HOW COLLAGEN PEPTIDES HOLD THE KEY TO QUALITY AGING

SLOW AND STEADY WINS THE RACE FOR SUGAR REDUCTION

Human milk oligosaccharides

A challenge for the future
Asia’s dedicated nutraceutical event where industry professionals meet to do business

5-6 September 2017
Sands Expo & Convention Centre, Marina Bay Sands, Singapore

**New location for 2017**

**Vitafoods Asia 2017: New Venue and City, Bigger and Better Experience**

Vitafoods Asia – the only event dedicated to the nutraceutical, functional food and beverages, and dietary supplement industries in Asia – will be held in Singapore for the first time ever. Happening at the Sands Expo and Convention Centre in Marina Bay Sands from 5 – 6 September, the seventh edition will be twice as large as before, with over 250 exhibiting companies, and will present more of the best innovations that the industry has to offer.

**Singapore and Beyond**

As Asia’s leading food and nutrition hub, Singapore houses many R&D centres and regional offices from leading F&B companies around the world. For Vitafoods Asia, this strategic move will bring in new visitors from other parts of the world while maintaining its reach in Asia Pacific.

As with previous editions, the nutraceutical event for Asia will cover four key industry areas – Ingredients & Raw Materials, Contract Manufacturing & Private Label, Services & Equipment, and Branded Finished Products – offering a more focused and targeted content across all segments. Designed to facilitate business interactions, these areas reflect the diverse nature of the nutraceutical industry and the classification will allow visitors to identify exhibitors of interest with greater ease. This year, attendees can expect to view a wide portfolio of offerings from a record number of over 250 exhibitors from around the world, including major manufacturers and service providers like analyze & realize, AstaReal, Catalent, Geltis, Graminex, Ingredia, KSM, Lesaffre, Sabinsa, Troikaa, and Vidya Herbs.

**Returning Event Highlights**

Visitors interested in uncovering the latest launches and core products can head over to the Inspiration Showcase, featuring a wide range of products – such as energy drinks, meal replacement bars, and collagen jellies – that address a variety of needs. Those seeking the opportunity to see, touch, and taste the latest functional food and beverages in order to make informed purchasing decisions can head to the Tasting Centre, where visitors are also encouraged to vote for their favourite product in the annual Tasting Centre Awards.

Attendees looking to keep up-to-date with key developments in the industry can pay a visit to the Market & Trend Overview section. Experts from Innova Market Insights will offer a range of poster and tablet device presentations delving into carefully selected health categories to broaden visitor’s understanding on the pan-Asian market leading ingredients, products, and consumer trends.

The popular Omega-3 Resource Centre also makes a return, bringing new trends and product developments from the market. Industry members can learn all about the Omega-3 supply chain and even access market data on selected topics at the focused knowledge hub.

In addition, attendees can further expand their network and knowledge at the New Exhibitor Pavilion, where new entrepreneurial businesses and start-ups in the industry will be exhibiting for the very first time.

The coming edition also offers the highest number of International Pavilions. Visitors planning to source from specific countries can narrow their search by zooming in on the 8 pavilions – Australia, Canada, France, Germany, Japan, Poland, Taiwan and USA.

**New Education Opportunities**

Apart from gaining access to the latest innovations and networking opportunities, attendees can look forward to new educational offerings lined up at Vitafoods Asia. This year, the revamped Vitafoods Asia Conference will be split into two segments: four 1/2-day Masterclasses and a full-day Digestive Health & Microbiome Summit. The conference will feature an impressive panel of global industry experts from countries such as Australia, Germany, Sweden, Thailand, The Netherlands, and USA, across various segments and job functions. Each unique segment will address the key challenges within Asia’s nutraceutical, supplement, and functional food industry.

For those seeking complimentary learning opportunities on the show floor, two brand-new presentation theatres are available. The Innovation Theatre is a two-day programme that is fully dedicated to the future of the Asian nutraceutical and functional nutrition industry. It aims to explore the upcoming developments in the industry, namely in the categories of Open Innovation, Personalised Nutrition, and New Technology. Separately, the Vitafoods Asia Life Stages Theatre is designed to examine on the specific nutrition requirements throughout the human life stages, focusing on three core themes – Infant & Maternal Health, Adult Health, and Healthy Ageing.

Lastly, attendees looking for a successful market access to Asia can also seek regulatory advice at the new Industry Experts Advice Centre, featuring regional and pan-Asian market and regulatory experts. Interested parties can visit Vitafoods Asia website prior to the event to secure a free 1-2-1 consultation.

For more information on Vitafoods Asia, visit www.vitafoodsasia.com.

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For more information on Vitafoods Asia, visit www.vitafoodsasia.com.
Nutraceuticals Now is a technical review providing the latest information on functional products and ingredients which are defined as having a disease preventing and/or health promoting benefit in addition to their nutritional value. It is targeted at manufacturers of food and drink, who are producing finished products aimed at the ever increasingly health conscious consumer.

Any views and/or opinions expressed in the articles in this magazine are entirely those of the individual authors and do not necessarily express the views of the editorial staff.

ISSN -1478-6605

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Printed by: Harrisons

Available by subscription only

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INTRODUCING NUTRANOW APP AND HOW IT WORKS

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Vitafoods Asia 2017: Uncover Opportunities to Enter Burgeoning Nutraceuticals Market

New Venue and City, Bigger and Better Experience

Come September, Asia’s nutraceutical, functional food and beverages, and dietary supplement industries will gather in Singapore for Vitafoods Asia, the region’s only event dedicated to these markets. Despite what crowd sentiment and ‘common sense’ say about the global economy, many of those we’ve spoken to have expressed positivity about the future of their companies.

According to Allied Market Research, the global nutraceuticals market size is expected to reach $302.306 million by 2022, with a CAGR of 7.04% from 2016 to 2022. Asia Pacific is expected to surpass the global growth average with a CAGR of 7.33%, making noteworthy contributions to the global market.

Increasingly, consumers believe that supplements can help them achieve their nutrition goals, and this signals a wide open market with plentiful opportunities. Based on our interactions with industry players, we expect personalised nutrition and probiotics to feature strongly in this year’s Vitafoods Asia.

Herbalife revealed the results of its Asia Pacific Balanced Nutrition Survey earlier this year, and it showed that one in three consumers are keen on personalised nutrition products and nutrigenomics. However, due to a lack of practitioners in the region, such products have generally been too costly for consumers. Separately, probiotics is likely to remain a popular category, given the size of the Asia Pacific market — accounting for an estimated majority share of 38% in 2016 — and the rising awareness of health benefits associated with it.

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My team and I look forward to welcoming industry professionals from all over the world at Vitafoods Asia 2017.

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• Herbalife, Asia Pacific Balanced Nutrition Survey Findings, 5 April 2017
• Murdo Intelligence, Asia Pacific Probiotics Market (2017-2022), May 2017

Chris Lee
Managing Director
Global Health & Nutrition Network
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How collagen peptides hold the key to quality aging

As people all over the world realize they are likely to live to a ripe old age, the desire to live better for longer is becoming increasingly important. Collagen peptide expert GELITA believes that its multifunctional ingredients are what consumers are looking for, in more ways than one. Nutraceuticals now speaks to Dr Stephan Hausmanns, Vice President BU Health & Nutrition at GELITA, to find out why.

Q: How is the desire to live better for longer manifesting itself in populations around the world?
A: Consumers are aware that they are likely to live longer than their predecessors, and the number of people aged 60 and older is growing faster than any other age group. This has led to increased consumer desire to be healthy now and in the future. Across the globe, people are taking an increasingly proactive role in their own health by adopting more nutritious diets and more active lifestyles. At the same time, governments and health organizations are keen to encourage people to adopt healthy lifestyles in order to avoid the potentially huge burdens of illness and infirmity in older people could place on their health and social services.

Q: What kind of opportunities does this open up for manufacturers?
A: This shift in attitudes has created exciting new opportunities for food, beverage and nutraceutical producers. Consumer demand for solutions that can tackle age-related conditions and keep people active is growing year on year. In order to be able to meet this demand, however, manufacturers require scientifically proven ingredients that can be incorporated into a wide variety of everyday items.

Q: Which aspects of their health in later years are consumers most concerned about?
A: Limited physical performance, loss of muscle tone and skin vitality, as well as degenerative joint diseases and cartilage problems are some of the main concerns that people associate with aging – and without some form of intervention, these are very real possibilities for many.

