taste is a valued concept in food..... creating consumer appeal
through taste is our speciality

We work intimately with the nature in creating unique, innovative functional flavour systems that excite the palate - taste and create new sensations to all processed foods and beverages that goes a long way in market success and creating brand value.....

FOOD INGREDIENT SPECIALITIES PRIVATE LIMITED
No. 90, Vanagaram - Ambattur Road, Ayanambakkam,
Chennai - 600 095. India

FIL
Flavours

Tel : 044 - 26531336 / 2653 0572 / 2653 0451 / 2653 0452
email : info@foodingredientspecialities.com / foodinfil@gmail.com



Circulated to PFNDAI Members Only
PFNDAI is not responsible for the authenticity and correctness of the information published and the views expressed by the authors of the articles.
Email : pfndai@pfndai.org Website : www.pfndai.org

PFNDAI Bulletin AUG 2021
PFNDAI FOOD, NUTRITION & SAFETY MAGAZINE

INDEX

Editorial

Dietary and Lifestyle Factors in Bone Health through our Life Span 1
What is required for our healthy bones through our life cycle?
By Dr Meena Godhia & Ms Rashi Nandwani

Coming Events 11

Declaring License Number on Commercial Documents 13
By Dr Joseph I Lewis

Having Your Favourite Chocolate without Any Guilt 15
By Ms Swechha Soni

Role of Nutrition in Cancer 18
By Ms. Girija Damle

Things to Consider while Building your Food & Beverage Brand Digitally 23
By Ms Dolly G Soni

Regulatory Round Up 41

Research in Health & Nutrition 26

Food Science and Industry News 41

Regulatory News 47

Images © Shutterstock.com

Cover Design & Bulletin Layout by Ms. Leena Shanbhag

CALPRO

Polaris

LESS IS MORE

Experience Plant based alternative to replace your MarineOmega 3s needs

- 100% Allergen Free
- Rich in Omega-3 EPA/DHA
- Vegan Products
- Extensive Range of concentration ratios

Product : **DHA 280 (Powder) | DHA 700 (Oil)**

In liquid (oil)

In soft gel capsules

In powders

CALPRO SPECIALITIES PVT. LTD.
816, Udyog Vihar Phase 5, Gurugram
Haryana 122008, India
marketing@calpro-india.com
M: +91 98107-64476

Sourced from **Polaris**, France

Synergia
Life Sciences

Enriching The Benefits of Food Products

MenaquinGold®

Natural Vitamin K2-7









World's Most Researched Vitamin K2-7

Good for more than you thought possible!

- Good for the Nerves
- Good for Energy
- Good for the Heart
- Good for Diabetics
- Good for Muscles
- Good for the Bones

CERTIFICATIONS :
cGMP, ISO 22000, HACCP, NSF GMP, Halal, Kosher, Non-GMO

Synergia
Life Sciences

SYNERGIA LIFE SCIENCES PVT. LTD.

1503, Universal Majestic, P.L. Lokahande Marg,
Ghatkopar – Mankhurd Link Road, Govandi, Mumbai – 400 043.
Tel: +91 22 6266 9600. Email: info@synergialifesciences.com
Website: www.synergialifesciences.com www.menaquingold.com

EDITORIAL

Someone said, "Life expectancy would grow by leaps and bounds if green vegetables smelled as good as bacon." Yes, if the healthy foods tasted delicious then we would not have many of our problems such as overweight, obesity, heart diseases and many others.

This is exactly what many of the people are trying to do. They are not trying to make greens smell like meat but they are trying to make the less tasty food products delicious. These magicians are flavourists who use all kinds of devices they have to make food desirable.

Flavours are substances that may be added to foods or may form within them while cooking and add a new dimension to the experience one derives from eating the food. Earlier people used to simply depend on the preparation of food itself that would make it more palatable. For example, fire helped cook or roast the food that was gathered in early times.

Later, spices and herbs and other food ingredients were added to foods to give better sensory experience while eating. Addition of salt and sugar enhanced these pleasures.

When we realised that there are small amounts of chemicals present in many flavour ingredients that had tremendous impact on overall taste and smell of prepared food, these were isolated and later were synthetically made to be added in small quantities to impart the flavour to foods without materially changing the food composition much.

More recently many chemicals are synthesized which are not present in foods naturally but would provide a typical flavour sensation. Thus we have natural flavours, nature identical flavours and artificial flavours. These may be used separately or together to provide more complex flavour sensation.

Flavours are usually a mixture of many substances so when a natural flavour is analysed, we find hundred or more chemicals present which together provide a complex sensation which we perceive and identify as typical flavour of fruit or aromatic herb or a roasted chicken.

Commercial flavours are usually not that complex having much fewer substances unless they contain natural flavour components. They may contain nature identical as well as artificial flavour compounds. All the substances and chemicals that are used in flavours are thoroughly tested and found to be safe at the recommended level of usage in preparation of these flavours.

Modern research is trying to find new ways of developing flavour and its perception. Already flavour enhancers have been used for quite some time. Flavour modification is being studied as some fruits are found to make acid food taste sweet. They modify the taste receptors on tongues.

There is research on genetic modification as well as enzyme-mediated flavour being conducted. Along with it the engineering aspects such as flavour stabilisation and carriers of flavours in foods.

Thus a lot of flavour developments are in pipeline so in future we may not only have newer flavours but also new ways of making and using them. We are already seeing at least a hundred different flavours of ice cream where a few decades ago you could count them on your fingertips. This flavour explosion is going to continue as long as consumers are looking for new flavours in new foods they are venturing to explore.

Prof Jagadish Pai,
Executive Director,
PFNDAI

Veg DHA Omega-3 Throughout the Life Cycle

life's DHA™ – Veg DHA Omega-3

Health and wellness throughout life

***life's* DHA™ Supports:**

- A healthy pregnancy in mothers to be
- Brain and eye development for foetuses, infants and children
- Cardiovascular health in adults
- Mental health in senior citizens

Also from Vasta:

Lactoferrin for ID/IDA and for immune health;
Nucleotides for infant nutrition; **Phosphatidylserine** for cognition; **Taurine** for alertness and energy;
Nisin & Natamycin for shelf life extension; **Folic Acid** for well being… and many other ingredients!

VASTA BIOTECH

Vasta Biotech Pvt. Ltd.

M: +91 98416 03903
T: +91 44 24993095 • F: +91 44 24991007
vasta@vastabiotech.com • www.vastabiotech.com

REDA Food Ingredients

Explore The Possibilities

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

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





Taste the Difference

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

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

Sweeteners

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

Taste Enhancer

PRODUCT	SUPPLIER
Yeast Extract	Biorigin

Other Products

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

Let's talk!

REDA Chemicals India Pvt. Ltd.

Head Office
705, Summit Business Bay, Pereira Hill Road, Next to Western Express Highway Metro Station, Andheri Kurla Road, Andheri(East), Mumbai 400099
Tel: +91-22-26837581 / 82
Email: sales.india@redachem.com
www.redafood.com

Warehouses
Mumbai | Delhi | Chennai | Kolkota

Offices
Mumbai | Delhi | Chennai

Roquette Specialty starches
Texturizing and Functional solutions

Specialty starches | Bakery and snacks

Functional starches for indulgent texture and instant thickening in bakery applications.

Cake

Chips

Crackers

Bread

Frosting and icing

Gluten-free products

Key benefits:

- Volume retention
- Suspended inclusion
- Bake stable- fillings
- Gluten-free
- Enhanced texture
- Extended shelf life

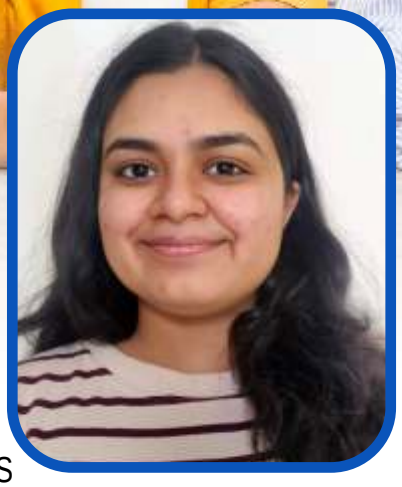
www.roquette.com
Email: foodbiz.india@roquette.com

ROQUETTE
Offering the best of nature™

Create Great Innovations with Roquette Specialty starches

DIETARY AND LIFESTYLE FACTORS IN BONE HEALTH THROUGH OUR LIFE SPAN

WHAT IS REQUIRED FOR OUR HEALTHY BONES THROUGH OUR LIFE CYCLE?



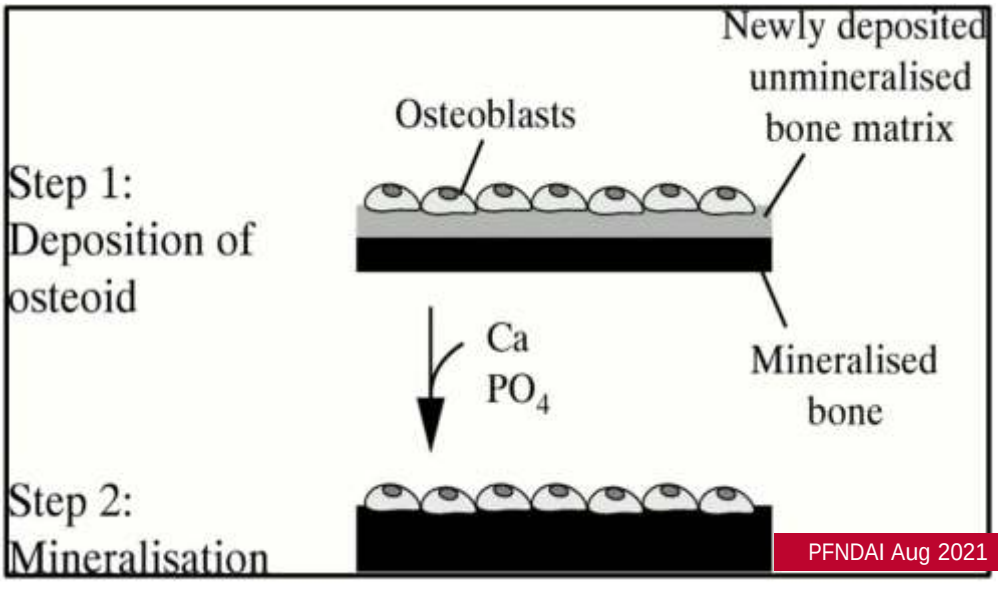
AUTHORS

Dr Meena Godhia
Former Associate Professor:
Food, Nutrition & Dietetics
SVT College of Home Sci,
SNDT Women's Univ

Ms Rashi Nandwani
MSc - Public Health
Nutrition & Dietetics,
Symbiosis Institute
of Health Sciences

Bone formation or ossification is the process of new bone development. This process begins at the foetal stage (initial cartilaginous structure) around the end of the first trimester and ends around adulthood with bone formation through mineralization. The bone consists of 60% mineral, 30% matrix and 10% water.

Mineralization (density) of the bone can be achieved in two processes,
1. Deposition of osteoid and
2. mineralization, as can be seen in the diagram below.



Prolicious

40g Plant based protein (per 200g pack)

2X Protein of regular khakhras

The same amount of protein as a protein bar!

- ☑ GLUTEN FREE VARIANTS
- ☑ LOW GI VARIANTS
- ☑ VEGAN
- ☑ HIGH FIBRE
- ☑ TRANS FAT FREE

+91 93216 24511 | FOLLOW US ON @itsprolicious | www.prolicious.com

Samyog Health Foods Pvt. Ltd.

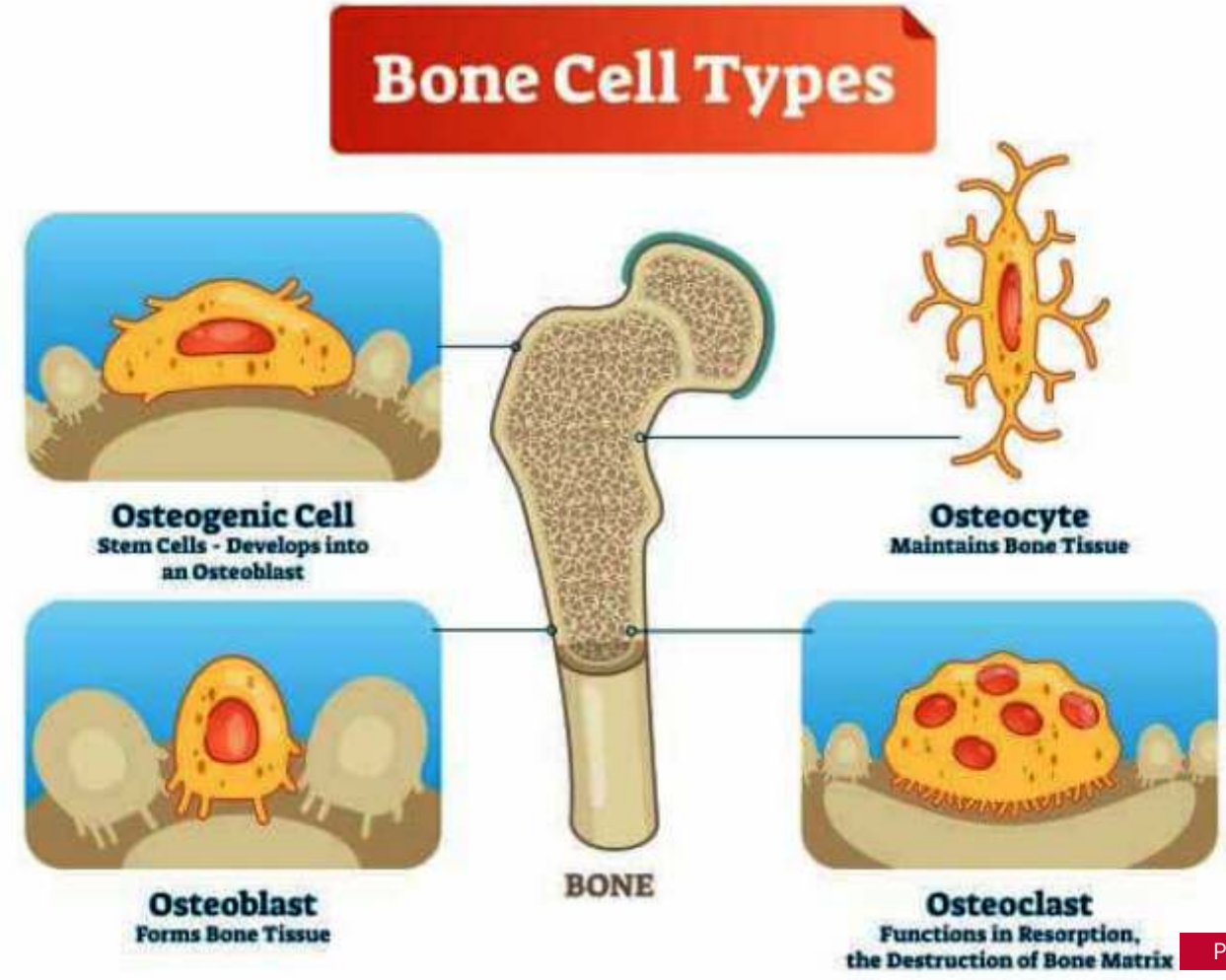
Important cells involved in ossification / bone development include -The immature form of osteoblasts are osteogenic cells. These differentiate into osteoblasts, which are responsible for forming new bones. They are also responsible for building osteoid which is the framework of new bones. Osteocytes are mature osteoblasts. Osteoclasts are cells that are involved in the remodelling of bones via the resorption mechanism. (See table and diagram below) -

REFERENCE-
https://biologydictionary.net/

Osteoblasts are the bone-forming cells, which move to non-mineralized matrix vesicles in order to build new bones or preserve bone composition (structure) followed by the phosphorus attraction and then calcium ions. Secondary ossification develops *after birth* and forms long-bone epiphysis and uneven and smooth extremities. When the child reaches late adolescence and early adulthood 18-25 years, the whole cartilage is replaced with the bone along with fusing the diaphysis (long bones) with each other. Resorption and reconstruction of bone happen over a person's lifetime, well after the original formation of bone.

The hydroxyapatite crystals are the precursor to real bone mineralization, at the cellular level, of the sodium phosphorus protein transport molecules. In the development of all new bones and the restoration of old bones,

Bone Cells		
Cell type	**Function**	**Location**
Osteogenic cells	Develop into osteoblasts	Deep layers of the periosteum and the marrow
Osteoblasts	Bone formation	Growing portions of bone, including periosteum and endosteum
Osteocytes	Maintain mineral concentration of matrix	Entrapped in matrix
Osteoclasts	Bone resorption	Bone surfaces and at sites of old, injured, or unneeded bone



marico

INTRODUCING SAFFOLA OODLES

THE RING NOODLES

Creative Visualization.

46g ₹20

184g ₹76

YUMMY MASALA FLAVOUR

FUN RING SHAPE

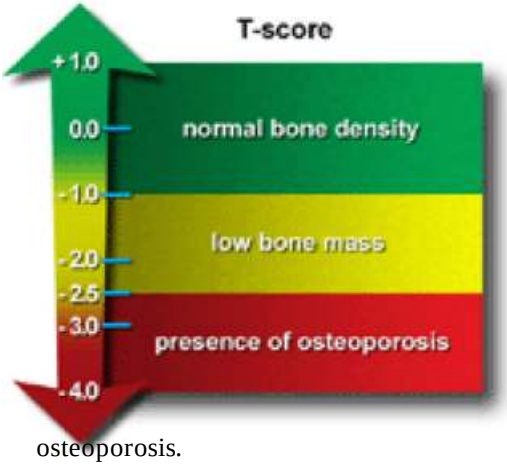
NO MAIDA

both phosphorus and calcium play a vital interdependent function. During stages of development in children and teens, the bones increase in size and weight and attain a high bone mass at about 30 years though bone remodelling and resorption happens over the lifespan of an individual. Consequently, sufficient doses of calcium and vitamin D are required during puberty, adolescence and early adulthood.

Measuring bone mineral density (BMD) -T SCORE AND Z SCORE

A bone mineral density test, sometimes just called a bone density test, detects whether the person has osteoporosis or porous bone that is weak and thin bones and prone to fractures.

T score: This compares bone density with a healthy, young adult of same gender. The score indicates if the bone density is normal, below normal, or at the levels that indicate osteoporosis.

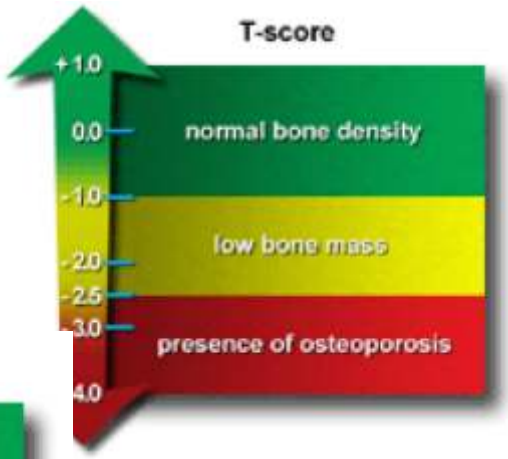


Here's what the T score means:

- -1 and above: Your bone density is normal
- -1 to -2.5: Your bone density is low, and it may lead to osteoporosis
- -2.5 and above: You have osteoporosis

Z score: Compares how much bone mass is there compared with other people matched for age, gender, and size. A Z score below -2.0 means that you have less bone mass for your age and that it could be caused by something other than aging.

The focus on bone-forming is on solid basic bone development and structure as a cornerstone during childhood and young adults. The bulk of new bone formation is done between 25 and 30 years old. The focus is on preserving bone density and avoiding degradation following this phase of development. After age 50, bone density frequently declines significantly, thereby maintaining bone-mineral density and minimizing bone degradation in this life cycle period.



Let us understand all the nutrients-both vitamins and minerals, which are involved with bone formation/ remodelling of bone-which includes calcium-phosphorus, vitamin D, Magnesium, vitamin K, Zinc and carotenoids. Besides diet, there are also lifestyle factors involved, which prevent us from falls/ fractures and osteoporosis.

CALCIUM AND BONE HEALTH

In the human body, calcium is a critical nutrient and the most abundant mineral with the bone tissue as a reservoir ensuring a supply of calcium to maintain a steady concentration in blood muscle, and intercellular fluids. Serum calcium is monitored very closely. It does not fluctuate with variations in dietary diets. Vascular contracture and vasodilatation, muscle activity, nerve propagation, intracellular reporters and hormone secretion require calcium, but less than 1% of overall physical calcium is necessary for these essential metabolic functions. Calcium is found abundantly in milk and milk products, sesame seeds, poppy seeds, ragi, green leafy vegetables, nuts, oilseeds etc. It is also available as a nutritional supplement, in combination with other bone forming nutrients.

Calcium absorption is affected by numerous factors, and calcium absorption is governed by several nutrient-nutrient and nutrient-drug interactions. Calcium absorption is also affected by other causes, including:

- Age and lifecycle stage: Calcium absorption is higher in younger children, as requirement increases due to bone development and increase in height and bone length. This absorption declines rapidly in adults. Absorption increases during physiological states like pregnancy and lactation.
- Presence of lactose favours calcium absorption. Lactose is milk sugar. Hence calcium from milk better absorbed.
- Presence of vitamin D allows better absorbance of calcium. Vitamin D is responsible for promoting calcium absorption and is responsible for maintaining adequate calcium and phosphorus concentration, which are essential nutrients for bone development and density. Deficiency of vitamin D can cause weakening of bones and can also make them brittle.

BEE PHARMO LABS PVT.LTD
THE PLEDGE OF ACCURACY
SINCE 1988

OUR ACCREDITATIONS

FOOD PRODUCT TESTING SERVICES

We are Govt approved testing laboratories by **FDA**
Our test facilities are accredited by **NABL[ISO/IEC 17025:2017] & ISO certified(9001:2015)** by **EURO VERITAS**
Our lab has been approved by **FSSAI, BIS, APEDA**

We Can Undertake Following Food Categories for Analysis

Products

- Dairy products
- Fruits, vegitables and its products
- Cereals, pulses and its products
- Spices, Condiments and its products
- Animal origin, fishery and its products
- Alcoholic and non alcoholic products
- Oil seed, oils and its produts
- Sweets.,confectionary and its products
- Bakery products
- Sugar, Honey & jaggery
- Process, canned food products
- Feeds
- Water
- Ready to eat
- Infant substitute
- Skim Milk Powder

Testing as per FSSAI requirements.

- Pesticide residues, PAH, PCB's
- Mycotoxins
- Natually occurring toxins(NOT,s)
- Heavy metals and minerals
- Minerals & Toxic heavy metals
- Vitamins
- Antibiotics / Residues
- Food Adulteration tests
- Food additives, preservetives and artificial sweetners
- Synthetic food colour
- Antioxidents
- Packaged Drinking analysis as per IS 14543
- Drinking water as per IS 10500
- Process water IS 4251
- Shelf life study(Ambient @ Acclerated)
- Microbiological testing (Bacterial and pathogens)
- Hygiene audit /Kitchen audit
- Allergens
- Sterol Composition

Analytical Facility

1) GC MS MS
2) LC MS MS
3) ICP MS
4) AAS/ GF/ Flame
5) HPLC with UV/ FLD/ RI/ PDA
6) HS with GC FID/ TCD
7) Ion Chromatography with CD
8) Protein / Fat / Fibre Analyzer
9) Elisa Reader
10) FT-IR
11) U V Spectrophotometer
12) Partical size by Malvern (Wet & Dry)

Bee Pharmo Labs Pvt.Ltd
C-2, Hatkesh Udyog Nagar, Mira Bhayander Road, Mira Road (East), Thane - 401107
Tel: 9029774868 to 9029774877 (10 Lines)
info@beepharmo.com | food@beepharmo.com | www.beepharmo.com

- Stomach acidity makes calcium more soluble and increases calcium absorption. However, with aging as amount of HCl production decreases, thereby reducing calcium absorption. Antacids will reduce calcium absorption.
- Anti-nutrients in food such as phytic and oxalic acid interfere with calcium absorption. Spinach is high in oxalates and foods such as whole grains, beans and legumes are high in phytates.
- Amount of calcium consumed: The absorption rate of calcium decreases with increasing calcium consumption from supplements specially.

VITAMIN D AND BONE HEALTH

The degree to which vitamin D directly affects bone is its indirect actions via 1,25(OH)D2- 1,25 dihydroxy-cholecalciferol (active form of vitamin D) stimulation of intestinal calcium and phosphorus absorption as vitamin D favours synthesis of calcium binding protein(CaBP). A major effect of 1,25(OH)2D3 is the provision of calcium and phosphate to bone from the intestine, rather than a direct action on bone. Adequate sunlight exposure is the most cost-effective means of obtaining vitamin D. Whole-body exposure to sunlight in the summer has been calculated to provide the equivalent of 10,000 IU of vitamin D.

Latitude and season affect both the quantity and quality of solar radiation reaching the earth's surface, especially in the UVB region of the spectrum. Latitudes influence for vitamin D synthesis in the skin. Thus, sunlight exposure, which promotes the synthesis of vitamin D, will differ from area to area. India being a tropical country is blessed with sunlight, so daily exposure to sunlight favours vitamin D synthesis beneath the skin. Excessive application of sunblock creams may also have an impact negative impact on vitamin D synthesis.

Sources- Liver, red meat, oily fish (Rawas), egg yolks and fortified foods. Egg yolk (cholesterol content of one large egg yolk approx 186mg)

MAGNESIUM AND BONE HEALTH

Magnesium is an important mineral for the maintenance of healthy bones. Mg is important for all living cells, including osteoblasts and osteoclasts. The bone contains around 60 per cent of the Mg. Because magnesium is closely connected to calcium, it is important for both minerals to have an adequate ratio for their effectiveness. In addition to its structural function in the crystals, the Mg amounts of the bone surface have to do with serum Mg. A 2:1 calcium to magnesium ratio is a reasonable rule of thumb. If you are, for instance, taking 1000 mg calcium, 500 mg magnesium should be taken. It helps to preserve physiological extracellular concentrations of the cation as an exchangeable Mg reservoir, and hence it helps improve bone structure and prevents osteoporosis. In most diets, magnesium is not sufficient, especially if you consume large quantities of refined foods in which much of the magnesium is missing.

Food sources- Leafy Greens (spinach), Nuts (Almonds), Seeds (sesame), Beans and Whole Grains, Banana

VITAMIN K AND BONE HEALTH

Vitamin K is essential for bone health as it's responsible for carboxylation of several bone-related proteins, regulating genetic transcription of osteoblastic markers, and regulating bone reabsorption. Vitamin K works in the bone through a variety of mechanisms. For starters, vitamin K is a required coenzyme for the gamma-glutamyl carboxylase enzyme, which carboxylates glutamic acid (Glu) residues in vitamin K-dependent proteins, converting them to gamma-carboxyglutamic acid (GIa). Thus, adequate consumption of vitamin K is essential FOR GOOD BONE HEALTH.

Food sources- Green leafy vegetables, vegetable oils, cereals grains etc.

ZINC AND BONE HEALTH

Zinc is a mineral that is necessary for normal skeletal growth and bone homeostasis. Zinc also appears to be capable of promoting bone regeneration. Zinc can improve chondrocyte and osteoblast function while inhibiting osteoclast activity, indicating a role for zinc in bone homeostasis and regeneration. This is also essential for preventing osteoporosis. Dietary zinc consumption leads to an increase in bone mass.

Food sources- Nuts (Cashew/ Almonds), Legumes (Chickpeas), Lentils and Beans, seeds (Flax & Pumpkin) and Eggs

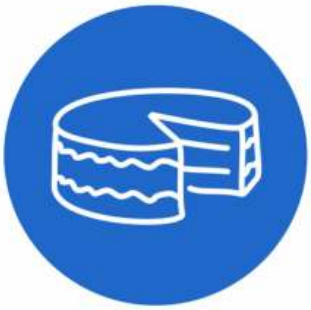
Innovative Co-Development

Leverage on the consumer trends with

AAK Kamani's speciality oils and fats for bakery solutions

Explore our range of Bakery Solutions

Cookies



Cakes

Puffs

To Co-Develop innovative solutions, contact

AAK KAMANI

info.in@aakkamani.com | **1800 266 6363** | www.aakkamani.com

CAROTENOIDS AND BONE HEALTH

Carotenoids, a type of provitamin A, have been shown to have an anabolic effect on bone metabolism. Vitamin A (retinol, retinal, and retinoic acid), which is formed from carotenoids in both animals and humans, has been shown to play a role in bone cell regulation and may have an anabolic effect on bone. Cryptoxanthin, among other carotenoids, has been found to have a potential anabolic effect on bone by stimulating osteoblastic bone formation and inhibiting osteoclastic bone resorption.
Food sources- Carrots, Pumpkin, green leafy veggies, Pumpkin, papaya , sweet potato

LIFESTYLE FACTORS AND BONE HEALTH

Bone health is governed by numerous lifestyle factors like exercise, ageing and diet. Regular exercise is needed for bone strength, balance and coordination and promotion of a good bone density. So if we want healthy bones during our lifespan regular physical activity is the mantra and vice versa, lack of physical activity can adversely affect our bones by causing urinary calcium loss from bones.

Exercise can influence the bone through many processes including the strength of contraction of muscle, loading of gravity and effects of endocrine and paracrine. The bone is subjected to mechanical stresses through muscle contraction and gravity loading during physical activity. Hence weight bearing exercises, using your own body weight as resistance or weight training is recommended. Exercise is an important stimulus for healthy bones. Exercise causes muscle contraction, which in turn acts to improve bone strength. Life-long PA is associated with a better bone quality, thus potentially resulting in a stronger bone.

AGEING AND BONE HEALTH

Osteoporosis, a porous and weak bone disease, is a major public health issue among the elderly. The hip, vertebrae, wrist, pelvis, ribs and other bones are the most often involved in osteoporosis. Bone loss happens during the natural ageing process, particularly in women who are postmenopausal because of reduced oestrogen levels. The risk for osteoporosis, including female, thin, inactive or old age, is increased by several factors such as smoking cigarettes; alcohol in excessive quantities.

If inadequate intakes of calcium or insufficient absorption of calcium, a bone breakdown happens as the body requires the calcium it has retained to sustain natural biological functions. The risk of calcium deficiency is also elevated in both teenagers and the older populations due to dietary patterns, and female athlete's triad, that is sports persons with disordered eating. Calcium deficiency is also seen in individuals with a milk allergy or lactose intolerance because of the dietary limit on foods containing calcium. These persons may be handled successfully with dietary amendments.

Hence, bone health is essential for mobility and good quality of life. A lot of factors interact in a complex manner which determines the overall bone health. Hence, it is important we understand the role of diet, lifestyle factors like exercise, exposure to sunlight, ageing to optimize bone health.

5 TIPS FOR A GOOD BONE HEALTH

1. Eat a balanced diet and pay emphasis to food sources rich in calcium, vitamin D, vitamin K, carotenoids, zinc and magnesium. Check out nutrient-drug interactions-like antacids.

2. Lifestyle modifications with respect to age should be made for better bone health by including regular physical activity and exercise in our daily schedules. Both aerobic and anaerobic activities are important for good bone health. Include strength training, walking, jogging, climbing or swimming in your daily routine, based on your choice.

3. Have an adequate protein intake as it helps in better absorption of calcium which is essential for bone health.

4. For vitamin D, expose yourself to sunlight every day

5. Good diet, adequate exercise, good sleep quality and stress management are prerequisites of good bone health.

HEXAGON NUTRITION
Nutritionally Yours.....

YOUR CHILD IS WHAT YOU EAT!

In the daily diet of breastfeeding mothers, Micronutrients play a vital role.
It provides an effective post-natal care strategy and replenishes the mother's nutrient stores so that she can provide proper care to the newborn.

We at Hexagon Nutrition provide innovative and sustainable solutions for breastfeeding mothers by combining our technical expertise in food fortification because every lactating mother and her newborn deserves complete nutrition.

REFERENCES

1. National Institutes of Health (US). Dietary supplement fact sheet: calcium [Internet]. Bethesda (MD): National Institutes of Health. Available from http://ods.od.nih.gov/factsheets/Calcium/HealthProfessional/ [cited 2014 August 23]. 2013.

2. van der Velde RY, Brouwers JR, Geusens PP, Lems WF, van den Bergh JP. Calcium and vitamin D supplementation: state of the art for daily practice. Food Nutr Res 2014;58.

3. Webb, A. R., Kline, L., &Holick, M. F. (1988). Influence of season and latitude on the cutaneous synthesis of vitamin D3: exposure to winter sunlight in Boston and Edmonton will not promote vitamin D3 synthesis in human skin. The Journal of clinical endocrinology and metabolism, 67(2), 373–378. https://doi.org/10.1210/jcem-67-2-373

Bikle, D. (2010). Vitamin D: newly discovered actions require reconsideration of physiologic requirements. Trends In Endocrinology & Metabolism, 21(6), 375-384. doi: 10.1016/j.tem.2010.01.003

COMING EVENTS

2021 Annapoorna ANUFOOD India
Sep 06-08, 2021
NESCO Centre Hall
NESCO, Western Express Highway, Goregaon, Mumbai
Web: https://www.anufoodindia.com/
Contact: info@koelnmesse-india.com

Fi India & Hi 2021 – Food Ingredients and Health Ingredients India
Sep 30, 2021
Bombay Exhibition Center (BEC), Mumbai
Contact: https://www.figlobal.com/india/en/forms/contact-us.html

4TH International Conference on Food and Nutrition ICFN 202
Sep 23-24, 2021
Immunity, Nutrition and Covid-19
Contact: https://www.foodandnutritionconference.com/conference-registration.php

FINE ORGANICS

A Fine **Add** itude

Speciality Food Additives

Bakery
- ROMOBAN Calcium Propionate, Sodium Propionate
- SMOOTHEX Mono-diglycerides SE/NSE
- FINAMUL-90 Distilled monoglyceride
- FINAMUL-97/6080 Sodium stearoyl lactylate
- FINAMUL-9750 a unique blend of emulsifiers
- FINAMUL-DL/4050L DATEM liquid
- FINAMUL-4030 DATEM Powder
- FINAMUL-2306 Premium blends of emulsifiers for bread
- FINAMUL-4087/4095 : Specialised liquid emulsifier blends

Confectionery
- FINAMUL-2402 Polyglycerol polyricinoleate
- FINAMUL-1909 Ammonium phosphatide
- FINAMUL-2816 Premium blends of emulsifiers for chocolate
- FINAMUL-6030 Sorbitan tri stearate
- FINAMUL-6000 Sorbitan mono stearate
- FINAMUL-AG-5012 Acetem

Oils & Fats
- FINAMUL-NC 9110 Anti- crystallizing agents for oils
- FINAMUL-CG 3000 Citric acid ester of mono-diglycerides
- FINAMUL 8300 Anti-spattering agents/ frying efficiency of oil

Dairy & Ice Creams
- FINAMUL-5565 Mono-diglycerides-60%
- FINAMUL-PGE Polyglycerol stearate
- FINAMUL-7000 PGMS 90
- FINAMUL-LT 27 Lactic acid esters of mono-diglycerides

Speciality Additives
- MCT oils

Fine Zeelandia

Pastry Mixes
- Biscamix Sponge Vanilla/Choco Egg Free
- Moscamix Sponge Vanilla/Choco Egg Free
- Dream Muffin Vanilla/Choco Egg Free

Bread Mix
- Gamma Bread Improver, Panomix Bread Mixes

Pastry Concentrates
- Biscamix Vanilla/Choco Egg Free Concentrate
- Dream Muffin Vanilla Egg Free Concentrate

Pan Release Agent
- Carlo, Carlex, Ovam

Cake Gel
- Finagel/Finagel Super

FINE ORGANIC INDUSTRIES LTD

Fine House, Anandji Street, Off M G Road, Ghatkopar East, Mumbai 400 077, India. Tel: + 91 (22) 2102 5000
Email:info@fineorganics.com • Web: www.fineorganics.com

DECLARING LICENSE NUMBER ON COMMERCIAL DOCUMENTS

AUTHOR
Dr Joseph I Lewis,
Chairman,
Regulatory Affairs,
PFNDAI

Whenever control measures are proposed through regulation or by "ad hoc orders", data on the specific market failure or fraudulent practice from inspections provide evidence. If no evidence is available, the order is likely to be viewed as arbitrary and without basis. In a digital age, where every measurable event can be captured, assembled , stored and analysed, to propose regulations on appeals of 'public or consumer interest' is unacceptable. Moreover, if current systems are incapable of measuring theefficacy of existing regulations/standards, future ones too are unlikely, thereby merely increasing the regulatory burden without weeding out ineffective ones.