Q: What are the options when it comes to finding solutions to these problems?
A: People who want to stay fit and healthy as they grow older have several options, from sports and lifestyle interventions to the use of preventative nutrients. We believe that specific collagen peptides can be a powerful ally for people looking to take the preventative nutrient approach. With their special nutritional properties, high quality proteins are important tools when it comes to effectively improving health and wellbeing. In fact, GELITA’s specific collagen peptides are scientifically proven to be very useful in many serious health issues related to aging.

Q: Can collagen peptides really help to fight serious age-related problems? Aren’t they just good for healthy skin and nails?
A: The potential roles for collagen peptides in supporting health as we age go far beyond skin, nails and outward appearance. Specific peptides can be tailored to deliver solutions to age-related problems that could potentially place huge burdens on health budgets as well as personal wellbeing. In addition, GELITA has developed specific Bioactive Collagen Peptides® named BODYBALANCE™. A high quality study investigating its effects on body composition and muscle strength in 60 sarcopenic men aged 65 and older, overall, the results clearly show that the combination of resistance exercise and specific collagen peptide supplementation can strengthen muscular power and fight prevent sarcopenia.

Q: Science has not yet provided a cure for osteoarthritis, another huge age-related health concern. Do you believe that collagen peptides could provide the breakthrough we have been waiting for?
A: Well, they are not a drug and they can’t cure osteoarthritis but they can do a lot to reduce or at least postpone the condition. The principal reason for joint problems as people age is wear and tear of joint cartilage. In most cases, the symptoms are treated, rather than the cause. At GELITA, we have worked hard to develop a solution that tackles this problem in a completely different way. We have developed a product called FORTIGEL®. It stimulates the body’s cartilage cells to increase production of both collagen and proteoglycans, the two major components that make up almost 90% of cartilage dry mass. In doing so, these collagen peptides considerably improve joint mobility, reduce pain and produce lasting quality of life. We have proven the effectiveness of our product in joint cartilage recovery in several clinical and pre-clinical studies.

Q: Bone health is a particular concern for women after the menopause. Is there anything collagen peptides can do to help in this respect?
A: Loss of bone density and stability is a significant problem for many postmenopausal women. It can develop into osteoporosis, a bone weakening condition that is actually a major public health threat for many population groups – not just post-menopausal women. In fact, the WHO predicts that the already huge number of men and women with osteoporosis in the EU will rise to 33.9 million in 2025 – that’s a 23% increase from 2010. Bone is a mixture of mineral crystals held in an organic collagen matrix. Without this collagen matrix, the crystals are extremely brittle and prone to breakage. Thus, it can be seen that collagen is as vital as calcium for bone health. We have therefore developed a bone health product called FORTIBONE®. It stimulates osteoblast activity to increase the production of the extracellular bone matrix. In addition, it regulates the degenerative processes that affect bones by reducing osteoclast-based protease production. A recent double-blinded study on post-menopausal women showed that FORTIBONE® administration statistically significantly increased the bone mineral density in the spine and the femoral neck by more than 5% compared to placebo over the period of one year. This study confirms the anabolic effects of FORTIBONE® on the bone metabolism.

Q: Women in particular also worry about the condition of their skin as they grow older. How can collagen peptides be incorporated into skin health products, and what results can consumers expect to see?
A: Collagen is what gives the skin its firm structure. However, from the age of 30 onwards collagen synthesis in the dermis is reduced. At the same time, the skin suffers from a progressive loss of moisture, which makes it increasingly dry. Our collagen peptides in VERNIL® stimulate the fibroblasts in the dermis. This substantially increases the synthesis of collagen, elastin, and proteoglycans, all of which contribute to the skin’s elasticity. As a result, the epidermis is supported from underneath and skin sagging is prevented. Clinical studies have been published that prove these positive effects on skin elasticity, wrinkle reduction and the appearance of cellulite-affected skin with a daily dose of 2.5 g of VERNIL®. With regards to applications: all GELITA collagen peptides can easily be incorporated into a wide variety of products — from pharmaceutical-like applications such as capsules, film-coated tablets and standard tablets to indulgence products such as chocolate, instant coffee, beauty drinks, shots or even fortified gummies.

Q: When sourcing collagen peptides, what should manufacturers look out for?
A: As with many things in life, not all collagen peptides are equal. We would always advise manufacturers to source and use only the products used in the clinical trials. Whatever the intended application, it is essential that the promised functionality is based on sound science and has been proven in high quality clinical studies. GELITA’s philosophy of substantiating all product functionalities on solid science is what I believe makes the company the preferred supplier for healthy aging products.

Reference
1 www.iofbonehealth.org/facts-statistics#category-22

About GELITA
GELITA is the world’s leading manufacturer and supplier of collagen proteins. Providing functional, health and wellbeing benefits, the company’s extensive range of collagen proteins provides versatile functionalities in functional foods, nutraceuticals and dietary supplements and offers innovative opportunities for a wide variety of product development options. GELITA offers comprehensive service, support and many years of expertise in collagen protein applications. With its strong commitment to science-based innovation, GELITA is continually looking for new solutions for food, as well as for health and nutrition applications. The company provides its customers with tailor-made formulations and a range of products that meet and exceed the requirements of each and every application.

Dr Stephan Hausmanns,
Vice President BU Health & Nutrition at GELITA
Nutraceuticals now react quickly on the raw materials situation and on market trends. In many cases there is not just one ingredient that can satisfy all the requirements in an alternative formulation. The right ingredients must be chosen taking into consideration processing conditions and ingredient interaction to arrive at a tailored, customer-specific recommendation.

The choice of appropriate ingredients depends on the positioning or the value benefit proposition of a product. Finding ingredients that meet a specific criterion and still deliver on texture, taste, flavour, shelf life and safety can be a challenge.

The right ingredient, in combination with the correct processing, packaging and storage conditions, helps to ensure product quality. We help our customers to achieve cost optimisation and flexibility with alternative ingredients or develop innovative flavour profiles in a range of areas of food design and technology, health and nutrition, food safety, processing aids.

**INNOVATIVE PRODUCT CONCEPTS**

I am delighted to announce the launch of a new Brenntag Food Application Kitchen. We have always taken pride in our ability to provide extensive technical support to our customers through our network of Food Application Centres across Europe. Our new UK-based facility will allow us to undertake even more bespoke projects and formulating trials across the variety of food and beverage applications, featuring formulation, product and stability testing.

Our Food Application Kitchen is located at our food hub site in Widnes, Cheshire, which is also the flagship in our evolving focus on food, feed and pharmaceutical blends in the UK & Ireland. The site now incorporates a facility that manufactures dilutions of acidulants, preservatives and other ingredients at customer-designated strengths as part of our standard portfolio.

Along with Widnes, our Belfast site houses a food solutionising plant, offering our customers a range of pre-diluted ingredients. All of our Brenntag UK & Ireland distribution sites have gained certification for the British Retail Consortium (BRC) which demonstrates our commitment to being the custodians of safety for the ingredients supply chain we operate in.

**DISCUSSING KEY TRENDS IN THE MARKET**

Specific market trends depend on the market application, however we are continuing to see the focus on ranges for health conscious customers across the food and beverage sectors. Demand for “well being” or “good for you” products are increasing. Fat, salt and sugar reduction, “Free From”, clean and clear label continue to be some of the key messages calling for more diversified product offerings. Consumption is largely driven by external factors that are common across most food categories, such as concerns over healthy eating or “Macro Trend of Health”.

For instance, the bakery market has changed significantly, as shoppers direct their purchasing process through a prism of health trends as well as price. The increasing demand for natural bakery products that contain ingredients such as fibre is expected to fuel the demand for bakery products. We have seen ongoing success of using chicory root fibre in bakery formulations, as it is rapidly becoming the favoured choice with its clean labelling and ability to replace sugar and addition of fibre.

In the beverage market, sugar reduction continues to be one of the key messages
of the key aspects. Some of the simplest and most cost effective ways to decrease the sugar without affecting flavour is to select an intensive sweetener system. Cellulose gums can help counter the loss of body following the removal of sugar.

Demand for fibre fortified drinks is also on the increase. The ever-growing energy drinks market leads to the need for suppliers to provide bespoke food blending at an increased output level. We have seen increased demand for specific vitamin and mineral blends in beverage to replace those lost when juices are pressed, heat treated and transported. Blending of course is not only limited to powders. From simple blends like a 50% Citric Acid to solution in bulk, to a more bespoke blend of sweeteners or preservatives in an IBC– the highest quality standard such as the BRC accreditation is key.

Dairy products have always been associated with health, and are seen as an essential part of a well-balanced, enjoyable diet. Value, convenience, health, wellness and even indulgence now actively influence buying decisions. The texture, mouthfeel, shelf life and appearance of dairy products such as milk, drinking or spoonable yoghurts, and flavoured milk are all key factors that consumers are looking for, and multiple benefit claims are on the rise. Low fat and Free From (such as allergy and gluten free) claims continue to be popular. We are also seeing digestive/gut health positioning gaining further share of this segment. Again, in case of texture improvement, clean label alternatives, low fat/sugar content for dairy products – correct choice of ingredients can help deliver the right positioning of the product.