The frequency of issuing 'orders' and 'directions' instead of procedures mandated by law continue in spite of the observations of the CAG [Report 37 of 2017] presented to the Standing Committee, Rajya Sabha, 2018. The CAG commented " FSSAI continues to issue directions without following the procedure of previous approval of the Central Government, previous publication and notification (as contained in section 92 of the Act), the placing of such regulations and rules before Parliament (as contained in section 93 of the Act), despite the Supreme Court declaring such procedure as mandatory. Audit noticed many instances where FSSAI issued directions and notified regulations without the requisite approval of Food Authority and the Ministry"

At a recent webinar, several observations and concerns, including those above, emerged from presentations, panel discussion and participant queries on the 'order'. Briefly, the specific issue which necessitated the order in the absence of evidence or data is unconvincing and whether the proposed measure will resolve the problem if the failure or gap in the supply chain is not clearly identified.

Whenever control measures are proposed through regulation or by "ad hoc orders", data on the specific market failure or fraudulent practice from inspections provide evidence. If no evidence is provided, the order is likely to be viewed as arbitrary and without basis. In a digital age, where every measurable event can be captured, assembled, stored and analysed, to propose regulations on appeals of 'public or consumer interest' is unacceptable. Moreover, if current systems are incapable of measuring the effect or impact of existing regulations/standards, future ones are unlikely too, thereby increasing the regulatory burden without weeding out ineffective ones.

In an article published (October 2019), Dr. P.I Suvrathan the first chairperson, FSSAI, posed a visionary question "Can FSSAI become a world class regulator", while laying out the landscape for arriving into this space. Relevant in context here, these are:

- The procedures followed need to be transparent, so that stakeholders know how FSSAI has arrived at the decision and can expect similar decisions about similar issues in the future also, thereby facilitating orderly investment decisions.
- Every consumer and food business operator has the right to be treated fairly, according to declared principles, and applied uniformly, subject to individual peculiarities.
- FSSAI should be well aware of the realities of running a food business in the country, the points at which it needs to intervene and the constraints, which need to be reduced.
- FSSAI needs to be in a position to develop a consistent understanding of the characteristics of market failure, so that it can intervene to protect consumers where the market is not balanced, effective, or does not provide proper levels of protection

FSSAI needs to be in a position to develop a consistent understanding of the characteristics of market failure, so that it can intervene to protect consumers where the market is not balanced, effective, or does not provide proper levels of protection

The issues raised below in the order gives the impression of there being no mechanism operating in the market to address track and trace or lodging complaints.

• The LN of any food business operator is not easily visible or available, to consumer or service recipient, and … if it is not available to him, expecting him to complain with complete coordinates is an uphill task. Even regulators find it difficult to trace the origin of complaint and attend to it promptly…

• The LN is compulsory required on packaged food labels, the issue lies in case of restaurants, mithai shops, caterers, even retail stores etc. FSS(Licensing & Registration of Food Businesses) are being amended to mandate display of "Food Safety Display Board". However there remains a deficit of mechanism for consumer to know the LN of service/product provider.

• Even in case of pre-packaged food where LN number is printed on the pack, there exists a deficit of track and trace mechanism whereby the path of the package from manufacturer to consumer can be traced.

Firstly, texts with legal implications should not use casual and offhand expressions e.g. "product provider", "service provider", "service recipient"; all these expressions are related to business operators identifiable as. manufacturer, packer, labeller, transporter, distributor, wholesaler or retailer and food products being either pre-packaged, or sold loose (mithai shops) or served on site (restaurants, canteens, caterers).

The pre-packaged food market model provide two distinct features: product and supply chain integrity. Consumer safety and interests are associated more with product, much less with supply chain and commercial documents; the latter being essential but not central for tracking tracing and lodging complaints. Three label declarations, required by law, the absence of which is a violation, create food market end of a safety management system (FSMS), used for tracking and tracing downstream/upstream product flows

- A 14-digit LN code, implemented since August 2011, precisely identifies and locates the state, the officer under whose jurisdiction the facility is licensed and the FBO who places the product on the market.
- All handlers in the food supply chain, wholesaler, distributor or retailer u/s Sections 27 are liable for any article of food received, that is "unidentifiable" of manufacturer or wholesaler or distributor as case may be. While the food package is traceable the handlers may not be so if the license number is unavailable on commercial documents.
- The batch/code/lot a unique identification mark by which the food package can be traced in manufacture and identified in distribution; printed on every pre-packaged food. There is no "deficit of "track and trace "mechanism of the product, which carries the failure. The LN on invoices/bills will additionally identify the FBO, under the recall mechanism.
- Thirdly, every pre-packed food label displays 'customer care' details, phone or email, where the customer can lodge a complaint. Thereafter routes exist to escalate or copy the complaint to relevant departments or portals of the Ministry of Consumer affairs and/or the FSSAI.

Handlers in the packaged food supply chain are assigned liabilities by law; however, whether these entities are held accountable to deliver the expected performance remains unknown. Foods exempted from labelling have to rely on other methods to track, trace and/or lodge complaints. The question arises whether the measure is implementable.

The food and grocery retail sector dominated by traditional store formats (corners shops, kirana stores etc) hold about 98% of the total market share, with modern trade formats (supermarkets, hypermarkets) expected to double from 2% to 4% by 2020. In terms of number of outlets, modern formats account for about 8000 of a total 12.8 million retail outlets (GAIN Report No. IN9062, 2019). While the order seeks only for inclusion of the LN on existing commercial documents, which is the simplest part, the task of monitoring compliance is humongous. The measure needs a more open and transparent consultation with stakeholders.

HAVING YOUR FAVOURITE CHOCOLATE WITHOUT ANY GUILT

AUTHOR
Ms Swechha Soni,
Manager- Food & Nutrition,
PFNDAI

Chocolate is something that maybe hardly resisted by anyone. It is often difficult to control the temptation for chocolate and is certainly the most liked sweet in the world making it the go-to treat for most of the celebrations. People indeed like to indulge in chocolate in all its forms and for some it may be a daily dose of happiness especially kids. And no doubt it always brings a wide smile on everybody's face which is why it is believed to be a great stress buster. Well apart from this it cannot be denied that chocolate has a bad reputation for causing weight gain due to its high fat and sugar. However, this needs to be thoroughly evaluated before making the final judgement. Therefore, let's do some excavation to find out the other side of the chocolate.

As typically known, chocolate is made from tropical *Theobroma cacao* tree seeds and its use is about 4000 years old in the form of chocolate beverages. In fact, the medicinal uses of cacao or chocolate either as a primary remedy or as a vehicle to deliver other medicines, have been documented between the 16th and 20th centuries. Among these, three applications are most common: (i) to induce weight gain in emaciated patients; (ii) to stimulate the nervous system; and (iii) to improve digestion and elimination. [2]

Over the years since then, it has emerged to become a popular product enjoyed by millions every day due to its unique rich and sweet taste. This popularity has also given rise to innumerable studies on the effect on human health. The key ingredient in chocolate, contains biologically active phenolic compounds. Cocoa powder contains up to 50 mg of polyphenols[2] per gram. Single servings of cocoa and cocoa products contain more phenolic antioxidants than most foods. Cocoa contains a number of polyphenolic compounds, but it is particularly rich in flavonoids—specifically, flavanols, also called flavan-3-ols. The main flavanols found in cocoa are epicatechin and catechin, and procyanidins. Procyanidins provide the majority of antioxidant activity in cocoa products.

Such insights coming out over the last decade through various studies have changed people's views on chocolate, and it has stimulated research into how it might impact aging, and conditions such as oxidative stress, blood pressure regulation, and atherosclerosis.

Chocolate's antioxidant potential may have a range of health benefits. The higher the cocoa content, as in dark chocolate, the more benefits there are. Dark chocolate may also contain less fat and sugar, but it is important to check the label.

Types of chocolate

Fine chocolate falls into three categories: dark chocolate, milk chocolate and white chocolate

- Dark chocolate has chocolate liquor, cocoa butter, lecithin, sugar and vanilla.
- Milk chocolate has all of the above plus milk fats and milk solids.
- White chocolate contains everything milk chocolate does except chocolate liquor

Some of the Health Benefits of Chocolate

Although the sugar and fat content in chocolates may be a bit concerning for the heart health but here's something that cannot be missed out. Cacao beans are full of phytonutrients, which act as antioxidants and provide additional benefits. Furthermore, cacao beans are rich sources of iron, copper, magnesium, zinc and phosphorus. Dark chocolate contains two to three times more beneficial flavanols than milk chocolate because milk chocolate's cacao concentration is diluted with milk and possibly more sugar.

Heart Health

One study, published in The Journal of Nutrition, [1] suggests that chocolate consumption might help reduce low-density lipoprotein (LDL) cholesterol levels, also known as "bad cholesterol." The study aimed at studying the effect of plant sterols (PS) and cocoa flavanols (CF) on cholesterol levels and the authors after complete study found and concluded that "Regular consumption of chocolate bars containing PS and CF, as part of a low-fat diet, may support cardiovascular health by lowering cholesterol and improving blood pressure."

Chocolate may also help prevent the development of atrial fibrillation, a type of irregular heartbeat that increases the risk of heart failure, stroke and more. This was supported by the evidence that adults who ate chocolate at least once a month had 10 to 20 percent lower rates of developing atrial fibrillation than those who never or rarely ate chocolate.

Good Mood

Consuming chocolate may help improve your mood, making you feel calmer and more content. Dark chocolate stimulates the production of endorphins, chemicals in the brain that create feelings of pleasure. Dark chocolate also contains serotonin, an antidepressant that can elevate mood. Flavanols are believed to play a role in chocolate's mood-enhancing effects, but don't fall into the habit of finding comfort from food or turning to it in emotional times as one may simply slip into chocolate coma (overeating, resulting intake of too many calories).

Good Cognitive function

Chocolates have been very much associated with good mood. But can they really contribute to the brain function? Well, some of the studies do suggest that chocolate may be good for the brain as they focused on identifying chocolate's ability to improve cognitive function. A study [5] published in the Journal of Alzheimer's Disease in 2016 found that chocolate consumption might lower the risk of cognitive decline in older people. The study looked at nearly 400 Portuguese citizens over age 65 and saw that those who ate a moderate amount of chocolate — on average, one chocolate snack a week;decreased their risk of cognitive decline by 40 percent over two years. Those who ate more chocolate, or those who had more caffeine, saw fewer cognitive benefits. This study did not differentiate between milk and dark chocolate, or identify which component of the chocolate is to be really credited for this. On the contrary another study [4] published in 2014, indicated that a cocoa extract, called lavado, might reduce or prevent damage to nerve pathways found in patients with Alzheimer's disease. This extract could help slow symptoms such as cognitive decline.

Effects on Insulin Resistance

It is also believed that the flavanols in cocoa may improve insulin resistance by reducing oxidative stress, improving endothelial function and may also help in glucose metabolism. As identified, oxidative stress is the underlying mechanism for both insulin resistance and cardiovascular disease. Possible effects on insulin sensitivity have also been associated with effects of cocoa on endothelial function as increased insulin sensitivity improves endothelial function; conversely, improvement in endothelial function can increase insulin sensitivity [3]. This suggests that cocoa may be useful in improving insulin resistance in metabolic syndrome and slowing the progression to type 2 diabetes.

Chocolate may help with weight loss

Eating high-quality dark chocolate every day may even, according to a study in Journal of Agriculture and Food Chemistry, help with weight loss. The flavonoids in dark chocolate help reduce insulin resistance, which prevents spikes in blood sugar levels, discouraging you from overeating. Many polyphenols, including catechin and epicatechin, have been found to alter glucose metabolism in animal and in vitro studies

Athletic Performance

A little dark chocolate for the athletes might boost oxygen availability during fitness training, as found by The Journal of the International Society of Sports Nutrition. In this study, [6] cyclists' performance doing time trials was noted and it was found that "After eating dark chocolate, the riders used less oxygen when cycling at a moderate pace and also covered more distance in a two-minute flat-out time trial." It is believed that in this case, the major role was of the flavonols – epicatechins found in dark chocolate which is known to enhance the release of nitric oxide in the body.

Effect on Skin

Cocoa as an ingredient is found in many skin essentials like moisturizers, face packs, scrubs, etc but its beneficial effects on skin does not just limit to its use as a topical agent. Cocoa flavanols have been identified in protecting skin from damage against UV light.

The concerning side of chocolate

Chocolates do have some beneficial components but the fact that consuming it in excess is concerning. Consuming an energy-dense solid chocolate regularly may cause weight gain due to its sugar and fat content. Another unhidden fact that can be witnessed in most of the kids who are die hard chocolate lovers is that excess chocolate consumption can cause tooth decay.

Modern concerns have also given rise to modern solutions as the market is now flooded with chocolates that are less in calories or sugar free and even chocolates with prebiotics for enhanced health outcome.

Nevertheless, when it comes to consumption of a food and its relation to health, moderation is the only key. Hence, a good practice is to always evaluate both sides of any product- knowing its health risks and benefits and deciding the servings, checking the labels for the clear specification of the product that you are choosing so that you can have the luxurious pleasure of having your most favourite chocolate without any guilt.

References

1. Allen RR, Carson L, Kwik-Uribe C, Evans EM, Erdman JW Jr. Daily consumption of a dark chocolate containing flavanols and added sterol esters affects cardiovascular risk factors in a normotensive population with elevated cholesterol. J Nutr. 2008 Apr;138(4):725-31. doi: 10.1093/jn/138.4.725. PMID: 18356327.

2. David L. Katz and others, Cocoa and Chocolate in Human Health and Disease, Antioxid Redox Signal. 2011 Nov 15; 15(10): 2779–2811.

3. Jeong-a Kim and others, Reciprocal Relationships Between Insulin Resistance and Endothelial Dysfunction, Circulation. 2006;113:1888–1904

4. Jun Wang, Cocoa extracts reduce oligomerization of amyloid-β: implications for cognitive improvement in Alzheimer's disease, J Alzheimers Dis. 2014;41(2):643-50.

5. Moreira, Afonso et al. 'Chocolate Consumption Is Associated with a Lower Risk of Cognitive Decline'. 1 Jan. 2016 : 85 – 93.

6. Patel, R.K., Brouner, J. & Spendiff, O. Dark chocolate supplementation reduces the oxygen cost of moderate intensity cycling. J Int Soc Sports Nutr 12, 47 (2015).

ROLE OF NUTRITION IN CANCER

AUTHOR
Ms. Girija Damle,
Dietitian, PFNDAI

With the increasing incidence of cancer, the focus on healthy eating has also increased. One often comes across a food product claiming to be protective against cancer or processed in a certain way to get rid of the carcinogen (cancer-causing substance) that would have otherwise been present in the food.

In simple words, cancer is often a chronic, debilitating disease caused as a result of uncontrolled cellular growth in the body. The earliest signs of cancer may include a change in a mole or wart, change in skin texture, unexplained weight loss, persistent (usually non-tender) lumps or swollen glands, etc. However, cancer may not always present as a swelling or mass in the breast, neck, joins, abdomen, or head. Some cancers are non-solid and affect the blood cells. This class of cancer is known as leukemias. These may present as persistent fatigue, easy bruising, red spots on the skin, etc.

You must have come across terms like 'stage 4 cancer' or 'advanced-stage cancer'. When cancer progresses from stage 1 to stage 4, it means that with time, cancer has metastasized or spread to other parts of the body and in many cases has also modified the body's anatomy to ensure that the cancer cells get enough nutrition and oxygen to survive and grow. When cancer is confined to the part of the body where it originated, it is easier to cure it with surgery, radiation, or medicines. Thus, the earlier cancer is diagnosed, the better are the treatment outcomes.

Food is an important environmental factor that modulates the risk of developing cancer. Lack or excess of some nutrients, chemicals, or foods may increase or decrease the risk of cancer. A deficiency of some nutrients like vitamin A, D, and folate is known to increase cancer risk. So make sure you add coloured fruits and vegetables like carrot, spinach, sweet potato, and dairy, and eggs in your diet to fulfill your daily vitamin A requirements of 800-1000 mcg/day. Some early signs of vitamin A deficiency are dry skin, dry eyes, and frequent infections. Vitamin D may be present in negligible amounts in some foods like mushrooms and eggs. It is majorly produced in your skin when exposed to the sun's UVB rays. As a result of a sedentary lifestyle, air-conditioned cars, homes, and workplaces, and increasing air pollution, exposure to adequate UVB sun rays is not possible. It is thus important to regularly get your serum vitamin D levels checked, and consult a doctor for supplementation in case of deficiency. Folate is a type of B vitamin found in green leafy vegetables, fruits, beans, and nuts. One may not need to depend on supplements to meet folate needs, but a well-balanced diet rich in green leafy vegetables and whole pulses, and legumes usually is enough. Apart from these nutrients, adequate intake of selenium, vitamin C, and E is known to strengthen the immune system and reduce the risk of developing cancer.

Excess intake of foods containing additives, artificial colours, trans fats, and highly processed foods may also increase the risk of developing cancer.

Processed and red

Chemicals found in meat, added during processing or produced when cooking can increase the risk of cancer by damaging our cells. These chemicals include haem,nitrates, and nitrites, heterocyclic amines (HCAs), and polycyclic amines (PCAs). Haem is a red pigment that is naturally found in red meat and processed red meat. High intake can damage cells, and cause bacteria in the body to produce harmful chemicals, which may increase the risk of oesophageal and stomach cancer.Nitrates and nitrites are sometimes used to keep processed meat fresher for longer. When consumed, nitrites can be converted into cancer-causing chemicals (N-nitroso compounds or NOCs). These chemicals may be the reason why processed meat increases the risk of cancer more than fresh red meat.Heterocyclic amines (HCAs) and polycyclic amines (PCAs)are produced when meat is cooked at high temperatures, which includes grilling or barbequing. They can damage cells in the bowel, and increase the risk of colon cancer.

Alcohol

Alcohol consumption increases oxidative stress in the body and impairs the body's ability to absorb nutrients. Alcoholic beverages may also contain a variety of carcinogenic contaminants that are introduced during fermentation and production, such as nitrosamines, asbestos fibers, phenols, and hydrocarbons. These factors associated with alcohol intake increase the risk for oral, esophageal, kidney, and liver cancer. Studies show that the higher the alcohol volume and intake frequency, the higher is the risk.

On the other hand, some studies also that consumption of grape wine that is rich in a polyphenol called resveratrol protects against cancer. However, any potential benefits of alcohol consumption for reducing the risks of some cancers are likely outweighed by the harms of alcohol consumption.

Charring or cooking at very high temperatures

Harmful chemicals, called heterocyclic amines (HCAs) and polycyclic aromatic hydrocarbons (PAHs), are produced when muscle meat, including, pork, fish, and poultry, is cooked using high-temperature methods. Exposure to high levels of HCAs and PAHs may increase the risk of developing cancer. Acrylamide is another chemical that is associated with higher cancer risk. It is found in tobacco smoke and some foods and can be produced when certain vegetables, such as potatoes, are heated to high temperatures.

Artificial sweeteners

Artificial sweeteners, also called sugar substitutes, are substances that are used instead of sucrose (table sugar) to sweeten foods and beverages. Because artificial sweeteners are many times sweeter than table sugar, much smaller amounts are needed to create the same level of sweetness. In the 1970s a study on rats had shown an increased risk of bladder cancer due to a high intake of saccharin and cyclamate. Ever since various studies (majorly animal studies) have been conducted on various artificial sweeteners, but the results have been inconclusive. However, the USFDA has prescribed safe

Table 1. Acceptable daily intake of artificial sweeteners according to FDA

Artificial Sweetener	Acceptable Daily Intake
Saccharin	5 mg/Kg body weight
Cyclamate	7 mg/Kg body weight
Aspartame	50 mg/Kg body weight
Sucralose	15 mg/Kg body weight
Acesulfame-K	15 mg/Kg body weight
Stevia	4 mg/Kg body weight

limits for most artificial sweeteners and prolonged intake beyond these limits may increase the risk of developing cancer.

Foods that reduce the risk of cancer:

Some foods contain functional compounds that have been found to modulate the immune system and protect against cancer. For example, garlic contains allicin, berries contain anthocyanins, turmeric contains curcumin, tomatoes contain lycopene, etc. A diet rich in fiber-containing foods like fruits, vegetables, flax seeds, whole grains, and pulses is known to protect against colon cancer. Soybean and other soy products contain phytoestrogen that mimics estrogen activity in post-menopausal women and protects against breast cancer.

Fun fact: Cooked tomatoes contain more lycopene than raw tomatoes. So go ahead and make that tomato gravy over having it in salads and wraps.

Some cooking methods are known to be better than others when it comes to cancer risk. For example, steaming, boiling, sautéing at low temperatures, etc are thought to be healthier than deep fat frying, air frying, grilling, smoking, or cooking at very high temperatures.

Food for cancer patients:

The nutrient requirements of cancer patients may or may not be more than that of a healthy individual. This depends on the metabolic needs, stage of cancer, and type of cancer treatment the patient is taking. For example, some patients may suffer from cancer cachexia while others may not have to drastically change their intake.

Cancer cachexia is a wasting syndrome characterised by involuntary weight loss, muscle wasting, fatigue, loss of appetite, anemia, etc. It is a cumulative result of disease progression, reduced food intake, and cancer therapy side effects.

Eating well can not only help cancer patients correct and prevent malnutrition but also helps to boost mood, improve quality of life and cope well with the side effects of chemotherapy and radiation therapy.

Staying hydrated

Cancer patients lose a substantial amount of water due to side effects like vomiting, diarrhea, or reduced oral intake. Water helps with many bodily functions, from digestion and metabolism to flushing toxins from the body and maintaining body temperature. Getting enough fluids also helps prevent constipation and lethargy. Regular sips of water, increased intake of watery foods like fruits, soups, and buttermilk, sucking on popsicles and ice chips can improve water intake and prevent dehydration.

Protein

Protein helps repair tissues, build blood cells, and support the immune system. Getting enough protein can patients heal faster from the side effects of radiation therapy and chemotherapy, while also helping to prevent infections. Foods like cheese, eggs, milk, yogurt, lean meats, poultry, fish, beans, peanut butter, nuts, lentils, and soy are all good sources of protein.

Neutropenic food

Neutropenia means low levels of neutrophils, a type of white blood cells. Thus a neutropenic diet is a special diet for patients with a compromised immune system due to low levels of neutrophils. This special diet ensures that not pathogenic organisms enter the body and challenge the immune system. One must take utmost care to maintain hygienic conditions while storing, preparing, serving, and consuming food.

Food from restaurants, street vendors, uncooked foods, fruits with thin skin like grapes, plums, apples, etc, fermeted foods, unpasteurized dairy products, etc is completely avoided on a neutropenic diet. Patients undergoing bone marrow transplants as a therapy for cancer, most likely to be prescribed a neutropenic diet.

Enteral and parenteral nutrition

Some cancer patients are unable to consume food orally due to poor appetite, swelling in the mouth, obstructive tumors around the mouth, unconscious state, swallowing difficulties, etc. For patients, a feeding tube is inserted via the nose into the stomach or small intestine to maintain adequate oral intake. This type of feeding method is known as enteral nutrition. Well-cooked, blenderized, and thoroughly strained food (kitchen feeds) or commercially available formulas may be fed through the feeding tube. The latest nutrition guidelines suggest the use of commercially available formulas for enteral nutrition support because they are hygienically prepared and packed and are energy and nutrition-dense. However, these products may not always be affordable, thus well-planned kitchen feeds are still prescribed for many patients.

Managing cancer therapy side effects:

Here are some tips to improve nutrition intake in patients suffering from side effects like poor appetite, nausea, vomiting, diarrhea, etc.

Poor appetite

- Try consuming smaller, more frequent meals and snacks.
- Try changing the time, place, and surroundings of meals.
- Consume high-calorie, high-protein meals, and snacks like nuts, dried fruits, boiled eggs, etc
- Avoid forcing the patient to eat. This may make them irritable and worsen their appetite.
- Include the patient in choosing the food that is going to be offered.

Mouth sores

- Use soft foods that are easy to chew. Eg- soft boiled rice, porridges, stewed fruits, scrambled eggs, etc.
- Avoid foods that may irritate the mouth, like citrus fruits or juices, spicy or salty foods, rough, coarse, or dry foods (raw vegetables, crackers, toast).
- Cut foods into small pieces.
- Serve foods cold or at room temperature since hot foods may irritate the mouth and throat.
- Use a blender to make foods softer and easier to chew.
- Add mildly flavoured sauces or gravies to food to make them easier to swallow.
- Offer salty or seasoned foods.

Taste changes

- Try serving foods at different temperatures. Warm food may taste better than room temperature or cold food.
- Offer foods that look and smell good.
- Regularly rinse the patient's mouth with a mouth wash or plain water.
- Try sweet or sour foods and drinks such as lemonade.

Dry mouth

- Offer hard candy, popsicles, or chewing gum to stimulate salivation.
- Offer softer foods that may be easier to swallow.
- One may use lip balm or other moisturizers to keep the patient's lips moist.
- Offer small, frequent sips of water.
- Offer foods that have more liquid in them. Example dal, buttermilk, soups, porridge, water fruits etc.

Nausea and vomiting

- Try easy-to-digest food such as clear liquids, toast, rice, and dry cereals
- Avoid foods that are fried, greasy, very sweet, spicy, hot, or strongly flavored.
- Offer sips of water, juices, sports drinks, or other beverages throughout the day.
- Offer small portions of food that the patient is comfortable with.

Diarrhea

- Try to avoid high-fiber foods like nuts, seeds, whole grains, dried beans, peas, raw fruits, and vegetables.
- Try to limit greasy, fatty, or fried foods.
- Limit gassy foods like beans, cauliflower, broccoli, cabbage, and onions.
- Consume small, frequent meals and liquids throughout the day.
- Limit milk and milk products if lactose intolerance is a problem.
- Drink plenty of fluids throughout the day. Hot or warm beverages are sometimes helpful.

Constipation

• Include high-fiber foods, like nuts, seeds, whole grains, dried beans, peas, raisins, prunes, raw fruits, and vegetables.
• Keep the skin on vegetables when cooking them.
• Add bran or wheat germ to foods such as bread (chapatti/roti) and porridges.

Snacking

Snacking can be an effective way to incorporate energy and nutrient-dense foods into the patient's diet to ensure that the daily nutrient requirements are met.

Cancer Diets

One may come across suggestions to start a vegan diet or a raw diet to cure cancer. These diets may however not be suitable for some patients. For example, a vegan diet can be deficient in protein and nutrients like iron, calcium, and vitamin B12 if not taken under the guidance of a qualified nutrition professional. Raw diet may not be suitable for a patient on a neutropenic diet or suffering from diarrhea. Thus it is necessary to consult your physician or dietitian before making any drastic lifestyle changes. A balanced diet is the best diet to improve quality of life and help patients cope better with cancer therapy.

The treatment of cancer can be difficult for anyone of any age. Suggestions for creating a patient-centered environment, making tasty high-calorie snacks, and possible alternatives to oral nutrition are a part of the supportive care included in the treatment of cancer.

Every patient is different and may tolerate treatment differently. Thus personalized nutrition is key to prevent malnutrition in cancer patients.

References:
https://www.cancerresearchuk.org/about-cancer/causes-of-cancer/diet-and-cancer/does-eating-processed-and-red-meat-cause-cancer

https://www.cancer.net/navigating-cancer-care/prevention-and-healthy-living/food-and-cancer-risk

Ward, M. H., Cross, A. J., Abnet, C. C., Sinha, R., Markin, R. S., &Weisenburger, D. D. (2012). Heme iron from meat and risk of adenocarcinoma of the esophagus and stomach. European journal of cancer prevention : the official journal of the European Cancer Prevention Organisation (ECP), 21(2), 134–138. https://doi.org/10.1097/CEJ.0b013e32834c9b6c

Review of the scientific evidence and technical opinion on noncaloric sweetener consumption in gastrointestinal diseases - Scientific Figure on ResearchGate. Available from: https://www.researchgate.net/figure/Acceptable-daily-intake-of-each-sweetener-approved-by-the-FDA_tbl1_336490421

THINGS TO CONSIDER WHILE BUILDING YOUR FOOD & BEVERAGE BRAND DIGITALLY

AUTHOR
Ms Dolly G Soni,
Executive- Marketing & Digital,
PFNDAI

We all have the habit of spending most our time on the internet mostly on social media pages. While scrolling and swiping suddenly you see an attractive advertisement on your screen of any brand talking about their products and you tend to click on that advertisement and may be end up buying something from their site. Have you ever imagined why does it appear on your screen? Well, this is a form of Digital Marketing.

Let's understand this concept with an example, imagine you go to a small grocery store, there you literally have to tell the shopkeeper that what you want, and he may pick something of any brand and hand it to you. Here your exposure to new products is very limited. Similarly, when you go to a big store there you get an opportunity to look at the shelf and choose your product. They have a wide range of product. But do you think that they really have everything from A to Z? Whether you go to a small store or a big one the exposure to new products is limited. But when these products are marketed and sold on digital platforms like Amazon or Big basket you will get a wider choice.

There are different definitions of Digital Marketing from different people. Different people have different perspective towards digital marketing. Now if I tell you what digital marketing means to me, its marketing of the product or service at people's ease using online mediums, sounds different right? But that is how it works.

There are numbers of companies selling thousands of different food and beverages which people love and enjoy. These products look too good when they are stocked up on the shelf of convenience store. But that is not the only thing a company aims at. Precedence is increasing the sale and restocking the shelf again and again. Even after launching a product after considering people's likes and dislikes your product is not getting off the shelves, there might be a possibility that your retail partner may lose patience. And moreover, the competition in the market is increasing rapidly. If you want to be that company which is at the top and create a space in people's kitchen/fridge for your brand, you must reach to the audience out there.

The food and beverage industry is diverse- large brands to restaurant chains, fast food outlets, etc. Digital is the new world, and it is the most important tool, if you are not using this tool you could fail to increase brand awareness, brand visibility and much more. You need a digital marketing and advertising strategy that takes full advantage of the opportunities available to your food or beverage brand.

The first step towards the marketing of your product is brand awareness. Brand awareness helps in building the relationship between your brand and the audience. It will allow people to be familiar with your brand and recognize it. But this doesn't happen overnight. It takes a lot of efforts, patience, creativity, and uniqueness. Brand awareness has helped companies to embed their brand names in the respective industry and because of this, the brands have become so popular that sometimes people mention the brand name rather than using their generic terms.

For example, when you want to buy a soft drink you would specify whether you want a Coca Cola or a Thums Up. Below are few points which should be considered for marketing of your brand digitally.

Social media is a better place to be in as a brand. These social media sites have billions of users waiting to become your customer. You can utilize social media marketing to enhance your brand visibility. It presents a magnificent opportunity to market and highlight the products. As per Statista, internet users spend 144 minutes per day using social media on an average. This can be an advantage for your brand to reach out to these people.

The marketing strategy that most of the brands follow is to target the people who spend most of their time online. People on Instagram, Facebook and other similar appscan easily connect with brands and create an influence. The company must take full advantage of this and encourage user generated content and shall let their followers share their experiences or feedback of the product usage. These experiences and feedback can be shared through video reviews, photos, etc.

There are influencers on social media who have thousands and millions of followers, collaborating with such influencers can help in building the brand and marketing of the same. This is one of the worthwhile ways to reach out to a greater number of people and persuade new customers to try your products.

With the help of Instagram, Facebook, LinkedIn, YouTube, etc, you can connect with your audience. YouTube has large number of subscribers who keep searching videos related to food and beverages. Today's millennials love watching food videos, they rely on YouTube to make recipes. Collaboration can be done with known cooks and chefs to make recipes using the products by the brand. Another thing is that YT also allows to advertise that cannot be skipped so advantage of this feature can be taken by the brands. Such type of marketing helps you to reach the audience who haven't found your brand yet. There are millions of people on social media who look for trustworthy manufacturing companies, so try to reach them with the help of social media.

Try to use relevant hashtags which will make it easier for the followers to find the information related to your product. Social media marketing is the most important part of digital marketing of any brand. So, you can take advantage of this and introduce your product to new audiences, educate them about your brand.

In all this, don't forget to set up your target audience, digital marketing doesn't work when you don't have any precise audience to target on. Another hit that the audience groove about is when they see things relating to any current trend. Marketing brands after inspiring from the trends that usually flood the social media platforms works amazing. For example, when Yashraj Mukhate (Indian Music Composer) took over Instagram by a song titled as "Rasodemai Kaun tha", many brands had no calm and came up with amazing creatives to market their product and used the trending hashtags that gave more exposure to the brand by landing up on the feeds of the users.

Another way of marketing of your brand digitally is to create a website. It is the biggest hit when it comes to marketing of the brands online. You can send your followers from your Instagram, Facebook account to your website in just one click. But don't forget to make your website appealing. If your website is appealing, people will tend to visit your website frequently and if not, you may end up losing your audience interest. Use some astonishing images and videos. Make sure your website is mobile friendly, and that people can easily order products from your website.

You can create your food blogs and vlog channels, as in today's time people love having info about anything briefly. Since you maybe an expert of your brand, you will have plenty of information, which you can share with your audience through blogs and videos. These would be much engaging when made using simple and easy to understand languages. Attractive images and fine details would make the outcome more interesting. All these will help in getting more traffic towards your brand.

As mentioned above, digital is the new world, people are spending most of the time on their mobile phones and showing interest in engaging in different activities taking place on social media. Food and beverage companies are getting a way to engage the audiences and drive sales. Digital marketing has got number of options that can help the food and beverage to make themselves visible. So, choose a right platform, prepare a plan and there you go.

REGULATORY ROUND UP

By
Dr. N. Ramasubramanian,
Director, VR FoodTech,
n.ram@vrfoodtech.com

Dear Readers

Please find below FSSAI notifications, advisories, orders, etc since the last round up.

Final notification amending standards in different foods like buffalo milk (has been made uniform throughout the country), soybean sauce, tree nuts, vegetable oil (residual solvent level in edible vegetable oils), cereal and pulse flours, spices, caffeinated beverages, non- carbonated beverages, packaged drinking water, etc.

The regulation also sets new standards for soluble tea powder, decaffeinated coffee-Chicory products.

FSSAI in its notice dated 27 July 2021 has categorically stated that application under Non-Specified Food regulation would not be entertained if the food contains genetically modified organism or an ingredient derived from GMO. This shall be applicable till such time the final regulation on GMO is notified. However, Government of India has decided to permit defatted meal from GM soybeans to meet its acute shortage in the manufacture of poultry feed.

Ultimately it may end up in human food chain.

FSSAI vide its notice dated 02 August 2021 has summarized the ICMR 2020 RDA of Vitamins and Minerals. The document also collates the value for vitamins and minerals not addressed by ICMR 2020.

Extension has been given to the FSSAI approved processors of reused cooking oil.

Online submission of Form D1 has been made mandatory and the licensing officers have been requested not to insist on physical submission.