A growing consumer trend for healthier foods is now looking at sectors that have not traditionally been considered as healthy - in a confectionery market for instance. Consumers are looking for healthier alternatives that still provide the taste and comfort of a traditional confectionery product. Ingredients such as Inulin from Sensus allow manufacturers remove part of the sugar but still deliver a pleasant tasting finished product with no changes in the manufacturing process.

In my view, a successful product is one which interacts with a variety of consumer beliefs and shows the benefits of ingredients, and innovation is vital to engage with existing and new potential users. Innovation can be achieved through the introduction of ingredients, new technologies and processing - or all of these aspects for optimal formulation.

For more information please contact alastair.nicholl@brenntag.co.uk.
Capsaicinoids’ New Role in Weight Management – Promoting Healthy Body Composition

By Lynda Doyle

Despite the fact that more and more people are aware of the health implications of weight gain and obesity, they are still a growing problem and projected to significantly increase in the coming decade. Diet and exercise often bring little long-term success, even though many try to lose weight using these methods. Maintaining consistency with a diet plan is challenging and exercise, even when done regularly, may not significantly impact caloric expenditure to make a difference. To help, many turn to dietary supplements. One naturally occurring ingredient comes from red chili pepper (Capsicum) and over the last 40 years, research has shown how it supports key aspects of healthy weight management including lipolysis – the breakdown of fat, metabolism (thermogenesis) and body fat and improve body composition provide a more comprehensive approach to weight management and overall health. Several studies have confirmed that Capsimax supports key mechanisms for weight management, including increasing lipolysis (the breakdown of fat) and energy expenditure and reducing appetite. A recent study that demonstrates that Capsimax not only supports weight management but also body composition.

The Benefits of Capsimax

Capsimax’s New Role in Weight Management – Promoting Healthy Body Composition

The Special Action of Capsaicin in the Body

The body has a special subset of nerve receptors that perceive stimuli such as heat and acid. When these receptors are activated, the body feels a painful burning or itching sensation. A subset of these receptors, called transient receptor potential vanilloid 1 (aTRPV1), can be activated by capsaicin and its analogs. These receptors are found in the gastrointestinal tract, adipose tissue and the brain, and play a key role in the physiological effects seen when capsaicinoids are consumed. Over 90 clinical studies have been conducted with capsaicinoids, demonstrating their ability to increase lipolysis (the breakdown of fat) and energy expenditure and reduce appetite. The culmination of these effects not only promote weight loss but also healthy body composition, which may be a better indicator of overall health and reducing risk associated with chronic diseases.

Body Composition is a Better Indicator of Weight and Health

Body weight by itself only indicates the combined weight of all the tissues of the body and is not nearly as important as composition. Body composition describes the relative amount of fat to fat-free mass (bones, muscles, organs, etc.) and how fat that is distributed throughout the body. So, even a healthy person with seemingly normal weight on the scale may still have an unhealthy body composition. People are generally classified as having body composition that is either android (a.k.a. ‘apple shaped’) or gynoid (‘pear shaped’). Carrying more weight in the waist (‘apple shaped’) is associated with increased risk factors of hypertension, diabetes, high cholesterol and cardiovascular disease. The waist-to-hip ratio accounts for body composition by measuring the dimensions of the circumference of the waist to that of the hips. It provides insight into both the amount of weight a person carries, how it is distributed in the body and the risk of associated illness from excess fat. Therefore dietary and supplementation interventions that reduces body fat and improve body composition provide a more comprehensive approach to weight management and overall health. Several studies have confirmed that Capsimax supports key mechanisms for weight management, including increasing lipolysis (the breakdown of fat) and energy expenditure and reducing appetite. A recent study that demonstrates that Capsimax not only supports weight management but also body composition.

References

By the early 1900s, eminent pediatricians had already noted the much lower mortality rate of breastfed infants compared to bottle-fed infants, and observed a correlation between breastfeeding and disease resistance, including resistance to infectious diarrhea. Furthermore, they found important differences in the intestinal microbiota, including the predominance of bifidobacteria (later known as Bifidobacterium bifidum) in the feces of breastfed infants. This was attributed to an unidentified “bifidus factor.” In the 1950s, evidence began to emerge that bifidobacteria was a specific group of carbohydrates in human milk, now known as human milk oligosaccharides. These HMOs support the growth of lactobacilli, which in turn inhibit pathogens by outcompeting them for nutrients and by secretory acids (lactic acid and acetic acid) that make the environment unfavorable for pathogen growth. Nowadays, it is well known that the diet influences the composition of the gut microbiome, not only in infants but also in adults. The gut microbiome of breastfed infants is typically dominated by commensal bacteria of the genera Bifidobacterium and Bacteroides due to their competence to metabolize HMOs. HMOs are not digested by humans, so they lack any nutritional value and enter the colon largely intact, metabolize HMOs. HMOs are not digested by humans, so they lack any nutritional value and enter the colon largely intact, where they act as prebiotics to enrich the beneficial microbial population and suppress the growth of harmful bacteria. As well as inhibiting pathogens indirectly by supporting the growth of commensals, HMOs prevent many pathogens from binding to cellular receptors, as discussed above for norovirus. Gastrointestinal pathogens often bind to glycans on the surface of the mucosal epithelium, the innermost cell layer which is in direct contact with the contents of the gut. Soluble HMOs with similar glycans structures act as adhesion-blocking decoys to prevent this critical initial stage of the infection process. The trisaccharide 2′-fucosyllactose prevents the binding of bacteria such as Campylobacter jejuni, one of the most harmful pathogens responsible for bacterial diarrhea (Yu et al., 2016). Other HMOs have been shown to block Escherichia coli, Salmonella enterica, and Vibrio cholerae (Coppa et al., 2006). Acidic HMOs similarly block Helicobacter pylori, which promotes the development of gastritis and gastric ulcers (Simon et al., 1997). The effectiveness of fucosylated HMOs is not limited to viruses and bacteria – HMOs also provide passive immunity against the fungus Candida albicans and even the phagostasis of eukaryotic parasites can be hindered by the same adhesion-blocking mechanism. Many scientific reports have confirmed the positive effects of breast milk and specific HMOs on infant health and development in vitro and in vivo. HMOs have the potential to modulate systemic immunity by triggering immune factors that influence immune cell population and its functions. HMOs reduce intestinal inflammation, and by promoting the growth of lactobacilli and bifidobacteria, these bacteria themselves also have a positive influence on innate immunity. Acidic HMOs such as sialyllactose may provide the sialic acid required for the biosynthesis of gangliosides and glycoproteins, which are in turn essential for brain development. Approximately 200 structurally diverse HMOs have been identified thus far, comprising various monosaccharides building blocks such as glucose, galactose, L-fucose, N-acetylneuraminic acid and N-acetylgalactosamine. HMOs are the third most abundant component of human breast milk after lactose and lipids, with a concentration of 5–10 g/L. However, the quantity and composition of HMOs depends on the individual and changes during the period of lactation. At the beginning of lactation, when the infant is most vulnerable to infections, the concentration of HMOs can reach 24 g/L in the early milk known as colostrum. Remarkably, both the concentration and diversity of carbohydrates appears unique to human breast milk. According to the Centers for Disease Control and Prevention (Atlanta, Georgia, USA), about 200,000 of which are fatal. Although norovirus causes diarrheal diseases in all age groups, it is the most common cause of diarrheal death in children under 5 years of age. There is no vaccine against norovirus and no specific treatment for infections. However, recent studies have shown that human milk oligosaccharides (HMOs), specifically 2′-fucosyllactose and 3-fucosyllactose, may help to prevent norovirus infections by stopping the virus particles from attaching to their receptors on the cell surface. Norovirus infections begin when the virus binds to glycans expressed on the surface of mucosal epithelial cells in the digestive tract – the so-called histo-blood group antigens (HBGA). Fucosylated HMOs such as 2′-fucosyllactose, 3-fucosyllactose and more complex HMOs containing an alpha 1,2-fucose epitope are structurally similar to these HBGA receptors. This resemblance is sufficient for the HMOs to act as decoys – thus norovirus particles bind to HBGAs and HMOs in vitro in a similar manner (Weichert et al., 2016, Shang et al., 2013). More importantly, the reduced frequency of diarrhea caused by microbial infections correlates with the content of fucosylated HMOs in breast milk (Morrow et al., 2004, Yu et al., 2016).
Tate & Lyle Extends Clean-Label Portfolio with the launch of CLARIA® Bliss Tapioca-Based Starch in Europe, Middle East & Africa

Extension to the line will enable manufacturers to formulate products with cleaner labels in line with consumer demand, while maintaining excellent taste, texture, colour and performance.

Tate & Lyle PLC ("Tate & Lyle"), a leading global provider of specialty food ingredients and solutions, has announced the introduction of its tapioca-based CLARIA® Bliss starch to the Europe, Middle East & Africa (EMEA) region, responding to growing demand from consumers for cleaner label products.

An extension to the line of CLARIA® Functional Clean-Label Starches, the launch of CLARIA® Bliss in EMEA follows its debut at the Institute of Food Technologists Food Expo in Chicago last year. CLARIA® Bliss has functionalities like modified tapioca starches and can help manufacturers develop high quality and great tasting products. With tolerance to shear, heat and acid, even under extreme conditions like ultra-high temperatures (UHT) and homogenisation, CLARIA® Bliss makes it easier than ever for food manufacturers to develop products with cleaner labels and differentiated texture.

Its launch follows market research from Innova that shows the number of food products defined as clean-label sharply increased in Europe in categories such as chilled desserts (+54%) or ready meals (+39%) between 2014 and 2016.

Yves Maltête, VP Global Product Management, Texturants at Tate & Lyle, said: “At a time when 86% of European consumers regard food and beverages as processed if they contain ingredients they don’t recognize , CLARIA® Bliss can help manufacturers maintain great taste in their products. It will also allow them to simplify their ingredient list in a variety of applications, including delicate dairy desserts, clear sauces, chilled ready meals or filling of fresh baked goods.”

CLARIA® Bliss delivers on the growing tapioca-based starch trend, which has seen launches of products including tapioca ingredients increasing on average by 25% each year since 2010. Tapioca is popular among manufacturers and consumers for its clean flavour and colour, soft gel texture and non-GMO and gluten free attributes. CLARIA® Bliss thickens and sets to form a soft, translucent gel that is especially desirable in applications like a dairy custard or in specialty sauces.

Yves Maltête continued: “There is an enormous opportunity for our customers around the world to simplify ingredient lists and take advantage of demand for cleaner labelled products. We want to partner with our customers to help them meet these challenges, and retain their competitive edge locally and globally. With our expanded CLARIA® line now including CLARIA® Bliss, it’s easier than ever to make that a reality.”

For more information on CLARIA® Bliss, please visit www.clariastarch.com/claria-bliss.
The Food Matrix effect, beyond the nutrients

By Lecerf Jean-Michel, Medical Doctor, Head of the Nutrition Department, Institut Pasteur de Lille

The Food Matrix Effect, Beyond the Nutrients

probably due to the interaction between saturated fatty acids at the link between dairy milk saturated fatty acid and the everyone knows the relationship between saturated fatty Classically nutrition science examines the nutrients intakes and Ingram‐Mulvey, (11) has shown that the differences in absorption, which varies with the type of matrix: milk or fat, dairy products, and particularly the non-nutrients components, and the food matrix. It implies physical and chemicals factors related to the native composition of the food product as well as the processing and particularly the heating process. So, the composition depends on the type of food product.

The food matrix may explain many of the differences between the sum of single nutrients and whole foods. Food science and food technology must be combined in nutrition in order to improve our knowledges and our recommendations.

References
More must be still demonstrated but actually it appears that food matrix may explain many of differences between the sum of single nutrients and whole foods. Food science and food technology must be combined in nutrition in order to improve our knowledges and our recommendations.
Prinova Acquires Lycored’s United Kingdom and China-based Premix Manufacturing Locations

June 26, 2017 — Carol Stream, Ill.-based Prinova today announced it has reached an agreement to acquire Israeli-based Lycored’s China and United Kingdom Premix operations.

Prinova is a global supplier of ingredients, flavors, blending and contract manufacturing solutions for the food, beverage and nutrition industries. Prinova holds strategic stocks in numerous distribution centers around the world to ensure continuity of supply and is the leading global supplier of Vitamin C, B and food grade Amino Acids.

“Prinova has made substantial investments in our North American premix operations and supplies a wide variety of dry and liquid nutrient and flavor premix blends in the U.S. and internationally,” said Don Thorp, President, Prinova. “The addition of these premix capabilities gives Prinova the ability to extend these offerings on a global basis, customized to the needs of the regional markets,” he said.

The Lycored facilities in China and the United Kingdom have been supplying leading international food companies with premixes to fortify their products with vitamins, minerals and other nutrients. These premixes address the cereal, beverage, dairy, infant formulation, and other premix categories, reflecting the ability to deliver product solutions to the entire range of premix markets.

“This acquisition gives Prinova a global footprint with six manufacturing sites around the world located on three different continents”, Thorp said.

David York, CFO, Prinova stated “Prinova is incredibly excited about this acquisition. We now feel very confident we can supply our customers worldwide.” York said that as part of the agreement, Prinova will retain all Lycored’s employees in China and the United Kingdom.

About Prinova

Since 1978, Prinova has been a leader in providing high-quality ingredients, flavors and value-added nutrient fortification products to the global food, feed and wellness industries. Prinova holds strategic stocks in numerous distribution centers around the world to ensure continuity of supply and is the leading global supplier of Vitamin C, B and food grade Amino Acids. The company also has a team of application and technical specialists and certified flavorists to help customers develop, improve, and enhance the taste and function of their products. Prinova’s facilities are BRC certified. The company’s main corporate office is in Carol Stream, Illinois with the European head office in the United Kingdom. Additional regional offices are located throughout the United States as well as global sales associates in Mexico, Spain, Germany, Belgium, France, Turkey and China. For more information, visit www.prinovausa.com.

About Lycored

Committed to ‘Cultivating Wellness’, Lycored, part of Adama Group, is an international company at the forefront of unearthing and combining nature’s nutrition potential with cutting edge science to develop natural ingredients and products. Established in 1995 in Israel, Lycored is the global leader in natural carotenoids for food, beverage and dietary supplement products. For more information, visit www.lycored.com.

Hauts-de-France, a champion in food processing

Nord France Invest

Nutraceuticals Now attended a press trip in Hauts-de-France region in the North of France for two days in June, organized by Nord France Invest, the investment promotion agency for Hauts-de-France.

The Hauts-de-France region lies at the heart of a 78 million consumer market in a 300-km radius, served by a first-rate infrastructure network (highway, railway, ports, airports).

Northern France is the first-ranked food cluster in France, and leading businesses in the industry have chosen the region as their springboard for European growth. Easy access to leading consumer markets, abundant resources, and a highly-trained labor pool are the keys to the success.

KEY FIGURES

• 1,300 businesses
• 53,000 jobs
• Over €10 billion turnover
• No. 1 export region in France

Hauts-de-France region is the birthplace of worldwide giants in food processing: Bonduelle, Lesaffre, Roquette, Lenus, Paul Hoider group), Ingredia ... all these groups were born in the region and have become national leaders or international leaders in their fields.

The region is also very attractive for international food companies: Coca-Cola, Barilla, Haagen Dazs, Tate&Lyle, Mc Cain, Vandemoortele, Marine Harvest, Moy Park, Ajinomoto, Cargill, Kerry have major operations in Northern France, mainly in manufacturing and distribution, but also in R&D and innovation.

With more than 30 private and 20 public research units (Lille Pasteur Institute, National Institute for Agronomy Research...) and engineering schools, Hauts-de-France is at the forefront of the French R&D for the food industry.

THE PRESS TRIP

The highlight of the press trip was Nutr’Event. Every two years, the Region holds the leading European business convention Nutr’Event. Organized by Eurusante (health cluster), this convention is dedicated to innovation in food, nutrition and health. This year, the topic was about how to make customers’ needs evolve with the latest innovations in functional and active ingredients, market regulatory changes, traceability enhancement and food safety improvement.


Casperone takes boswellia that extra mile.

Natural products have been used since ancient times in traditional medicine, but Indena takes the compounds hidden in these precious traditions that extra mile. Casperone®, bioavailable boswellia, is just the latest example. Boswellic acids, in particular beta boswellic acid, present in the gum resin of Boswellia serrata trees, have been considered the main bioactive components of Boswellia serrata, and many preclinical studies have confirmed their activity as modulators of a healthy inflammatory response. More information about boswellia products including Casperone® can be found at our website www.indenausa.com.
Nutraceuticals market can rely on highest levels of authenticity via testing and certification. Indena is at the forefront of this trend.