RESEARCH IN HEALTH & NUTRITION

Overweight or obesity worsens liver-damaging effects of alcohol

June 1, 2021 Science Daily

"People in the overweight or obese range who drank were found to be at greater risk of liver diseases compared with participants within a healthy weight range who consumed alcohol at the same level," said senior author and research program director Professor Emmanuel Stamatakis from the Charles Perkins Centre and the Faculty of Medicine and Health.

"Even for people who drank within alcohol guidelines, participants classified as obese were at over 50 percent greater risk of liver disease." The researchers drew upon data from the UK Biobank -- a large-scale biomedical cohort study containing in-depth biological, behavioural, and health information from participants in the United Kingdom (UK). According to the researchers, this is one of the first and largest studies looking at increased adiposity (overweight or obesity) and level of alcohol consumption together, in relation to future liver disease.

Information was examined from 465,437 people aged 40 to 69 years, with medical and health details collected over an average of 10.5 years. The findings were published in the European Journal of Clinical Nutrition. Lead author Dr Elif Inan-Eroglu, a postdoctoral research fellow with the Charles Perkins Centre, said the results suggest people carrying excess weight may need to be more aware of risks around alcohol consumption. "With the most recent data suggesting two in three people -- or 67 percent of the Australian population are in the overweight or obesity range, this is obviously a very topical issue."

Key findings

The researchers reviewed data on participants classified as overweight/obese based on their body mass index (BMI) and waist circumference, self-reported alcohol consumption according to UK alcohol guidelines, and liver disease incidence and liver disease as cause of death.

BMI is based on both weight and height. A BMI of over 25 denotes overweight, and over 30 denotes obesity. For waist circumference, researchers used the World Health Organization (WHO) classification: normal (<80 cm for women, <94 cm for men), overweight (>80 cm for women, >94 cm for men), and obese (>88 cm for women, >102 cm for men).

The level of risk was given a number called a 'hazard ratio'. The higher the number than 1, the higher the risk.

- People who drank above UK alcohol guidelines had, compared to within guideline drinkers:
  - o A nearly 600 percent higher risk of being diagnosed with alcoholic fatty liver disease (5.83 hazard ratio).
  - o A nearly 700 percent higher risk of death caused by alcoholic fatty liver disease (6.94 hazard ratio).
- People with overweight or obesity who drank within or above alcohol guidelines had over 50 percent greater risk of developing liver disease compared to normal weight participants who consumed alcohol at the same level.

People who eat a healthy diet including whole fruits may be less likely to develop diabetes

June 2, 2021 Science Daily

Diabetes is a disease where people have too much sugar in their bloodstream, and it is a huge public health burden. Approximately 463 million adults worldwide were living with diabetes in 2019, and by 2045 this number is expected to rise to 700 million. An estimated 374 million people are at increased risk of developing type 2 diabetes, the most common form of the disease. A healthy diet and lifestyle can play a major role in lowering a person's diabetes risk.

"We found people who consumed around 2 servings of fruit per day had a 36 percent lower risk of developing type 2 diabetes over the next five years than those who consumed less than half a serving of fruit per day," said study author Nicola Bondonno, Ph.D., of Edith Cowan University's Institute for Nutrition Research in Perth, Australia. "We did not see the same patterns for fruit juice. These findings indicate that a healthy diet and lifestyle which includes the consumption of whole fruits is a great strategy to lower your diabetes risk."

The researchers studied data from 7,675 participants from the Baker Heart and Diabetes Institute's Australian Diabetes, Obesity and Lifestyle Study who provided information on their fruit and fruit juice intake through a food frequency questionnaire. They found participants who ate more whole fruits had 36 percent lower odds of having diabetes at five years. The researchers found an association between fruit intake and markers of insulin sensitivity, meaning that people who consumed more fruit had to produce less insulin to lower their blood glucose levels.

"This is important because high levels of circulating insulin (hyperinsulinemia) can damage blood vessels and are related not only to diabetes, but also to high blood pressure, obesity and heart disease," Bondonno said.

Gut to brain: Nerve cells detect what we eat

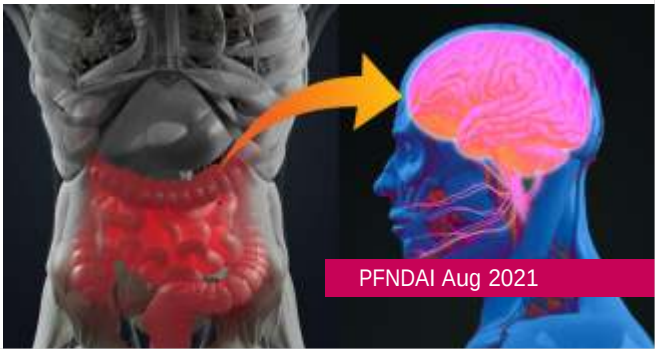
June 2, 2021
Science Daily

When we consume food, information about the ingested food is transmitted from the gastrointestinal tract to the brain in order to adapt feelings of hunger and satiety. Based on this information, the brain decides, for example, whether we continue or stop eating.

In addition, our blood sugar level are adapted by the brain. The vagus nerve, which extends from the brain all the way down to the gastrointestinal tract, plays an essential role in this communication. In the control center of the vagus nerve, the so-called nodose ganglion, various nerve cells are situated, some of which innervate the stomach while others innervate the intestine.

Some of these nerve cells detect mechanical stimuli in the different organs, such as stomach stretch during feeding, while others detect chemical signals, such as nutrients from the food that we consume. But what roles these different nerve cells play in transmitting information from the gut to the brain, and how their activity contributes to adaptations of feeding behavior and blood sugar levels had remained largely unclear.

"To investigate the function of the nerve cells in the nodose ganglion, we developed a genetic approach that enables us to visualize the different nerve cells and manipulate their activity in mice. This allowed us to analyze which nerve cells innervate which organ, pointing to what kind of signals they detect in the gut," says study leader Henning Fenselau. "It also allowed us to specifically switch on and off the different types of nerve cells to analyze their precise function."



Different food activates different nerve cells

In their studies, the researchers focused primarily on two types of nerve cells of the nodose ganglion, which is just one millimeter in size. "One of these cell types detects stomach stretch, and activation of these nerve cells causes mice to eat significantly less," Fenselau explains. "We identified that activity of these nerve cells is key for transmitting appetite-inhibiting signals to the brain and also decreasing blood sugar levels."

The second group of nerve cells primarily innervates the intestine. "This group of nerve cells senses chemical signals from our food. However, their activity is not necessary for feeding regulation. Instead, activation of these cells increases our blood sugar level," says Fenselau. Thus, these two types of nerve cells in the control center of the vagus nerve fulfil very different functions.

"The reaction of our brain during food consumption is probably an interplay of these two nerve cell types," Fenselau explains. "Food with a lot of volume stretches our stomach, and activates the nerve cell types innervating this organ. At a certain point, their activation promotes satiety and hence halts further food intake, and at the same time coordinates the adaptations of blood sugar levels. Food with a high nutrient density tends to activate the nerve cells in the intestine. Their activation increases blood glucose levels by coordinating the release of the body's own glucose, but they do not halt further food intake." The discovery of the different functions of these two types of nerve cells could play a crucial role in developing new therapeutic strategies against obesity and diabetes.

Women's mental health has higher association with dietary factors

June 9, 2021 Science Daily

Lina Begdache, assistant professor of health and wellness studies at Binghamton University, had previously published research on diet and mood that suggests that a high-quality diet improves mental health. She wanted to test whether customization of diet improves mood among men and women ages 30 or older.

Along with research assistant Cara M. Patrissy, Begdache dissected the different food groups that are associated with mental distress in men and women ages 30 years and older, as well as studied the different dietary patterns in relation to exercise frequency and mental distress.

The results suggest that women's mental health has a higher association with dietary factors than that of men. Mental distress and exercise frequency were associated with different dietary and lifestyle patterns, which support the concept of customizing diet and lifestyle factors to improve mental wellbeing. “We found a general relationship between eating healthy, following healthy dietary practices, exercise and mental well-being," said Begdache. "Interestingly, we found that for unhealthy dietary patterns, the level of mental distress was higher in women than in men, which confirmed that women are more susceptible to unhealthy eating than men.”

Based on this study and others, diet and exercise may be the first line of defence against mental distress in mature women, said Begdache.

"Fast food, skipping breakfast, caffeine and high-glycemic (HG) food are all associated with mental distress in mature women," said Begdache. "Fruits and dark green leafy vegetables (DGLV) are associated with mental well-being. The extra information we learned from this study is that exercise significantly reduced the negative association of HG food and fast food with mental distress," said Begadache.

This research provides the framework needed for healthcare professionals for customizing dietary plans to promote exercise and improve mental well-being in mature adults, said Begdache. It could also provide a new perspective for the research community when assessing the role of diet on mental distress.

The researchers are conducting a parallel study with young men and women, looking at diet quality in addition to sleep and seasonal change variables from a longitudinal perspective.

Young adults who lost and then restored heart health had lower risk of heart attack, stroke

June 14, 2021 Science Daily

The number of premature deaths from cardiovascular disease is increasing in many countries including the U.S. While there is a wealth of information available on maintaining good heart health during and after midlife to reduce the risks of heart attack and stroke, data about cardiovascular health during young adulthood is scarce.

"Most people lose ideal cardiovascular health before they reach midlife, yet few young people have immediate health concerns and many do not usually seek medical care until approaching midlife," says the study's senior author Hyeon Chang Kim, M.D., Ph.D., a professor in the department of preventive medicine at Yonsei University College of Medicine in Seoul, South Korea.

“We need strategies to help preserve or restore heart health in this population because we know poor heart health in young adults is linked to premature cardiovascular disease."

Using the Korean National Health Insurance Services, a nationwide health insurer database, Kim and colleagues analyzed information collected from more than 3.5 million adults who completed routine health exams in 2003 and 2004. A subgroup of approximately 2.9 million participants underwent a follow-up health examination between 2005 and 2008. Patients' ages ranged from 20 to 39 at the time of the first exam, and 65.5% of the study participants were male.

Participants were categorized according to ideal cardiovascular health (CVH) scores based on the American Heart Association's Life's Simple 7® metrics.

Patients received "one point" towards a cardiovascular health (CVH) score for each of the following measures from Life's Simple 7: well-maintained blood pressure, low total cholesterol, acceptable blood sugar levels, an active lifestyle, healthy weight and not smoking.

Of note: healthy nutrition and diet, the final measure of Life's Simple 7, was not included in this analysis because dietary information was not collected from participants in this database.

Researchers evaluated the total number of first hospitalizations or death from a heart attack, stroke or heart failure by December 31, 2019 to define outcomes. The researchers found:

• Rates of premature (younger than 55) cardiovascular events were highest among patients with a CVH score of zero.

• A higher CVH score by one point led to reduced risks for heart attack by 42%, heart failure by 30%, cardiovascular death by 25% and stroke by 24%.

• While people who improved their CVH score over time reduced their risk of hospitalizations or death from a heart attack, stroke or heart failure, people who began with and maintained a higher CVH score ultimately had the least chance of hospitalization or death from a heart attack or stroke during the study period.

• Timely and consistent monitoring of heart health among young adults is important to prevent premature onset of heart disease and reduce the risk of cardiovascular events.

The study's findings may be limited because data was routine health screening data, therefore, it may not be as robust as data collected primarily for a specific study. The study also lacks data on the participants' eating patterns, so researchers modified CVH score metrics to exclude diet.

In addition, participants in this study were of Korean ancestry, so the results may not be generalizable to people from other diverse racial or ethnic groups.

New health benefits of red seaweeds unveiled

June 14, 2021 Science Daily

"In the past, people have wondered why the number of colon cancer patients in Japan is the lowest in the world," said Yong-Su Jin (CABBI/BSD/MME), a professor of food microbiology. "Many assumed that it was due to some aspect of the Japanese diet or lifestyle. We wanted to ask whether their seaweed diet was connected to the lower frequency of colon cancer."

Although several studies have shown that Asians who eat seaweed regularly have lower risk of colon, colorectal, and breast cancer, it was unclear which component was responsible for the anti-cancer effects. In the study, the researchers broke down the structure of different types of red seaweed using enzymes and tested the sugars that were produced to see which one of them caused health benefits. Among the six different sugars produced, agarotriose and 3,6-anhydro-L-galactose, or AHG, showed the most promise.

"After we produced these sugars, we tested their prebiotic activity using the bacteria Bifidobacterium longum ssp. infantis," said Eun Ju Yun, a former postdoctoral researcher at the Carl R. Woese Institute for Genomic Biology. B. infantis is a probiotic bacterium; it colonizes the gut of infants and provides health benefits. Among the seaweed-derived sugars, the bacteria could only consume agarotriose, indicating that it works as a prebiotic i.e., it improves the growth of probiotic bacteria.

"We also tested another strain, B. kashiwanohense, and found that it also consumed agarotriose," Jin said. "These results show us that when we eat red seaweed, it gets broken down in the gut and releases these sugars which serve as food for the probiotic bacteria. It could help explain why Japanese populations are healthier compared to others."

The researchers also tested the sugars to see if they had any anti-cancer activity. "We found that AHG specifically inhibits the growth of human colon cancer cells and does not affect the growth of normal cells," Yun said. The anti-cancer activity of AHG is due to its ability to trigger apoptosis or cell death.

"There is a lot of information on how red seaweeds are degraded by microorganisms in the ocean and in the human body," said Kyoung Heon Kim, a professor of biotechnology and the co-advisor on the paper. "Our work explains why red seaweeds are beneficial by providing the molecular mechanism. We will continue studying their function in animal models and hopefully we will be able to use them as a therapeutic agent in the future."

Switching from Western diet to a balanced diet may reduce skin, joint inflammation

June 22, 2021 Science Daily

The study, published in the Journal of Investigative Dermatology, suggests that switching to a more balanced diet restores the gut's health and suppresses skin inflammation.

"Earlier studies have shown that Western diet, characterized by its high sugar and fat content, can lead to significant skin inflammation and psoriasis flares," said Sam T. Hwang, professor and chair of dermatology at UC Davis Health and senior author on the study. "Despite having powerful anti-inflammatory drugs for the skin condition, our study indicates that simple changes in diet may also have significant effects on psoriasis."

What is psoriasis?

Psoriasis is a stubborn skin condition linked to the body's immune system. When immune cells mistakenly attack healthy skin cells, they cause skin inflammation and the formation of scales and itchy red patches.

Up to 30% of patients with psoriasis also have psoriatic arthritis with symptoms such as morning stiffness and fatigue, swollen fingers and toes, pain in joints and changes to nails.

Diet affects the microbial balance in the intestines and skin inflammation

Food is one of the major modifiable factors regulating the gut microbiota, the community of microorganisms living in the intestines. Eating a Western diet can cause rapid change to the gut's microbial community and its functions. This disruption in microbial balance -- known as dysbiosis- contributes to gut inflammation.

Since bacteria in the gut may play key roles in shaping inflammation, the researchers wanted to test whether intestinal dysbiosis affects skin and joint inflammation. They used a mouse model to study the effect of diet on psoriasis and psoriatic arthritis. They injected mice with Interleukin-23 (IL-23) minicircle DNA to induce a response mimicking psoriasis-like skin and joint diseases.

IL-23 is a protein generated by the immune cells responsible for many inflammatory autoimmune reactions, including psoriasis and inflammatory bowel disease (IBD). Hwang and his colleagues found that a short-term Western diet appears sufficient to cause microbial imbalance and to enhance susceptibility to IL-23-mediated psoriasis-like skin inflammation.

"There is a clear link between skin inflammation and changes in the gut microbiome due to food intake," Hwang said. "The bacterial balance in the gut disrupted shortly after starting a Western diet, and worsened psoriatic skin and joint inflammation."

One critical finding of their work was identifying the intestinal microbiota as a pathogenic link between diet and the displays of psoriatic inflammation. The study also found that antibiotics block the effects of the Western diet, reducing skin and joint inflammation.

Is the damage caused by an unhealthy diet reversible?

The researchers wanted to test if switching to a balanced diet can restore the gut microbiota, despite the presence of IL-23 inflammatory proteins. They fed mice a Western diet for six weeks before giving them an IL-23-inducing agent to trigger psoriasis and psoriatic arthritis features. Then, they randomly divided the mice into two groups: a group that continued the Western diet for another four weeks and a group that switched to a balanced diet for the same duration.

Their study showed that eating a diet high in sugar and fat for 10 weeks predisposed mice to skin and joint inflammation. Mice that were switched to a balanced diet had less scaling of the skin and reduced ear thickness than mice on a Western diet. The improvement in skin inflammation for mice taken off the Western diet indicates a short-term impact of the Western diet on skin inflammation.

This suggests that changes in diet could partially reverse the proinflammatory effects and alteration of gut microbiota caused by the Western diet.

"It was quite surprising that a simple diet modification of less sugar and fat may have significant effects on psoriasis," said Zhenrui Shi, visiting assistant researcher in the UC Davis Department of Dermatology and lead author on the study. "These findings reveal that patients with psoriatic skin and joint disease should consider changing to a healthier dietary pattern."

"This work reflects a successful collaboration among researchers, especially with Professor Satya Dandekar and her team at the Department of Medical Microbiology and Immunology and Professor Yu-Jui Yvonne Wan at the Department of Medical Pathology and Laboratory Medicine," Hwang said.

Dieting and its effect on the gut microbiome

June 23, 2021 Science Daily

The human gut microbiome consists of trillions of microorganisms and differs from one person to the next. In persons who are overweight or obese, for instance, its composition is known to be different to that found in individuals with a normal body weight. Many of us will, at some point in our lives, try dieting in order to lose weight. But what effect does such a drastic change in diet have on our bodies?

An international team of researchers co-led by Charité has addressed this question. "For the first time, we were able to show that a very low calorie diet produces major changes in the composition of the gut microbiome and that these changes have an impact on the host's energy balance," says Prof. Dr. Joachim Spranger, Head of Charité's Department of Endocrinology and Metabolic Diseases and one of the study's lead authors.

To explore the effects of dieting, the team studied 80 older (post-menopausal) women whose weight ranged from slightly overweight to severely obese for a duration of 16 weeks. The women either followed a medically supervised meal replacement regime, consuming shakes totaling less than 800 calories a day, or maintained their weight for the duration of the study.