According to a recent report [1], the global dietary supplements market is valued at USD 132.8 billion in 2016 and is expected to reach USD 220.3 billion in 2022; it is anticipated to grow at a CAGR of 8.8% between 2017 and 2022. But, as consumer awareness of these health conditions increases, negative publicity and fake product claims may have negative consequences on the overall growth of the market. In recent years, in fact, the topic of potentially mislabelled botanical products has raised questions about the overall quality and safety of products made available to manufacturers, with regards to raw materials, and to consumers, with regards to finished products.

There has been a great deal of focus on transparency, both in finished products and raw materials at worldwide level. This debate followed the New York Attorney General’s activity in which an agency investigation that found that four of five tested herbal products did not contain any of the herbs promised in their labels, and consequently required producers to conduct advanced genetic testing to ensure the herbal products actually contain the ingredients promised on the label.[2] From that point on, manufacturers expected increasingly greater transparency and compliance from their suppliers, in a market characterised by more stringent legal and regulatory frameworks and an increasing number of certification requirements, above all for quality controls.

With the aim of being compliant, and also acting as a frontrunner in achieving the excellent levels of safety and quality, Indena is moving forward. Approaching DNA-based technologies, the fundamentals in quality control of botanical preparations ensure the accurate identification of the plants to be used. Most plants can be correctly identified by means of microscopic and microscopic analysis. Yet some cases resort to DNA-based methodologies. The main difficulty in applying DNA identification techniques in the herbal basin is the lack of a universal DNA barcode for plants to be used for such a purpose as occurs in the animal kingdom. Unlike animals, the main pitfall of botanical DNA identification is that there is no universal DNA barcode for plants to be used for such a purpose as occurs in the animal kingdom. Unlike animals, the main pitfall of botanical DNA identification is that there is no universal DNA barcode for plants to be used for such a purpose as occurs in the animal kingdom. Unlike animals, the main pitfall of botanical DNA identification is that there is no universal DNA barcode for plants to be used for such a purpose as occurs in the animal kingdom. Unlike animals, the main pitfall of botanical DNA identification is that there is no universal DNA barcode for plants to be used for such a purpose as occurs in the animal kingdom. Unlike animals, the main pitfall of botanical DNA identification is that there is no universal DNA barcode for plants to be used for such a purpose as occurs in the animal kingdom. Unlike animals, the main pitfall of botanical DNA identification is that there is no universal DNA barcode for plants to be used for such a purpose as occurs in the animal kingdom. Unlike animals, the main pitfall of botanical DNA identification is that there is no universal DNA barcode for plants to be used for such a purpose as occurs in the animal kingdom. Unlike animals, the main pitfall of botanical DNA identification is that there is no universal DNA barcode for plants to be used for such a purpose as occurs in the animal kingdom. Unlike animals, the main pitfall of botanical DNA identification is that there is no universal DNA barcode for plants to be used for such a purpose as occurs in the animal kingdom. Unlike animals, the main pitfall of botanical DNA identification is that there is no universal DNA barcode for plants to be used for such a purpose as occurs in the animal kingdom. Unlike animals, the main pitfall of botanical DNA identification is that there is no universal DNA barcode for plants to be used for such a purpose as occurs in the animal kingdom. Unlike animals, the main pitfall of botanical DNA identification is that there is no universal DNA barcode for plants to be used for such a purpose as occurs in the animal kingdom. Unlike animals, the main pitfall of botanical DNA identification is that there is no universal DNA barcode for plants to be used for such a purpose as occurs in the animal kingdom. Unlike animals, the main pitfall of botanical DNA identification is that there is no universal DNA barcode for plants to be used for such a purpose as occurs in the animal kingdom. Unlike animals, the main pitfall of botanical DNA identification is that there is no universal DNA barcode for plants to be used for such a purpose as occurs in the animal kingdom. Unlike animals,we need a universal DNA barcode for plants.

The Next Generation Sequencing (NGS) approach

The NGS approach is the only analytical tool now enabling the precise identification of the composition of multi-ingredients products, which is often the case in the nutraceutical market. The precision and application of the NGS technology relies on the presence of DNA, even if only in traces, and on the use of four universal barcodes representing both chloroplast and nuclear genomes. The utilisation of multiple barcodes aims to guarantee that the identification of the ingredients, fillers and adulterants is always possible at the species level.

Pioneering complete Authenticity

As Indena is always in search of reliable and science-conscious partners, it has recently formed a joint partnership with UK biotechnology company Hyris Ltd. Hyris’s portable bCUBE technology, which weighs only 1.5 kg, allows users to analyse nucleic acids and run both temperature cycles and isothermal analysis. Hyris’s platform is able to perform a full genetic analysis of biological samples in any setting, and includes all the testing software, hardware, and reagents necessary to do so. The points of strengths are its portability, speed, and accuracy, and, since the system is portable, results are available much more quickly than by using traditional methods. In addition, the bCUBE device can be controlled by both a mobile app that allows users to download required test protocols and instructions as it is happening, and receive immediate diagnostic information on the sample being examined. Therefore, this technology enables instant ID results, and can start testing in approximately one hour, versus the higher amount of time required by traditional lab equipment. In addition to the shorter timeline, this innovative technology is even complimentary to other tests. Moreover, results are available anywhere in real time thanks to data transferring to the cloud.

“Indena DNA tested”, a label that combines decades of knowledge, testing, controls and transparency with the latest innovations in technology

Yet Indena, which is already approaching customers about this new powerful tool, continues to pursue the highest levels of reliability. In fact, Indena has recently launched the new “Indena DNA tested” seal, a certification that brings a declaration of authenticity as well as an evidence of solid scientific background. Indena’s consolidated expertise in dietary supplements and long-term presence on the market is generated by the company’s constant aim at the highest standards of quality, integrity, and safety of their products as well as at the consumers’ maximum confidence. DNA-based identification technologies are contributing decisively to the authentication of botanicals, but they are not the reference methods: they complement the botanical, chemotaxonomic and metabolomic analytical methods well. Accordingly, they must be part of a complete quality testing toolbox, which constitutes a reliable authentication platform. Throughout its history of almost one hundred years, Indena has been mapping the genetic identity of the raw materials used for its botanical extracts. As no universal Genomic ID method is available, this knowledge has allowed Indena to develop species-specific DNA identification analytical tools. As part of its Quality System, Indena is able to apply the appropriate technology to each case.

Sophisticated DNA sequencing-based tests are powerful technologies but they are just one piece of the puzzle. What really counts is gaining knowledge in plant genetic diversity.

When consumers consume a nutraceutical product, they should be able to do so with peace of mind, confident that the plant on the label is the plant in the supplement, and that every reasonable precaution has been taken to guarantee the product’s authenticity. Consumers can have such confidence if the companies along the supply chain have employed the best and most reliable testing measures for counteracting fraud and displacing allergens and other pathogens.

With its innovative methodology, Indena is not only increasing transparency and improving controls, always keeping in mind the final users in the chain of these products.

As traditional tests have their limits, the implementation of reference DNA sequences for use in analyzing DNA data. The community. These “reference” DNA profiles should derive from the analysis of plant samples of known, certified origin (herbarium, taxonomically identified samples).

This unique and extensive wide knowledge enables Indena to go even further.

DNA sequencing-based tests are emerging as highly reliable and powerful tools to authenticate botanicals, identify medicinal plant species and varieties in herbal products and in the future on dietary supplements.

The recent focus on the authenticity of herbal-based dietary supplements puts the spotlight on a concern that many operators in the industry had about how to guarantee the safety, purity, and identity of dietary supplement products. By anticipating the need for both an appropriate answer to this issue and for the safeguard and protection of supply chains all the way back to the plant’s harvest, Indena has not only developed a proprietary genomic technology for botanical ID testing based on the NGS approach, but it also gave birth to its own “DNA Tested” certification. The company owns a proprietary herbarium from which Indena derives reference DNA profiles via analysis of plant samples of known certified origin as a directly managed resource for reference.

Indena is injecting robust investments in working to validate proper DNA-based technologies to include these tests on the final extracts. Next-generation DNA sequencing for authentication of species in both raw materials and extracts is a unique and key aspect of Indena’s business that will continue to grow rapidly.

References


Dietary Polyphenols as Nutraceuticals

By Vikas Kumar, Amar Chittiboyina, Ikhlas Khan

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Polyphenols are natural compounds widely distributed in several fruits and vegetables. The term encompasses approximately 8000 natural compounds, all of which possess one common structural feature, an aromatic ring having at least one hydroxyl substituent. Many polyphenols exist as two or more hydroxyl groups and are biologically active substances occurring widely in food plants that are eaten regularly by people.