The participants were examined at the Experimental and Clinical Research Center (ECRC), a facility jointly operated by Charité and the Max Delbrück Center for Molecular Medicine (MDC). Regular stool sample analysis showed that dieting reduced the number of microorganisms present in the gut and changed the composition of the gut microbiome.

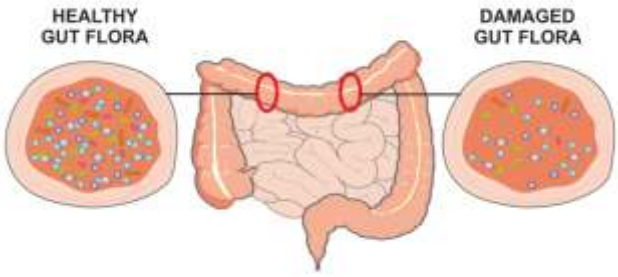
"We were able to observe how the bacteria adapted their metabolism in order to absorb more sugar molecules and, by doing so, make them unavailable to their human host. One might say we observed the development of a 'hungry microbiome'," says the study's first author, Dr. Reiner Jumpertz von Schwartzenberg, a researcher and clinician at the Department of Endocrinology and Metabolic Diseases whose work on the study was funded by the Clinician Scientist program operated by Charité and the Berlin Institute of Health (BIH).

Stool samples, which had been collected before and after dieting, were then transferred into mice which had been kept under germ-free conditions and, as a result, lacked all gut microbiota.

The results were staggering: Animals which received post-dieting stools lost more than 10 percent of their body mass. Pre-diet stools had no effect whatsoever. "Our results show that this phenomenon is primarily explained by changes in the absorption of nutrients from the animals' guts," says Prof. Spranger. He adds: "This highlights the fact that gut bacteria have a major impact on the absorption of food." When the researchers studied stool composition in greater detail, they were particularly struck by signs of increased colonization by a specific bacterium -- Clostridioides difficile.

While this microorganism is commonly found in the natural environment and in the guts of healthy human beings and animals, its numbers in the gut can increase in response to antibiotic use, potentially resulting in severe inflammation of the gut wall.

It is also known as one of the most common hospital-associated pathogens. Increased quantities of the bacterium were found both in participants who had completed the weight loss regimen and in mice which had received post-dieting gut bacteria. "We were able to show that C. difficile produced the toxins typically associated with this bacterium and that this was what the animals' weight loss was contingent upon," explains Prof. Spranger. He adds: "Despite that, neither the participants nor the animals showed relevant signs of gut inflammation."



Summing up the results of the research, Prof. Spranger says: "A very low calorie diet severely modifies our gut microbiome and appears to reduce the colonization-resistance for the hospital-associated bacterium Clostridioides difficile. These changes render the absorption of nutrients across the gut wall less efficient, notably without producing relevant clinical symptoms.

What remains unclear is whether or to which extent this type of asymptomatic colonization by C. difficile might impair or potentially improve a person's health. This has to be explored in larger studies."

Results from the current study, which also received funding from the German Center for Cardiovascular Disease (DZHK), might even give rise to treatment options for metabolic disorders such as obesity and diabetes. For this reason, the researchers will now explore how gut bacteria might be influenced in order to produce beneficial effects on the weight and metabolism of their human hosts.

Starting the day off with chocolate could have unexpected benefits

June 27, 2021 Science Daily

To find out about the effects of eating milk chocolate at different times of day, researchers from the Brigham collaborated with investigators at the University of Murcia in Spain.

Together, they conducted a randomized, controlled, cross-over trial of 19 postmenopausal women who consumed either 100g of chocolate in the morning (within one hour after waking time) or at night (within one hour before bedtime). They compared weight gain and many other measures to no chocolate intake.

Researchers report that among the women studied:
• Morning or night time chocolate intake did not lead to weight gain;
• Eating chocolate in the morning or in the evening can influence hunger and appetite, microbiota composition, sleep and more;
• A high intake of chocolate during the morning hours could help to burn fat and reduce blood glucose levels.
• Evening/night chocolate altered next-morning resting and exercise metabolism.

Frank A. J. L. Scheer, PhD, MSc, Neuroscientist and Marta Garaulet, PhD, Visiting Scientist, both of the Division of Sleep and Circadian Disorders, Departments of Medicine and Neurology, Brigham and Women's Hospital. Drs. Scheer and Garaulet are co-corresponding authors of a new paper published in The FASEB Journal.

"Our findings highlight that not only 'what' but also 'when' we eat can impact physiological mechanisms involved in the regulation of body weight," said Scheer.

"Our volunteers did not gain weight despite increasing caloric intake. Our results show that chocolate reduced ad libitum energy intake, consistent with the observed reduction in hunger, appetite and the desire for sweets shown in previous studies," said Garaulet.

"Significant" promise for potato and rice protein shakes for blood glucose control, flag researchers

25 Jun 2021 Nutrition Insight

Shakes containing potato and rice protein are better than whey protein at managing blood glucose levels and reducing spikes in insulin. This is according to a UK study from the Centre for Nutraceuticals at the University of Westminster, which also found that potato and rice proteins can be just as effective at managing appetite.

"Much like whey protein, there is significant potential for these alternate protein sources to be commercially developed for use in consumer products. Research will need to be undertaken to see if alternate forms of delivery, like bars and yogurts, yield similar results with potato and rice," study co-author Sanjoy Deb tells NutritionInsight.

Feeling full?

The study, now published in Nutrients, revealed that vegan protein shakes led to a lower rise in blood insulin compared to whey, while potato protein prevented any rise in insulin.

This may explain the better blood glucose control following consumption of the plant-based protein. The researchers say it also poses the question of whether vegan protein shakes are more suitable for individuals who need to need control their blood glucose levels such as diabetic and obese individuals.

After participants drank the whey protein shake, they released more of the key appetite regulating hormone GLP-1. However, the greater GLP-1 response did not translate to an increased feeling of fullness as there were no differences observed in appetite perception between the three different protein shakes.

Demand for alternatives

Whey is currently extensively used in consumer products such as protein shakes and fortified food and beverage products. However, alternative protein products based on soy, rice, wheat and pea are also gaining pace. Additionally, potato protein is a novel plant-based product that is obtained from the waste material from potato starch production. The researchers describe it as a "sustainable economic" protein source.

"Global concerns on sustainability have led to consumer shifts toward ethical eating and a change in dietary habits with increased adoption of vegetarian and vegan diets," says Mohammed Zariwala, corresponding author and director of the Centre for Nutraceuticals.

However, he notes that research in this area is still lacking. "It would be interesting to clarify whether proteins from plant sources can provide identical metabolic health benefits as those with traditional sources such as milk."

Differing protein qualities

The researchers point out that there is still a relative lack of evidence on their health benefits in comparison to milk proteins. "A globally validated protein scale has shown that the quality of protein (in relation to amino acid composition) in potatoes is comparable to a whey protein. Rice protein quality does come out lower than whey," adds Deb. He also emphasizes that all three protein isolates have differing amino acid profiles, which may contribute to the differing effects of these proteins. For example, whey and rice have a significantly increased proportion of glutamine than potato.

As a GLP-1 stimulator, this may explain the differences in appetite and blood markers elicited in the study. "For a healthy balanced diet, it is important for individuals to consume food sources of varied proteins so that they receive the full complement of amino acids," Deb concludes.

By Katherine Durrell

Vitamin K levels could help predict COVID-19 mortality, Kappa Bioscience-backed study finds

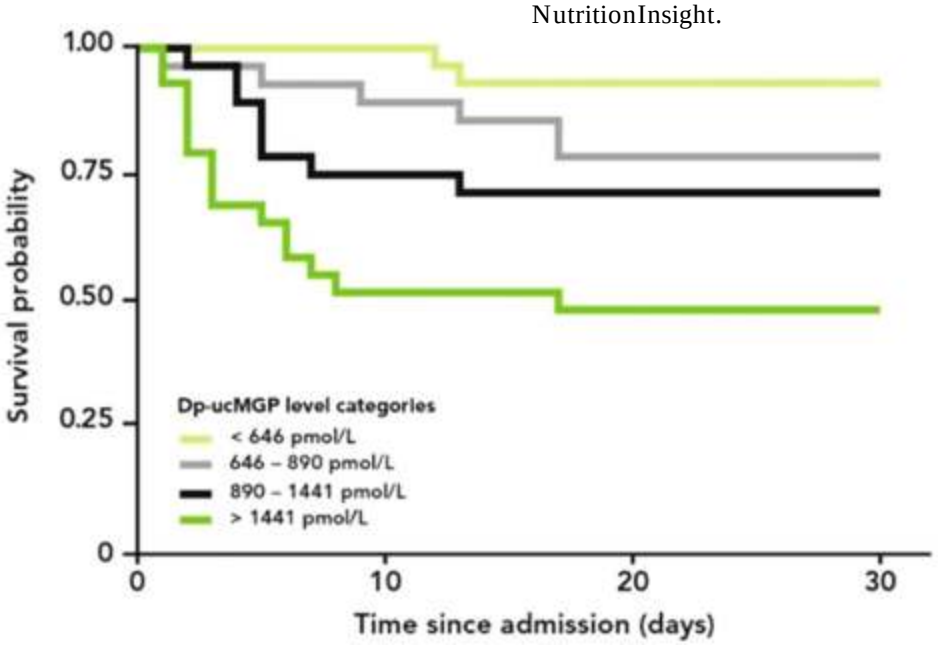
16 Jun 2021 Nutrition Insight

A new Kappa Bioscience-backed study has found low vitamin K status to be predictive of higher mortality for COVID-19.

The latest findings suggest that vitamin K could play a role in the disease mechanisms, with vitamin K2 proposed as a potential supplement to help improve outcomes of the disease.

The study also confirmed the results of a previous study that vitamin K status is lower in hospitalized patients with COVID-19 compared to healthy controls.

"I was stunned by the marked differences in levels of the biomarker of vitamin K status between COVID-19 patients and healthy controls, and between those COVID-19 patients that unfortunately died and those who survived," the study's lead author, Professor Allan Linneberg, tells NutritionInsight.



While more research is still needed, Kappa Bioscience says these preliminary results highlight vitamin K2's potential as an inexpensive measure for reducing mortality in COVID-19 patients. "There is an urgent need for measures to improve the outcome and long-term consequences of COVID-19," the company states. "Supplementation with vitamin K2 represents an inexpensive and simple-to-use solution. However, intervention studies are needed." Kaplan-Meier plot of 30-days cumulated risk of dying, stratified by levels of vitamin K status. Lower dp-uc-MGP levels reflect higher vitamin K status.

A stratified predictor of mortality

The study was conducted at the Center for Clinical Research and Prevention at the Bispebjerg and Frederiksberg Hospital, Denmark, where Linneberg is the director. Researchers used a Kaplan-Meier plot of the cumulated risk of death stratified by vitamin K status.

They concluded that mortality among COVID-19 patients appears to be strongly dependent on vitamin K status. Vitamin K status was measured as dephosphorylated-undercarboxylated matrix Gla protein (dp-ucMGP).

It was analyzed in 138 COVID-19 patients and compared to a control group of 138 people from the general population, matched for similar age distribution.

Vitamin K status was significantly lower in COVID-19 patients compared to the control population. Forty-three of the hospitalized patients with COVID-19 died within 90 days of admission. Survival analysis showed that low vitamin K status was associated with higher mortality risk.

The mechanism of action

Linneberg submits the current theory behind the link between COVID-19 death outcomes and vitamin K status: "It is hypothesized that in a state of severe vitamin K deficiency, the supply of vitamin K will be prioritized for the liver to regulate blood clotting. Only then, will the rest of our K supply be distributed to the rest of the body to activate other vitamin K-dependent proteins. These play key roles in regulating blood clotting, calcium metabolism, inflammation and more."

As a result, this may increase calcification and subsequent degradation of elastic fibres in lung tissue, leading to more severe lung damage in COVID-19 patients, he details.

Because of their structural differences, vitamin K1 and K2 have different outcomes in the body. Vitamin K1 is preferentially absorbed in the liver, whereas K2 is left available for extra-hepatic tissues.

Previous studies have indicated that vitamin K status plays a role in vascular calcification and that a low status of the vitamin is correlated with arterial stiffness. This suggests that a higher status of the vitamin could lead to more tissue flexibility and elasticity.

Correlation or causation?

The study does present some limitations that cannot be ruled out, according to Linneberg. "It is a possibility that severely ill patients consume more vitamin K in tissues and that starts a vicious circle."

Another limitation is that it also is not possible to rule out that low vitamin K status is a marker of comorbidity, meaning that there are other diseases that predispose to both COVID-19 mortality and low vitamin K status.

More research needed

While the evidence is mounting that vitamin K can play an important role in improving outcomes, Linneberg stresses that there is currently not enough research on the potential role of vitamin K in COVID-19 to change guidelines for treatment or prevention. "We need more research before we can advise whether we should treat patients with vitamin K and which patients should be targeted."

Proper dosage also raises questions. "A lot more is to be learned when it comes to vitamin K. To deliver proof-of-concept evidence, a randomized intervention study is needed to see if it is actually a lack of vitamin K that causes poor outcomes in COVID-19 patients."

A promising vitamin

Vitamin K2 has gained increased attention over the past few years. In 2020, 14 research papers about vitamin K status and associations to different health conditions and diseases were published, notes Dr. Trygve Bergeland, vice president science at KappaBioscience.

He also observes there is also an increasing focus on studying a low vitamin K and vitamin D status together. "The Hoorn Study and the PREVEND study, published in 2020 concluded that the combined low vitamin D and K status was associated with increased all-cause

mortality risk and possibly with cardiovascular mortality and cardiovascular events compared with adequate vitamin D and K status," he highlights. Vitamin K2 is underway to be tested in the largest dosage to date with kidney patients on dialysis. The NattoPharma-led study is testing the 1 mg dose to demonstrate product safety, among other health benefits.

By Missy Green

Fish oil supplementation during pregnancy boosts brain function in 10-year-olds, says study

07 Jun 2021 Nutrition Insight

Children born to mothers who took fish oil during pregnancy have been found to have faster problem-solving skills and greater attention focus, according to a new study. Speaking to NutritionInsight, Cristina Campoy, medical

doctor and professor of pediatrics at the University of Granada, explains the details of the study.

She notes that it is the first study to examine the long-term effects of maternal supplementation with fish oil and 5-MTHF (folic acid) on the resting state network (RSN) functioning – the "resting" brain activity when a person is not engaged in a cognitive or active task – of children. "The differences found between Fish Oil (FO) and No-FO groups in brain functionality are simply amazing," she adds.

Recommending supplementation

The team found that children born to mothers who did not take FO supplements performed poorly regarding speed processing and attention tests. These are associated with stronger functional connectivity in frontoparietal and sensorimotor networks. Campoy reveals that the results suggest that all pregnant women should receive adequate levels of LC-PUFAs or FO supplementation to guarantee an optimal cognitive development in the offspring.

She proposes that folic acid could be given as already recommended

(before pregnancy and during the first trimester of pregnancy) and LC-PUFAs could be given in the second half of pregnancy and during lactation.

"Women at risk of deficiency of these nutrients should be identified," she explains. "It will be very interesting to analyze in future studies if folic acid and LC-PUFAs supplements should be given separately at different moments during pregnancy."

A ten-year follow-up

Researchers followed up on 57 children whose mothers received 500 mg of docosahexaenoic acid (DHA) and 150 mg of eicosapentaenoic acid (EPA) fish oils per day, either with or without 400 mg of 5-MTHF (folic acid), folic acid alone, or placebo, during the second half of their pregnancies.

At the age of ten, the children were evaluated using rs-MRI brain scanning to measure RSN and neuropsychological tests. The results of each group were then compared to see if there were any differences. The results of this study indicate that early nutrition during pregnancy can have a significant impact on brain development in children, with the potential to enhance cognitive performance. "Furthermore, the present study suggests that folic acid and LC-PUFAs supplements should be given separately at different moments during pregnancy."

Fish oil nutritional breakdown.

Prepping for pregnancy

Further studies in obese and diabetic mothers are also needed and of interest, Campoy further notes. "The expected results from these studies will change the current policies and recommendations regarding the use of multivitamin-containing LC-PUFAs and folic acid, into a more individualized way."

"There is no clear or robust evidence to support the use of multivitamin-containing folic acid supplementation during pregnancy on mental performance later in life," Campoy reveals. "More studies are needed to understand the mechanism involved in the LC-PUFAs and folic acid effects on the functional brain connectivity," she adds.

Previously, research in the US found that women who got a higher amount of DHA had fewer early preterm births overall. Participants with low DHA levels at enrolment, on the other hand, had half the rate of premature preterm delivery.

By Nicole Kerr

First-year "critical window" to establishing anti-obesity habits, flag researchers

03 Jun 2021
Nutrition Insight

A study has shown the roots for obesity start in the first year of life but after mothers stop breastfeeding. Consequently, the first year of a child's life is a critical window of opportunity for parents to promote healthy eating habits.

Researchers at Columbia University Mailman School of Public Health, US, and Universidade Federal de Ciências da Saúde de Porto Alegre, Brazil, found that children consumed fewer fats and carbohydrates and had lower measures of body fats when their mothers had healthy infant feeding habits.

Márcia Vitolo, head researcher at Universidade Federal de Ciências da Saúde de Porto Alegre, tells NutritionInsight: "Childhood obesity tracks to adulthood and the prevention must start in the first two to three years of life, where the food preferences are established."

Big impacts from early practices

The researchers conducted a randomized trial in Porto Alegre, Brazil, in 31 canters that provide prenatal, infant and other primary care services to low-income families. "What this study suggests is that we might have to think even earlier. Feeding practices early in life can already have a significant impact on the body size of preschool children," says co-senior author Dr. L.H. Lumey, professor of epidemiology at Columbia University Mailman School of Public Health.

The Brazilian dietary guideline details ten steps for healthy eating practices from birth to two years old. The intervention was based on births from May 2008 to February 2009. It consisted of a training program to increase the knowledge of primary healthcare workers centred on Brazilian dietary guidelines.

"During the health workers' training, we updated them about the current feeding practices and prevalence of obesity among children in early ages. The intervention proposed to prevent families from offering unhealthy foods to babies and toddlers," Vitolo notes.

Infant nutrition re-education

All families in the trial were informed about complementary foods that should not be offered to children under two years of age through posters in waiting rooms. Trained interviewers measured children's growth and other outcomes at ages six months, one year, three years and six years at subsequent home visits. Details about food types, amounts and preparation methods were also recorded.

The findings were "particularly striking" concerning calories from cookies and powdered chocolate, essential carbohydrates and fats. "Most surprising was that the

mothers in our randomized trial offered ultra-processed foods that are high in sugar and fat as early as six months of age," said Vitolo. "This behaviour can be explained by cultural influences and strong marketing of processed baby foods, which continues globally," she added.

During the health workers' training, sugar, sweets, soft drinks, salty snacks, cookies and ultra-processed foods were emphasized as foods for mothers to avoid for their babies until two years of age.

Results of the trial

Energy intake at all ages was lower in the intervention group compared to the control group, with a statistically significant difference at three years. Also, children from the intervention group aged 3 had lower carbohydrate and total fat consumption than the control group and at six years of age had accumulated less body fat as measured by a smaller waist circumference and thinner skin folds.

"We found that the energy intake in both study groups was above the requirement across all age waves. However, the excess energy intake was less in the intervention group," observed Caroline Sangalli, who analyzed the study results with Lumey.

Early-life feeding patterns can have a substantial impact on preschool children's body size. "Although the disparity was slight at the onset, in the long term, the reduced intake of 92 kcal per day adds up to 33,000 kcal per year. Changes of this magnitude could explain changes in weight gain during childhood."

At six years of age, the intervention group had lower body fat on several measures, but this difference was not reflected in BMI scores, a less sensitive measure of adiposity. "However, with the prevalence of overweight in the intervention group at 7 percent lower than the control group at six years, this does suggest a valuable public health impact – especially since estimates indicate that the reduction in 1 percent of obesity prevalence among children up to age six years would save US$1.7 billion in medical costs," says Vitolo.

Importance of healthy infant nutrition

Recently, industry has highlighted the significance of healthier feeding habits for infants. For example, probiotic drops and powders have emerged within the infant nutrition sector, which no longer solely includes formula. Additionally, the development of a healthy infant microbiome has been shown to improve health prospects later in life.

Two maternal supplementation prototypes to boost children's cognitive development during pregnancy and nursing have also been developed. NutritionInsight detailed the most recent trends in newborn nutrition. UK organizations previously called for a "whole society" preventative approach to reduce childhood obesity.

By Nicole Kerr

'Important implications' for COVID-19 vaccines: Review shows gut microbiota affects various vaccine efficacies

By Tingmin Koe 02-Jun-2021-NutraIngredients USA

The gut microbiota, which is impacted by diet, the intake of antibiotics and probiotics, has shown to affect the efficacy of various types of vaccines, and this could have important implications for the ongoing COVID-19global vaccination drive, said a new review.

This could be because the gut microbiota plays an important role in modulating B cell and T cell responses; both of which are important in producing immune responses. With infants as an example, it was found that an abundance of Bifidobacterium in their faecal microbiota is significantly associated with CD4 T cell responses and antibody responses to non-orally administered vaccines.

Cd4 T cells are said to be the "orchestrators, regulators, and direct effectors" of antiviral immunity and could help generate stronger and longer-lived antibody responses. A higher diversity of the microbiota in infants, on the other hand, was associated with poorer responses to vaccination.

The above observations were seen in studies comparing the efficacy of oral poliovirus vaccine in infants from China and Ghana. Writing in the Nature Reviews Immunology, researchers from the South Australian Health and Medical Research Institute and Stanford University School of Medicine said there has been more evidence showing that the gut microbiota is "an important and targetable factor influencing the baseline immune status and the response to vaccination". They analysed several existing clinical cohort studies, interventional studies, and animal models and derived at this conclusion.

Consisting of microbiota composition, microbial metabolites, antibiotics, probiotics and prebiotics, the gut microbiota is highly variable amongst different individuals over the course of life. In China, a study of oral poliovirus vaccine in over 100 infants found that the relative abundance of Bifidobacteria in the faecal microbiota was correlated with increased poliovirus-specific IgA responses.

Although another study in India did not yield similar findings, both studies showed that a higher diversityof the microbiota was associated with poorer responses to vaccination.

The researchers also found that antibiotic intake during early infancy can affect the gut microbiota and inturn, the efficacy of vaccines. For example, a randomised controlled trial in India found that infants administered with the antibiotic azithromycin did not show improvement in vaccine immunogenicity.

Notably, adults who produced a greater lgA response to the vaccination had an increased ratio of Enterobacteriaceae to Bacteroides species. This was also seen in the faecal microbiota of Ghana infants who had better response to the oral rotavirus vaccination.

"Taken together, these results suggest that antibiotic-driven changes to the gut microbiota can induce major changes in the metabolome, alter inflammatory responses and impair antibody responses to vaccination.

"In summary, interventional studies carried out so far suggest that antibiotic-driven changes to the gut microbiota can influence responses to influenza vaccination and possibly to oral rotavirus vaccines, although all of the studies are limited by a small sample size and by the fact that antibiotics were typically administered shortly before immunization," said the researchers.

Existing studies showed mixed results on whether probiotic supplementation could improve vaccine efficacy.

A number of trials on pre/probiotic supplementation involving the elderly found no or little improvement in their responses to influenza vaccine. A recent systematic review also showed that only about half of the 26 randomised controlled trials studied showed that probiotics had a beneficial impact on vaccine response.

However, the researchers also pointed out that the trials had only small sample sizes. Moreover, none of the trials specifically recruited participants with a disrupted microbiota.

Therefore, the researchers said it would be highly unlikely that administering probiotics to participants with well-colonised, healthy gut, would cause their immune system to produce significant responses to vaccinations.

In addition, trials assessing the link between pre/probiotic supplementation and vaccine efficacy in the elderly mostly used probiotics containing the Lactobacillus strains, which are not commonly found in the adult gut, the researchers highlighted. "Further research is needed to identify adult-adapted strains of probiotics that might be more beneficial as interventions in the elderly."

In conclusion, the researchers said that existing interventional studies on the impact of probiotics or antibiotics on vaccine responses have been "significantly underpowered" and have provided evidence for "only relatively modest effects" of the microbiota on vaccine response.

Microbiome and knee osteoarthritis: Patients have different bacterial make-up compared to healthy individuals

By Tingmin Koe 31-May-2021-NutraIngredients Asia

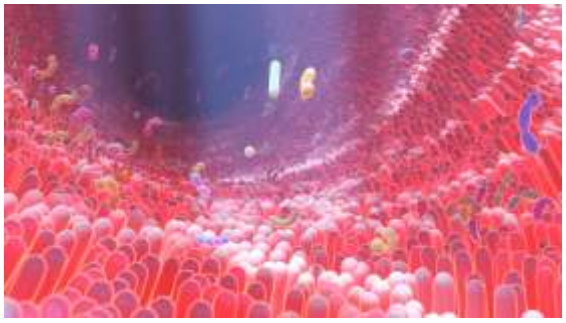
A pilot study involving 24 individuals found that people suffering from knee osteoarthritis (KOA) and vitamin D deficiency have a different gut microbiome from healthy individuals.

The study is said to be the first to reveal the links between vitamin D, KOA, and the gut microbiome. Writing in Nutrients, researchers from All India Institute of Medical Sciences, Christian Medical College, and University of Chile compared the microbiome of the study participants using their faecal samples.

The study participants were divided into four groups, namely 1) those with KOA, 2) those who were vitamin D deficient, 3) those who have KOA and were vitamin D deficient, and 4) healthy individuals. Vitamin D deficiency is defined as a vitamin D level of less than 30 ng/mL.

While the majority of the bacterial species (80 per cent) were common in all groups, the researchers also found distinct difference in the gut microbiome of these four groups.

For example, the gut microbiome of healthy individuals were enriched with Faecalibacterium and Anaerofilum, while Parabacteroides, Butyricimonas, Pseudobutyrivibrio, Odoribacter and Gordonibacter were the predominant bacteria in vitamin D deficient patients with or without KOA.



In addition, Peptococcus, Intestimonas, Delftia and Oribacterium were commonly seen in KOA patients.

"As expected, the gut microbiome of KOA patients included in our study was characterised by a dysbiosis compared with that of healthy individuals," the researchers said.

Notably, the researchers noticed that vitamin D deficiency could affect gut microbiome composition in subjects suffering from KOA.

"Interestingly we also observed an effect of the vitamin status on the KOA-associated dysbiosis. The gut microbiome of KOA patients with deficient vitamin D was characterised by an increased abundance of Parabacteroides, Butyricimonas, Gordonibacter, while Intestimonas, Delftia, Peptococcus were specific for KOA. These results suggest that vitamin deficiency shapes the KOA linked gut microbiome."

From the findings, the researchers believe that vitamin D supplementation could potentially benefit the gut microbiome of individuals with KOA, and hence recommended a vitamin D interventional study in KOA patients.

"Vitamin D supplementation likely exerts a beneficial role on the KOA-altered gut microbiome, thus modulating the disease process of OA. These observations recommend a larger vitamin D interventional study in KOA patients to confirm the beneficial effects of resetting the observed dysbiosis on the progression of KOA," the researchers said. The research was funded by Christian Medical College in Vellore, India.

FOOD SCIENCE & INDUSTRY NEWS

Food scientists aim to make plant-based protein tastier and healthier

June 4, 2021 Science Daily

It's no simple task, says food scientist David Julian McClements, University of Massachusetts Amherst Distinguished Professor and lead author of a paper in the new Nature journal, Science of Food, that explores the topic.

"With Beyond Meat and Impossible Foods and other products coming on the market, there's a huge interest in plant-based foods for improved sustainability, health and ethical reasons," says McClements, a leading expert in food design and nanotechnology, and author of Future Foods: How Modern Science Is Transforming the Way We Eat.

In 2019, the plant-based food market in the U.S. alone was valued at nearly $5 billion, with 40.5% of sales in the milk category and 18.9% in plant-based meat products, the paper notes. That represented a market value growth of 29% from 2017.

"A lot of academics are starting to work in this area and are not familiar with the complexity of animal products and the physicochemical principles you need in order to assemble plant-based ingredients into these products, each with their own physical, functional, nutritional and sensory attributes," McClements says.

With funding from the USDA's National Institute of Food and Agriculture and the Good Food Institute, McClements leads a multidisciplinary team at UMass Amherst that is exploring the science behind designing better plant-based protein. Co-author Lutz Grossmann, who recently joined the UMass Amherst food science team as an assistant professor, has expertise in alternative protein sources, McClements notes.

"Our research has pivoted toward this topic," McClements says. "There's a huge amount of innovation and investment in this area, and I get contacted frequently by different startup companies who are trying to make plant-based fish or eggs or cheese, but who often don't have a background in the science of foods."

While the plant-based food sector is expanding to meet consumer demand, McClements notes in the paper that "a plant-based diet is not necessarily better than an omnivore diet from a nutritional perspective."

Plant-based products need to be fortified with micronutrients that are naturally present in animal meat, milk and eggs, including vitamin D, calcium and zinc. They also have to be digestible and provide the full complement of essential amino acids.

McClements says that many of the current generation of highly processed, plant-based meat products are unhealthy because they're full of saturated fat, salt and sugar. But he adds that ultra-processed food does not have to be unhealthy.

"We're trying to make processed food healthier," McClements says. "We aim to design them to have all the vitamins and minerals you need and have health-promoting components like dietary fiber and phytochemicals so that they taste good and they're convenient and they're cheap and you can easily incorporate them into your life. That's the goal in the future, but we're not there yet for most products." For this reason, McClements says, the UMass Amherst team of scientists is taking a holistic, multidisciplinary approach to tackle this complex problem.

Joint health industry eyes post-pandemic market opportunities amid broadening consumer demands

30 Jun 2021 Nutrition Insight

Consumer appreciation for physical exercise has risen and is putting focus on joint health concerns. As social restrictions on movement and exercise patterns begin to change, industry has a unique opportunity to capitalize on the high level of consumer awareness. .

Higher awareness means greater demands

Oliver Wolf, Gelita's head of global B2B marketing, says there has been a noticeable change in attitudes toward joint health – something not solely caused by the COVID-19 pandemic. "More and more people are interested in doing something for their health and are prepared to invest in preventive products as well as treatments. This is even more in times when they had to stay at home watching their body becoming more and more flabby and losing performance."

"Overall, there has been a marked increase in health awareness. At the same time, consumers have become more demanding. As a result, it's no longer good enough for a product to be satisfactory on one level. Over a third of consumers globally plan to improve their bone and joint health in the next 12 months. Although the numbers remain high for older demographics, a growing proportion of young adults – 25 to 34-year-olds and 35 to 44-year-olds – are making bone and joint health a priority."

Holistic Approaches Rise

Consumers increasingly understand the holistic nature of joint health, impacting overall health and lifestyle becoming ever more apparent. Jaume Reguant, healthcare director at Bioiberica, says this reality is a central cause of the rise in popularity of products that target all aspects of joint health. Reguant notes that manufacturers are combining ingredients that provide a broader array of benefits. For example, products targeted toward mobility may contain protein for muscle health, hyaluronic acid and native type II collagen for joints and cartilage, as well as calcium or boron for bone health.

Wolf also emphasizes the importance of recognizing the way joints work together with other parts of the body, something Gelita tailors its products toward. "It is not only about joints. In fact, the entire musculoskeletal system has to be considered. Muscles, bones, fascia, ligaments and tendons all work together with the joints," Wolf says. "Only if all these components work perfectly together will we be able to move. The failure of only one of them causes considerable problems for the entire system. Specific collagen peptides can exactly target each of these different components and support them to do their job and keep us healthy and mobile."

Mobility across the lifespan

Wolf asserts that healthy aging is relevant to all consumers – independent of age. As the teenagers become more aware of their own physiology, they often turn to sports and higher physical activity levels, he says. Suhail Ishaq, president of BioCell Technology, expects the joint health market to continue expanding, "particularly as millennials start entering the market as they move into their thirties."

"Also throughout adulthood – as we start to show the first signs of aging between 35-40 years old, aches and pains creep in and wrinkles begin to appear. Here, we become more health aware and self-conscious as we juggle the many lifestyle issues of healthy nutrition, physical activity and finding balance," adds Wolf. "The world will soon have more elderly people than children, and more people living into older ages than ever before. As a result, seniors are more devoted to staying healthy, active, mobile and independent than ever before."

Dietary supplements continue to dominate

Holistic products targeting muscle, bone and joint health are on the rise. According to Innova Market Insights, 85 percent of joint health products launched in 2020 were dietary supplements – including capsules, tablets and sachets. "Capsules remain a firm favourite amongst joint health manufacturers, as they enable the safe containment of a wide range of ingredients, making them ideal for new comprehensive mobility solutions where formulation challenges may hamper functional foods," says Reguant.

Scientific backing is essential

Consumers are becoming more sensitive regarding the ingredients included in their daily diets and demanding products that address an increasingly wide range of health concerns. However, this is not always possible, according to Wolf. "They want it all, and they want it now. The truth is, not all consumer demands are compatible with each other, and the food and supplement industry must find ways to satisfy as many of them as they can while compromising others as little as possible."

In order to better communicate effective joint health supplement use, scientific data is essential. Supplement brands must be able to prove the positive effects their products promise for supporting the health of end users, Wolf continues.

Ishaq further asserts that people search for clinically studied ingredients in their purchasing products. "Consumers are very sophisticated and demanding regarding dietary supplements products. We offer them a solution with BioCell Collagen because it is patented and substantiated by multiple clinical trials that prove its efficacy. Consumers are more likely to purchase a dietary supplement with clinical evidence to support its claims than one that does not."

By Louis Gore-Langton

Innova Market Insights predicts younger consumers to drive "staying power" in post-pandemic immunity space

30 Jun 2021 Nutrition Insight

The COVID-19 pandemic has permanently boosted consumer interest in immune health, according to Innova Market Insights.

In addition, the market researcher notes that younger generations are expressing greater concern for protection against future pandemics and the threat posed to physical and mental well-being. This suggests a potential for long-term consumer interest in immunity. Lockdown measures resulting from the pandemic have taken a toll on many areas of life, inducing stress, isolation and worsening diets.

Speaking to FoodIngredientsFirst, Innova Market Insights' global insights director Lu Ann Williams says that a younger consumer base means more power for the immunity market. "Generally, younger consumers are most willing to make changes to their diets. With interest from younger consumers, immunity has the potential to be a trend staying power potential."

"There are a lot of tired people all over the world. And 18 months of news about the pandemic has certainly put us on a fast learning curve about the importance of being healthy. There is also a lot more commentary about mental health across all our media sources, and it's relatable."

Healthy mind, healthy body

Williams says that with such an array of health concerns arising during the pandemic, consumers are taking a more holistic approach. This means a greater focus on getting enough sleep, being physically and mentally healthy and obtaining a nutritious diet. "I think everyone, consumers and the food industry, have seen an evolution where there isn't an expectation for a silver bullet solution anymore. There is a more holistic approach that encompasses 'what I eat is good for me' and 'I feel good about what I eat.' This extends to mental well-being as well. It all comes together and is connected."

Innova Market Insights pegged "In Tune with Immune" as a top trend for 2021, noting that six in ten global consumers are increasingly mindful of the impact food and beverages have on their immunity.

Younger generations seek immunity boosters

The market researcher notes that Millennials (aged 26 to 35 years) and Gen X (aged 36 to 45 years) consumers have shown the most significant increase in reported concern for immunity since the COVID-19 pandemic began.

Holistic approaches to maintaining immune health rank highly. In Innova's 2020 Consumer Survey, choosing foods naturally high in nutrients – such as vitamins, minerals and antioxidants – came third as a way of achieving immune health, behind getting enough sleep and being physically healthy. Overall, 59 percent of consumers globally said that they were looking for food and beverages to support them in this regard.