Phenolic acids, flavonoids, stilbenes and lignans are the most abundantly occurring polyphenols in plants, of which flavonoids and phenolic acids account for 60 and 30% of total dietary polyphenols, respectively. Health benefits of polyphenols (as depicted in Figure 1) have been intensively studied scientifically for the several decades with perceived health benefits including antioxidative, chemopreventive properties. Most widely studied polyphenols for human health include resveratrol from red wine, curcumin from turmeric, cocoa polyphenols, quercetin from different sources of fruits and vegetable. Polyphenols are tough antioxidants in order that complement to the functions of vitamins and enzymes as a good defence counter to oxidative stress induced by surplus reactive oxygen species (ROS). Though antioxidants are known for their role in the observed biological activity, increasing evidence indicates that polyphenols may act in ways beyond their antioxidative action (Tsao, 2010). The greater interest in polyphenols observed in recent years is due to several factors including antioxidative and other beneficial properties of polyphenols, their great abundance in our diet, and their probable role in the prevention of various diseases associated with oxidative stress and other metabolic abnormalities. Bioavailability seems to diverge between several polyphenols, and the most ample polyphenols in our diet may not necessarily result in the highest degree of intracellular activity. Therefore, there are significant differences in the bioavailability of polyphenols as well as differences in the ability of polyphenols to exploit the full beneficial potential of that particular polyphenol until it reaches the systemic circulation, in a similar fashion as the case of inactivation of active drugs

Types of Dietary Polyphenols

Dietary polyphenols exhibit a group of secondary metabolites which are extensively present in vegetables, fruits, whole grains, wine, tea, chocolate and other cocoa products. They are mainly derived from plant materials, and therefore, phenolic acids, flavonoids, cafestol, and catechins, and other polyphenols. Dietary polyphenols are secondary metabolites of plants and are subdivided into subcategories such as flavonoids (gallic acid, flavonoids, isoflavonoids, flavonoids, cafestol, and catechins), and phenolic acids. Dietary polyphenols exhibit bioactivity and can be found in black tea and their characteristics emerge when the tea is brewed a few minutes longer than recommended. Tannins result in the precipitation of proteins which have been in contact with proteins.

Stilbenes Stilbenes are structurally characterized by the presence of a 1,3-diphenylene nucleus with hydroxyl substituted on the aromatic rings. Resveratrol is well known compound belonging to the stilbene group which is the major polyphenol in blueberries and cranberries (Reinsel et al., 2015). Resveratrol is considered as bioactive principle of red wines that were shown to induce heat shock proteins. Biological Activities Dietary polyphenols possess diverse biological properties such as anti-inflammatory, anti-mutagenic, anti-oxidant, anti-aging, anti-thermogenic, cardiovascular protection, improvement of the endothelial function, as well as inhibition of angiogenesis and cell proliferation activity. However, biological actions of dietary polyphenols are associated to their anti-oxidant potential, biological, chemical and medical research. These compounds form a diverse group that includes the widely distributed hydroxyphenols and hydroxycinnamic acids often as simple esters with glucose or other hydroxy carboxylic acids. Plant phenolic compounds are diverse in molecular structure, and they are characterized by hydroxylated aromatic rings (Mandal et al., 2010).

Flavonoids Flavonoids are the most abundant polyphenols in human diets. Dietary flavonoids are naturally occurring in fruit, vegetables, chocolate and beverages like wine and tea. Chemical flavonoids are based upon a fifteen-carbon skeleton (C6-C3-C6) consisting of two benzene rings (A and B) linked via a heterocyclic pyrone ring system. Flavonoids may be subdivided as anthocyanidins, flavan-3-ols, flavonols, flavonones, flavones, and isoflavones. Flavonoids and flavonols are the most widespread in the human diet (Khan, 2016).

Tannins Tannins are a group of water-soluble polyphenols bearing molecular weights from 500 to 3,000. Tannins have been reported to be responsible for decreases in feed intake, growth rate, feed efficiency, net energy value, and protein digestibility in experimental animals. Therefore, foods rich in tannins are considered to be of low nutritional value (Chung JY, 1988). Tannins naturally occur in black tea and their characteristics emerge when the tea is brewed a few minutes longer than recommended. Tannins result in the precipitation of proteins which have been in contact with proteins. Biological Activities Dietary polyphenols possess diverse biological properties such as anti-inflammatory, anti-mutagenic, anti-oxidant, anti-aging, anti-thermogenic, cardiovascular protection, improvement of the endothelial function, as well as inhibition of angiogenesis and cell proliferation activity. However, biological actions of dietary polyphenols are associated to their anti-oxidant potential.

Antioxidant Activity Antioxidant property of polyphenols has been recognized since decades. A number of in vitro studies have demonstrated the beneficial effect of polyphenols as anti-oxidant or free radical scavengers. Polyphenols function as terminators of free radicals and as chelating agent for metal ions that are capable of producing reactive oxygen species, thereby exerting protection against cardiovascular pathologies. Polyphenols repress the generation of free radicals and thereby reducing the rate of oxidation by interacting with the active site and that releases the active sites from various ROS. Firstly, they act as direct radical scavengers of the lipid peroxidation chain reaction and secondly, they also act as chelating agents for metal ions such as iron. Chelation of transition metals such as Fe2+ can directly reduce the rate of Fenton reaction, hence preventing oxidation caused by highly reactive hydroxyl radicals (Tsao, 2010).

Anti-inflammatory Polyphenols play a critical role in the prevention of inflammation through the activation of NF-kappab and AP-1 transcription factors, and nuclear histone acetylation and deacetylation of inflammatory diseases. Analogous uncontrolled undetected oxidative stress are controlled by the antioxidant potential of dietary polyphenols such as curcumin and resveratrol. A number of flavonoids such as hesperidin, apigenin, luteolin, and quercetin are reported to possess anti-inflammatory and analgesic effects. Several studies have confirmed the anti-inflammatory potential of polyphenols. Recently, Chanput et al., 2016 suggested to use AβH assay for anti-inflammatory activity of flavonoids.

Anticanceroselerosis and cardioprotection A large number of studies have suggested that dietary polyphenols are helpful in the prevention of atherosclerosis and cardiovascular diseases. Particularly flavonoids indicates the possibility of their use in primary and secondary prevention of atherosclerosis and its clinical correlates in the human. Hapten, heparin, nobiletin and tangeretin, have emerged as promising therapeutic agents for the treatment of metabolic dysregulation. Although, it is well established that polyphenols can lower oxidation of LDL in vitro. LDL oxidation is considered to be a key mechanism in atherosclerosis. These antioxidant effects result in the prevention of cardiometabolic diseases. Citrus flavonoids, including naringenin, hesperidin, and eriodictyol, can positively modulate the development of cardiovascular diseases. Biological potential of phenolics, resveratrol, or curcumin, were tested; all of them showed strong protective effects in some models (Scalbert et al., 2005). Despite promising results from experimental studies, only a limited number of these compounds have been tested in clinical trials with mixed results (Hartman et al., 2016). Therefore, clinical evaluation is warranted on promising agents like curcumin, resveratro, lycopene, folates and tea polyphenols.

Anti-diabetic Polyphenols can be depicted as functional compounds in plant foods, and therefore, a significant quantity is consumed through dietary sources. Polyphenols are well known for its potential in management of hyperlipidemia as well as associated beneficial effects in health and disease conditions. Anti-diabetic agents can dysregulate insulin secretion and insulin resistance. Phenolic compounds such as tannic acid, glycyrrhizin from licorice root, chlorogenic acid, and naringenin are reported to possess anti-inflammatory and analgesic effects. Polyphenol compounds can also prevent the development of long-term diabetes complications including cardiovascular disease, microangiopathy, nephropathy and retinopathy (Bahadoran et al., 2013).

Conclusion Polyphenols are ubiquitous in plant foods, and therefore, a significant quantity is consumed through dietary sources. Polyphenols are well known for its potential in management of hyperlipidemia as well as associated beneficial effects in health and disease conditions. Therefore, clinical evaluation is warranted on promising agents like curcumin, resveratro, lycopene, folates and tea polyphenols.


Figure 1: Health benefits of dietary polyphenols.
Slow and Steady Wins the Race for Sugar Reduction

A desire for sugar reduction has been expressed worldwide. In the UK, the Department of Health is showing strong support for the government’s target of 20% sugar reduction in products by 2020, although manufacturers are beginning to push back on this goal. Chile and Mexico are also putting similar regulations in place. Recent nutritional guidelines have hit the headlines in the US for “no added sugars” on product labels and many countries across Asia and the Pacific region, including India, are implementing strategies, such as improved dietary guidelines, sugar taxes and regulation alterations, to forcibly encourage change.