Immunity NPD

Mental health concerns have risen sharply since the outbreak of the COVID-19 pandemic. Williams asserts that although immunity may become less of a priority as the immediate threat of the current pandemic subsides, industry can capitalize on the increased interest by creating ways to integrate immunity-boosting ingredients into everyday products.

Excluding supplements, immune support claims are currently focused on three main F&B categories: Babies and Toddlers, Sports Nutrition and Dairy. These accounted for a combined 73 percent of immune claims on new products in 2020, according to Innova Market Insights.

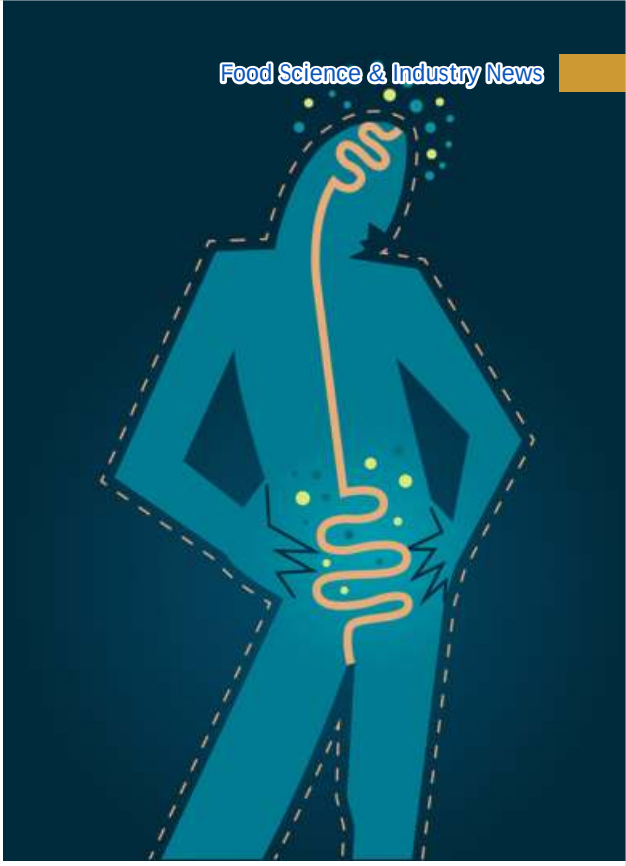
Smaller but growing subcategories also include soft drinks and hot beverages, with a particular interest in juice drinks and tea. In 2019, vitamin C product launches were found to be leading the way as an ingredient in gut health immunity launches, used in 39 percent of new product launches.

Blending mind and body

A rising number of NPD featuring holistic approaches to immune health that also target lifestyle factors and mental health concerns like sleep quality and relaxation are entering the market. For example, Chr. Hansen recently highlighted the impact of specific probiotics Lactobacillus acidophilus DDS-1 and Bifidobacterium animalis UABla-12, on both the immune system and sleep quality and stress levels in workers on rotation shifts.

Demonstrated in a study of 87 individuals, the ingredients were shown to improve relaxation levels and sleep patterns, while simultaneously strengthening intestinal microbiota. The study comes amid a wave of evidence supporting the influence of the gut on the brain and cognitive function, which has driven consumers typically interested in improving their mental well-being to ingredients that also boost their overall immunity.

By Louis Gore-Langton



Microbiome revolutions: ADM expert talks gut-brain axis, postbiotics and metabolic health

29 Jun 2021 Nutrition Insight

Microbiome research will lead to critical advancements around the gut-brain axis over the next five years, according to Daniel Ramón Vidal, research fellow microbiome at ADM. Vidal speaks to NutritionInsight about the microbiome's potential for mental well-being, the rising space of synbiotics and postbiotics, as well metabolic health's link to the gut's microbiota.

Just over 15 years ago, research around the gut microbiome was incredibly scarce and many in the science community did not yet understand its potential, he supports. "As the science community becomes more well-versed in the microbiome, consumers today are also developing a greater awareness of how a healthy gut can impact overall well-being."

In 2017, ADM acquired Vidal's ventures Biopolis and Lifesequencing and onboarded him as a microbiome expert. "We are testing and using ADM's ingredients in the research to further NPD, but our work through Biopolis has also been integral in identifying current probiotics and postbiotics that can be integrated into foods and beverages for convenient consumption."

"Combining resources and knowledge with ADM has pushed my work to explore new areas of the microbiome to help meet people's health needs." As understanding of the microbiome grows, consumers become more aware of how a healthy gut can impact overall well-being.

AI for the gut-brain axis

The gut and brain transfer important information to each other that can help support mental and emotional health, Vidal explains. Further research on the gut-brain axis is anticipated to create much-needed new product development for mental well-being. "This continues to be a rising issue in society today and that has been propelled further by heightened stress and anxiety around the global pandemic." Additionally, artificial intelligence (AI) is key to driving microbiome exploration and crucial findings forward. "AI technologies help us create machine-learning approaches that can pinpoint specific strains or microbial consortia, ultimately developing more tailored solutions."

Postbiotics and synergies

Postbiotics are "fascinating" solutions that are just now breaking into wider use and consumption, according to Vidal. Since postbiotics don't contain living microorganisms, they can be more easily applied across many different food and beverage applications as they can withstand harsh processing conditions like high heat or pasteurization. According to ADM's internal research, 49 percent of consumers believe every individual requires a customized approach to their diet, which allows probiotics and postbiotics to pave the way for individualized solutions. "We're continually looking for ways to find synergies between probiotics, postbiotics and prebiotics. By combining these solutions, we can help enrich more people's everyday lives."

"At ADM, we already offer several microbiome-supporting ingredient blends that are designed to meet specific health and wellness needs. Our synbiotic blend with our Fibersol line of dietary soluble fibre is designed to provide support in the area of digestion."
"As research of synbiotics continues, more strains will be identified that can be blended together for vital and beneficial support of the microbiome," Vidal details. Postbiotics are promising solutions that are now breaking into wider use and consumption.

Metabolic health

Another promising area linked to the microbiome is metabolic health, which is an ever-increasing concern for people, according to Vidal. One concern in particular is being overweight and obese for which consumers are looking for tailored solutions to support healthy weight. "ADM's Bifidobacterium animalis subsp. lactis CECT 8145 (BPL1) is a next-generation strain developed to target factors associated with fat mass accumulation." "Its heat-treated counterpart, HT-BPL1 doesn't contain living microorganisms, making it suitable for use under harsh processing conditions." This makes it easy for food and beverage developers to target metabolic health in a wider range of convenient snacks, bars and beverages for an on-the-go solution, Vidal notes.

Backed by science

ADM has conducted two clinical trials – one on BPL1 and one on both BPL1 and HT-BPL1 – and in both trials, reductions in measures of abdominal adiposity were seen over the course of the studies – in particular, BMI for BPL1 and waist circumference for HT-BPL12. The findings have helped ADM provide its food and beverage and dietary supplement partners with the scientific knowledge they need to better educate consumers with their product information and positioning.

"Some consumers may prefer to obtain metabolic support through supplements, and our living strain of BPL1 in nutritional supplements can help meet that demand," Vidal says. "On the flipside, other consumers may want to incorporate these benefits into their everyday smoothie or fortified protein bar. Our HT-BPL1 heat-treated strain is easily incorporated into these formulations, and is also supported by positive results from clinical studies."

Building on innovation

"It's only been 15 years since the understanding of the gut microbiome truly began, and we are still on the cusp of much more exploration," Vidal explains. There is much more to explore in the gut-brain axis, new probiotic solutions to create and an overall greater understanding of the microbiome to attain, he supports. "My next step is to continue to pinpoint ways we can better meet people's needs through the ingredients we develop."
"As research and knowledge of the microbiome expands, it's also important that we in the industry as scientists, ingredient suppliers, food, beverage and supplement manufacturers also educate the thought leaders in this space." From medical professionals recommending supplements to nutritionists advising on food and beverage choices, sharing accurate information and science-backed solutions is key for setting consumer expectations, Vidal concludes.
By Kristiana Lalou

Consumers weigh vegan & specialty diet attributes differently based on category, SPINS data shows

By Elizabeth Crawford 01-Jun-2021-Food Navigator USA

Rather, the success of different diet attributes – and therefore the importance of dedicating valuable real estate on labels for related claims – varies based on the maturity of the dietary trend, the extent to which a category innately 'fits' into a diet, the selection of products within a segment that meet specific food tribe requirements, innovation and product launches and other industry trends.

For example, rising interest in a plant-based diet means more consumers are looking for vegan and vegetarian options, but the extent to which these attributes resonate with consumers varies significantly between plant-based protein, plant-based dairy and other common categories, Scott Dicker, marketing data analyst with SPINS, told attendees at Natural Products Expo West virtual last week.

Within plant-based dairy, products with vegetarian-only attributes, which is determined based on nutritional information not marketing claims, grew 35% last year – outpacing the 18% growth of plant-based milk, cheese, creamer and yogurt segment overall. But products with vegan attributes grew only17% -- so slightly less than the overall category, Dicker said.
The opposite was true for plant-based proteins, where vegan attributes drove 28% growth in the past year, outpacing the overall category's 27% growth, compared to only 7% growth of products with vegetarian only attributes. Dicker attributed the difference between the claims' performance in the plant-based protein segment to many companies innovating or reformulating products to become fully vegan.

Products with vegan attributes also out-performed overall category growth in frozen at 15% versus 13%and in pantry staples at 12% versus 10% in the past year, according to SPINS. Likewise, it held its own in beverage – driving 10% growth – even though the overall beverage category grew 11%. The only category where plant-based noticeably faltered is in snacks and sweets, where it drove only 2%growth compared to the category's 5% increase over the last year.

cWhen it comes to overt marketing, vegan labels were most important in the plant-based protein and plant-based dairy segments, according to Dicker. He noted that vegan label claims drove a 26% year-over-year increase worth $838m in plant-based meat sales last year. In the plant-based dairy segment, labelled vegan products grew 15% year-over-year, accounting for $1.6bn in sales.

He also explained that the label 'vegan,' is gaining traction as consumer confusion increase around whether 'plant-based' means vegan, vegetarian, or plant-forward with some animal products. Other influential diet attributes driving sales across categories are Whole30, Keto, Paleo and FODMAP, which – like vegetarian and vegan – saw varying degrees of success depending on the segment.

Products with attributes catering toward the low-FODMAP diet drove the most growth in beverages at 11%(the same as the overall category), and snacks and sweets at 4% (just under the category's 5% increase).The diet also held its own with 11% growth in meat, which saw a 14% increase overall last year, and pantry staples where it grew 12% compared to the category's 10%, according to SPINS.

Even as low-FODMAP outpaced pantry staples, Whole30 and Paleo were the big winners in this category growing at 19% each, according to SPINS. But this is nothing compared to the diets' influence in other categories, such as plant-based meat where they outpaced the category's 27% growth at 72% and 106%,respectively. Likewise, these attributes performed well in plant-based dairy with Whole30 marking 20%growth and Paleo 36%. Despite their success in these categories, these attributes fell notably short in other areas. For example, sales of products with Whole30 attributes dropped 17% in the past year in dairy, compared to the category's 8% increase. Whole30 also under performed in beverage with a 7% year-over-year increase compared to the category's 11% sales growth. Paleo also came in with a 7% increase in beverage, and underperformed in sweets and snacks with 1% growth compared to the category's 5%, according to SPINS.

REGULATORY NEWS

CBD for elite sports? Four five calls for UK gov to trial medicinal cannabis for sports nutrition

05 Jul 2021 Nutrition Insight

Amid controversy around cannabis use and the Olympics, Fourfive is calling on the UK's sports governing bodies to start clinical trials into the effectiveness of CBD and medical cannabis in professional sport.

The CBD nutrition brand's move seeks to accelerate the use of these ingredients for sports nutrition.

"We want trials in place to measure the impact of CBD and medical cannabis can have on athletes who are experiencing different issues, and we want to see how this compares with the current treatments on offer," Dom Day, co-founder of Fourfive, tells NutritionInsight.

"In addition, the World Anti-Doping Agency (WADA) could also clear up and update its recommendations to include other cannabinoids beyond just CBD."

Why is cannabis penalized?

The news comes at a heated time surrounding the Olympics and cannabis use. US track athlete Sha'Carri Richardson has been suspended for one month after testing positive for THC, one of over a hundred cannabinoids in cannabis.

Richardson failed a drug test following her Olympic qualifying 100 m race victory at the US Olympic Track and Field Trials, according to the US Anti-Doping Agency (USADA).

According to USADA, for a substance to be added to WADA's prohibited list, it must meet two of the three inclusion criteria:

- It poses a health risk to athletes.
- It has the potential to enhance performance.
- It violates the spirit of sport.

Though WADA has increased the threshold for a positive test, it has not taken marijuana off the list because it still asserts that the drug meets at least two of the above criteria.

In 2019, WADA exempted CBD, which is an isolate, from this category. However, all other cannabinoids, whether natural or synthetic, are prohibited in-competition.

Following in US's footsteps

Two weeks ago in the US, both the NFL and NFLPA pain management committees committed to a US$1 million grant to support research into the effects of cannabis, cannabinoids and non-pharmacologic treatments on pain and athletic performance in US football.

"Like the NFL has, we want the UK's sport bodies including the RFU, the FA and even Sport England to step up and commit to research that looks at the benefits of CBD and medicinal cannabis so the industry can fulfil its potential," says Day.

"If the NFL can do this, so can every other sport. At the end of the day this is about athlete welfare, that is what matters," he continues.

Used by athletes

Since WADA sanctioned the use of CBD by athletes in sport, Fourfive has led the UK's awareness and supply of premier grade CBD, building a stable of advocates from many professional sports sectors as well as many 1000s of customers.

But individual sports governing bodies as well as Sport England have thus far been reluctant to show any leadership or foresight on the topic, the company says.

"The fact is that thousands of UK athletes are choosing CBD to manage pain as an alternative to standard pharmacological treatments. We are hearing from countless customers about the benefits of CBD, not just from athletes but from anyone who leads an active lifestyle, they are telling us that CBD helps with pain management, sleep disorders and anxiety," Day notes.

A booming UK CBD market

The Association for the Cannabinoid Industry (ACI) and Centre for Medicinal Cannabis (CMC) has estimated the cannabidiol (CBD) industry will generate £690 million (US$959 million) in annual sales for 2021.

According to the ACI, the UK has "improbably" become the world's second-largest consumer cannabinoids market after the US, spending more on cannabis extracts domestically than vitamin B and C combined.

Meanwhile, The Food Standards Authority (FSA) has moved to provide regulation around the supply of CBD through its Novel Food directive, but sports authorities have been reluctant and slow to provide guidance and evidence to the athletes they represent.

By Kristiana Lalou

Mind the Gap: Adequate vitamin D essential for protecting from fall injuries

01 Jun 2021 Nutrition Insight

Vitamin D deficiency may contribute to the serious falls injuring 100,000 elderly people each day, according to a new resource by the International Alliance of Dietary/Food Supplement Associations (IADSA). Published on IADSA's Mind the Gap platform, the resource looks to draw attention to the importance of vitamin D levels for muscle function and balance.

"The message of our latest Mind the Gap resource is simple: Increasing vitamin D intake is a way to help older adults keep their bones strong and reduce the risk of suffering a fall," says Simon Pettman, executive director of IADSA.

"With many people becoming less active as a result of lockdowns and self-isolation, the central message of this new story is more important now than ever."

Mind the Gap is a resource initiative that "facilitates the sharing of positive stories about the benefits that nutrition offers to consumers all over the world and society at large."

Mind the Gap is educating people on the importance of obtaining adequate vitamin D to prevent bone health damage.

The portal underscores the difference between the number of nutrients needed to optimize well-being and the quantity people actually consume.

It also seeks to fill gaps in consumers' scientific knowledge while promoting real-life examples of successful national nutrition programs, says IADSA.

Falling down: A global problem

Falls in the elderly, particularly in the over 60s population, is an endemic problem worldwide. According to the World Health Organization (WHO), there are 37.3 million falls each year serious enough to require medical attention.

Research published by the Centers for Disease Control and Prevention (CDC) shows that one in four older people fall each year, but less than half tell their doctor.

Moreover, falling once doubles a person's chances of falling again.

Other CDC research shows that 3 million older people are treated in emergency departments for fall injuries.

Over 800,000 patients a year are hospitalized because of a fall injury, most often because of a head injury or hip fracture.

A 2018 study in the Journal of the American Geriatrics Society also shows that the total medical costs for falls totaled more than US$50 billion in 2015, with Medicare and Medicaid shouldering 75 percent of these costs.

Moreover, an estimated 684,000 individuals die from falls globally, of which over 80 percent are in low- and middle-income countries, according to the WHO. Medical costs for fatal and nonfatal falls in the US are estimated to have reached US$50 billion in 2015.

Driving vitamin D supplementation

The WHO recommends that people with vitamin D deficiency take regular supplements to avoid the risks associated with falling. The US National Institute of Aging also recommends this, saying "getting enough calcium and vitamin D can help keep your bones strong."

The European Commission has approved health claims on this basis, granting a claim applied for by Abtei Pharma Vertriebs, stating: "Chewing tablets with calcium and vitamin D improve bone density in women 50 years and older. Thus [these] chewing tablets may reduce the risk of osteoporotic fractures."

Recently, NutritionInsight discussed the growing industry attention on combining vitamin D with vitamin K2 as a method for treating bone health damage with experts from IFF Health.

Vitamin K2 and D3 have been found to work synergistically for bone health, by diverting calcium away from arteries and into bones, according to research by Kappa Bioscience.

Vitamin D supplementation has also been widely debated for its potential to reduce the impact of COVID-19 lockdowns on vulnerable people, which resulted in a UK government scheme to offer over 2.5 million people free supplements throughout the winter period.

Moreover, a German study in February concluded that blanket vitamin D supplementation across the country could prevent 30,000 cancer deaths annually, along with related healthcare costs.

Edited by Louis Gore-Langton