Many food and beverage manufacturers, as well as retailers (a recent example being Lidl in Germany and Albert Heijn in BeNeLux), are committed to reducing sugar, as well as fat and salt in their products. Companies such as Nestlé have hit the headlines with commitments to cut 10% of sugar in their confectionery ranges by 2018. However, as Dr Joerg Spieldenner, head of Nestlé’s Public Health Nutrition department has said, when it comes to reducing the sugar content in products: “…it’s very difficult from a technological point of view and from an education and consumer information point of view”.

Consumer perception of ‘sugar reduced’

More and more consumers understand the need to reduce daily sugar consumption; a recent survey in Germany shows that 48% of consumers are now actively cutting down or daily sugar consumption; a recent survey in Germany shows that 48% of consumers are now actively cutting down or avoiding sugary foods. However, consumers are not prepared to sacrifice the taste and texture of their favourite products for sugar reduction and they are not keen on anything artificial in their food and drink either. Being ‘not artificial’ is seen as critical for consumers and globally more than half of those surveyed rated this as important, or very important, on pack and were also willing to pay more for foods and beverages made with no artificial sweeteners.

Stealth sugar reduction

It is no surprise therefore that many food and drink manufacturers that are implementing sugar reduction programmes across their product portfolios, are adopting a ‘slow and steady’ approach. ‘Stealth sugar reduction’ can vary between 10% and 20% per re-formulation, however, the majority of companies seem to be aiming for 10% as a target at present. This paced reduction allows consumers’ palates to adjust and get used to mild and natural sweet tastes more gradually, this in turn minimizes the potential for negative reactions. Stealth is also being used by many manufacturers with regard to the communication of these sugar reductions. Many manufacturers opt not to promote the reductions on pack, assuming that consumers will see ‘sugar reduced’, or ‘light’ and be concerned over the product’s taste and whether artificial sweeteners were used to boost sweetness.

Sugar reduction in practice

Whether a manufacturer is adopting a stealth approach to sugar reduction or not, the non-negotiable factor from consumers is that the product’s taste and texture must stay the same. There are many challenges to overcome when reducing sugar, because it has various functionalities in food products. Sugar doesn’t just deliver sweetness and taste but also provides important bulk, texture and mouthfeel qualities as well. This means that great expertise is required to know how to reduce sugar, whilst obtaining similar taste and texture, with no alteration to the production process.

Dairy, baked goods and cereal products all create a wide range of sugar reduction challenges, as an indulgent, creamy dairy taste, easy dough handling or a chewy textured bite all need to be maintained. Functional ingredients experts such as BENEO have been working hard for years, creating recipe formulations that overcome these challenges and deliver in terms of taste and texture when managing sugar reduction. BENEO’s inulin is an example of an alternative, “slow release” sugar that is derived from sugar beet. It is clean label and has a mild, natural sweet taste. As a slowly yet fully digestible, low glycaemic carbohydrate, it can be used to replace high glycaemic sugars. It provides balanced and sustained energy, reflected by a low and steady blood glucose response.

BENEO’s ingredients offer consumers a range of other EFSA approved benefits such as blood sugar management and improved digestive health. BENEO’s chicory root fibres (Orafti® inulin) and oligofructose are ideal solutions for sugar reduction, as they have texturising properties, a mild sweetness, well-balanced, round flavour and less calories than sugar (max. 2 kcal/g). Having no effect on the blood glucose level, they help to lower the blood glucose response of final food products. As clean label, soluble prebiotic fibres they can be easily integrated into various applications, while supporting excellent taste and texture and improving digestive health.

Putting it into practice

Specialists at the BENEO-Technology Center conduct regular recipe trials that also undergo stringent sensorial evaluation, to ensure that they will be able to deliver in terms of taste and texture, whether the sugar reduction is 10% or 20%.

In recent trials, Orafti® inulin was used in the coating of breakfast cereals. The results clearly show that it is possible to achieve 20% sugar reduction with no sensory difference in terms of texture, crispiness, sweetness or taste intensity compared to the full sugar equivalent. BENEO’s Orafti® oligofructose also performed well in recent yoghurt trials, helping to reduce total sugars by 20% and added sugars by 35% with no negative impact on taste or texture.

Slow release carbohydrate benefits

Whilst less sugar is important, the physiological diversity of some sugars and their beneficial role in blood sugar and weight management is also something that consumers are gradually becoming more aware of. BENEO’s Palatinose™ is an example of an alternative, “slow release” sugar that is derived from sugar beet. It is clean label and has a mild, natural sweet taste. As a slowly yet fully digestible, low glycaemic carbohydrate, it can be used to replace high glycaemic sugars. It provides balanced and sustained energy, reflected by a low and steady blood glucose response.

20% sugar reduced (SR) coated cereals with Orafti® inulin – generic recipe curve. As a result, products such as muffins, donuts or cereal bars that contain Palatinose™ help consumers get through a busy day without feelings of tiredness or cravings shortly after eating.

Sugar reduction is now a key mindset for consumers across the globe, yet most want to cut their sugar intake levels without it affecting the type of foods and drink they choose to consume. To enable consumers to do this, reformulation is the key to success. The goal, however, remains to deliver premium taste in a healthier way to demanding consumers.

Whether manufacturers are looking to adopt a stealth sugar reduction policy of 10 to 20%, or reduce by significantly more, the technical challenges remain the same. Sugar replacement is not a straightforward process and requires the close collaboration of manufacturers and functional ingredients experts, such as BENEO, to ensure that the end product tastes as good as usual, but is healthier than ever before.

INGREDIENTS (%w/w)

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<th>Uncoated cereals</th>
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There has been a vast amount of coverage in the media over recent years concerning sugar, government sugar taxes and the need for consumers to reduce consumption levels to curb increasing obesity and diabetes levels. As the responsibility for this has been turned onto manufacturers and food reformulation has been put under the spotlight, more companies are choosing to adopt the path of ‘stealth’ sugar reduction. Rudy Wouters, Vice President of the BENEO-Technology Center explains why this ‘slow and steady’ approach is being taken to re-educate a generation of sweet-toothed consumers.
Ingestible skincare – once seen as a niche category – is rapidly heading for the mainstream. Consumers, particularly those under the age of 35, are increasingly recognising the benefits of supplementation for healthy, resilient skin.

How do we know? Because we asked them. Earlier this year, Lycored surveyed 480 British and French consumers. Two thirds (66%) agreed with the statement ‘The idea of taking a supplement for skin health or beauty is normal.’ Only 14% said the idea was ‘not normal.’

Over four in ten (43%) consumers in the millennial age group (18-35) said they had used an oral product to benefit their skin health, with 46% saying they had never taken a pill or supplement for skincare. 68% of those aged between 50 and 69, and 14% of those aged 70 or over.

We also explored barriers to the category. Among respondents who had never taken a pill or supplement for skincare, 46% said the main reason was that “it seems to make more sense to apply a product to my skin.” The second most commonly cited reason was “I wasn’t aware I could achieve the same skincare benefits by taking a pill or capsule.” (32%). These barriers were least likely to be cited by the millennials who were surveyed, suggesting that awareness of the potential of ingestible skincare is highest among younger consumers.

At Lycored, we believe this is only the beginning. We’re on a mission to disrupt traditional consumer thinking about both skincare and beauty, and thereby changing conventional trade thinking. By doing so we hope to create new opportunities for our whole industry.

We’re frequently told to ‘love the skin we’re in,’ but how often do we really practice that? Over the years, Lycored has come to realize that maintaining skin health and wellness is a lifelong journey that begins on the inside, the home of our ‘inner glow.’ We created our proprietary carotenoid blend Lycoderm™ with that in mind. It’s been formulated with whole tomato fruit extract with carnosic acid derived from rosemary leaf to foster overall skin wellness.

Proven safe and effective in several clinical trials, Lycoderm™ works to foster overall skin wellness from the inside out to protect skin from the primary causes of ageing and damage while promoting healthy, resilient skin, supporting tone and texture.

Lycoderm™ offers consumers a range of health benefits. It has been shown to protect against UV damage and reduce the appearance of sunburn. It also helps prevent skin ageing caused by UV exposure and limits the induction of markers for inflammation and skin ageing. And it offers benefits for skin texture: after twelve weeks of supplementation in one trial, participants’ epidermis showed an increase in density as well as a decrease in roughness and scaling.

Moreover, ageing is an increasingly important trend in the nutraceutical market, and there is growing consumer demand for non-invasive treatments.

In spite of consumer drivers, and its many clinically demonstrated benefits, Lycoderm™ is constrained by the same barriers as other ingestible skincare products. The idea was to encourage people to understand that seeing beauty from within is a lifelong journey that begins on the inside, the home of our “inner glow.” We created our proprietary carotenoid blend Lycoderm™ with that in mind. It’s been formulated with whole tomato fruit extract with carnosic acid derived from rosemary leaf to foster overall skin wellness.

A Strategy of Disruption
Skin health starts on the inside and when we feel beautiful it shows. This is why we believe everyone should have the chance to define beauty for themselves and why we’re using our foray into the skincare industry to do more than simply introduce the world to our portfolio of products that enhance skin health and appearance. Rather than just building a campaign, we want to rethink what it means to be beautiful and to challenge perceptions about wellness, starting with some very promising results from our on-going clinical studies for Lycoderm™. This is why we lean on a message to rethinkbeautifull and want you to join us.

Our rethinkbeautifull movement is built around one idea – beauty goes beyond skin deep. We’re seeking to change the perception of “beautiful,” and start a conversation about what beauty actually is. By doing so, the campaign aims to free beauty from its proverbial box and create an emotional connection to ingestible skincare. By shedding light on the concept of beauty as something greater than physical appearance we aim to educate the public on how the same can be said for the role of ingestible skincare. The campaign messaging deliberately relates the idea of ‘Beauty From Within’ to health and wellbeing – both physical and emotional. Its foundation is that we feel on the inside shows through on the outside.

Social Media

The campaign began with an extensive social media programme. Along with a dedicated landing page on Lycored’s website, we created a film called Beauty is What You Make It, which highlights various individuals, male and female, sharing what beauty means to them.

To spread the word, we created two hashtags. The first was #rethinkbeautifull. The second was #rethinkbeautifullwhim, which was used to engage influencers and Lycored’s existing Brand Ambassadors. This was also deployed to invite people to share personal stories with the world.

Engaging Hollywood – Letters of Love
At the beginning of 2017, Lycored embarked on a new partnership with the ‘Playing for Change’ Foundation, a not-for-profit organization which aims to create positive change through music and arts education.

Working with them, we sponsored two letter-writing stations at the Sundance Film Festival in Utah. The aim of the ‘Letters of Love’ initiative was to encourage people to write letters containing positive affirmations to themselves, echoing the message of self-love that originated with the #rethinkbeautifull campaign.

The letters were sent back to the writer when they least expected it in an effort to remind future him of the positive feelings they had at the time. We were honored to know we would be sending their personalized notes back to them. The station was visited by a string of Hollywood stars, including Charlize Theron. In addition to writing personal letters, they had the option to sign an enlarged replica of the postcard to share thoughts about what makes them feel beautiful. Those who signed included Tim Robbins, Armie Hammer and Jack Black, who wrote: “Beauty is the realization that life is an insane miracle.”

Love is Beautiful Video

Most of us celebrate Valentine’s Day by showing the people in our lives just how much we care. It’s a wonderful impulse; however, this year we invited everyone to do the same for themselves via a very special short film titled “Love is Beautiful.” It featured women, children and men being asked a simple question: “What do you love about yourself?” Much to their surprise they weren’t able to answer the question.

In contrast, when asked to describe people closest to them, they immediately listed what they cherished most about them. The idea was to encourage people to understand that seeing themselves the way others see them can be difficult, but is a good step in helping them love themselves for the skin they’re in and get a truly lit-from-within glow. To promote the film, we replaced 200 outdoor advertisements in the London market with 200 bright and inspiring posters bearing the message “Your Heart Has No Limits”. This was then distributed as a direct mailing to 8,000 dermatologists, educating them about ingestible skincare to bring the campaign full-circle.

Conclusion

The campaign has achieved some remarkable results. The first video was viewed over 400,000 times, liked 2,600 times, and shared over 2,300 times.

The first day of the “Letters of Love” initiative resulted in vast numbers of letters being sent by Sundance attendees. At the Valentine’s Day takeover, the brand saw 288% growth in “Letters of Love” digital love letters compared to the previous month. There was a 689% increase in “Love is Beautiful” video views over a week.

The campaign has also generated media coverage in consumer beauty and celebrity outlets including PopSugar, Entertainment Tonight and Hollywood Life. At each stage we have tried to create an opening to communicate the benefits of LycodermTM. We are currently undertaking more consumer research to build a detailed picture of where people are on the concept of ‘Beauty from Within’, and the messages that are most likely to shift their perceptions while we keep on trucking by hitting the road at upcoming “Letters of Love” events, including the Wanderlust Festival in Squaw Valley, California and Art Basel in Miami Beach, Florida.

Feedback we are seeing so far suggests that those who like what we are doing want to engage with our movement in a deeper way, and that our message of disruption is resonating powerfully.

At the very least, we’ve started a conversation with consumers, and that’s always a good step in bringing about change.
Fruit d’Or Nutraceuticals has received Natural Product Number (NPN #80079040) from Health Canada’s Natural and Non-prescription Health Products Directorate (NNHPD), for both Cran Naturelle and Cran d’Or cranberry seed oil. Fruit d’Or Cranberry Seed Oil is registered with an NPN claim as a, “source of omega-3 and omega-6 fatty acids for the maintenance of good health. Source of antioxidants. Source of oleic acid.” Each tablespoon (15 ml) contains 34.8% ALA, 36.6% LA and 19.9% Oleic acid.

“This is a major breakthrough for culinary applications. Fruit d’Or is the first to extract the oil from the cranberry seed and earn this health claim of taking one tablespoon daily, or as directed by a healthcare practitioner, for the maintenance of good health. And because Health Canada has recognized that our cranberry seed oil is safe for consumption, it does not have to be GRAS-approved,” says Stephen Lukawski, director of global sales and product development, Fruit d’Or Nutraceuticals.

“No other fruit oil has this combination of omega 3, 6 and 9 in these high amounts,” Lukawski continues. “This news is a home run for the food industry around the world to use Fruit d’Or cranberry seed oil as a functional artisanal oil.” The rich, golden oil is flavor neutral with no aftertaste.

He adds, “No chemicals are used in our cold-pressed extraction method, which was developed to preserve the cranberry seed oil’s phospholipid content and its abundant natural antioxidants.” Fruit d’Or cranberry seed oil is a rich source of vitamin E tocopherols and tocotrienols, as well as sterols.

Cranberry seed oil is also creating exciting new cosmeceutical opportunities

Demand for Fruit d’Or cranberry seed oil is also increasing for its skin care and anti-aging benefits. Cranberry seed oil is one of the most unsaturated oils available, making it an ideal moisturizing ingredient. With a composition of more than 95 percent fatty acids, cranberry seed oil may protect and reestablish the protective lipid barrier of the skin. It has excellent oxidative stability, a pleasant odor and texture, and the ideal 1:1 ratio of omega 3 to omega 6. “Essential fatty acids are nourishing, protective, aid in the formation and maintenance of cellular membranes and are essential to the formation of prostaglandins to reduce inflammation,” confirms Lukawski.

Due to its stability and the protective characteristics of its high vitamin E content, cranberry seed oil is an excellent ingredient for products requiring stabilizing, emulsifying and penetrating actions to enhance the fatty acids and other components within its health product composition. By using a cold-pressed extraction method with no excipients, the multitude of beneficial compounds and biological activities housed within Fruit d’Or cranberry seed oil are retained,” explains Lukawski. “The bioavailability of these ingredients in skin care applications may enhance the regeneration, healing, protection and ultimately the beautification of the skin.”

Formulators are excited by cranberry seed oil’s versatility

Lukawski confirms that Fruit d’Or is already working with nutraceutical and cosmetic companies to combine its cranberry seed oil with vitamins, chia and other trending ingredients. “We are welcoming all researchers and formulators to embrace cranberry seed oil by putting this super star ingredient into their dietary supplements, blending it with vitamin D and other fatty oils such as CoQ10, selling it on its own, using it for skincare products or to complement other dietary oils such as those found in fish oil,” he says.

In keeping with Fruit d’Or Nutraceutical’s commitment to ongoing research, Lukawski says the company is excited to further investigate the benefits of the beta sitosterol found in cranberry seed oil, which has been linked to prostate health. He also reconfirms the company’s farm-to-table advantages. “Fruit d’Or produces its own cranberries and cranberry concentrate so they can control the quality from farm to factory, seed to table. Having a one-stop shop prevents the possibility of adulteration and degradation while protecting the health and safety of consumers. Vertical integration by Fruit d’Or allows for control of the supply chain and maintains a standardized quality that delivers on promise,” states Lukawski.

Those interested in learning more about the advantages of Fruit d’Or cranberry seed oil, and of working with Fruit d’Or Nutraceuticals, should visit www.bestcranberry.com
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