

Your Professional Guide to Ingredients and Processing

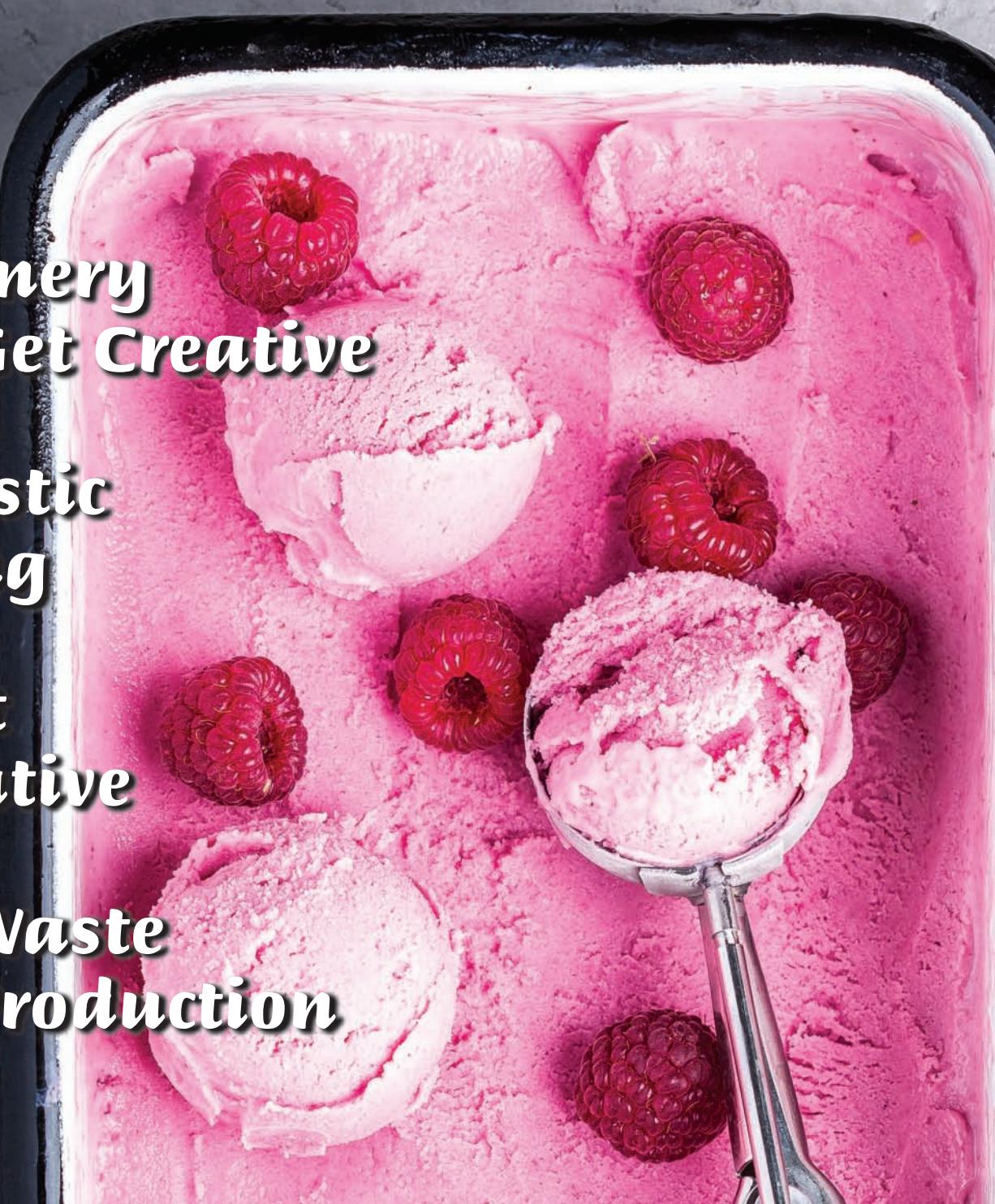
Asia Food JOURNAL

**Confectionery
Makers Get Creative**

**Safer Plastic
Packaging**

**The Sweet
Malternative**

**Hidden Waste
in Milk Production**



THE ONE TRADE FAIR FOR THE ENTIRE Food & Beverage INDUSTRY. THE BIGGEST. THE NO. 1

TASTE THE FUTURE
COLOGNE, 07.–11.10.2017



www.anuga.com

Koelnmesse GmbH
Messeplatz 1
50679 Köln · Germany
Tel. +49 1806 002 200
Fax +49 221 821-991010
anuga@visitor.koelnmesse.de

Secure admission tickets at
www.anuga.com/tickets

koelnmesse

Editor's Note



Reducing sugar: A relentless challenge

Why do we crave sugar? Well, according to scientists, our sweet tooth can be blamed to our primate ancestors. Millions of years ago, at a time when food was scarce and meals inconsistent, our primate ancestors sought out ripe fruits to give them energy and help store fat. This primeval desire to seek sweetness has in recent years been transformed from a basic survival instinct into a serious health threat. Sweetness is everywhere you turn – and with it, the realization that we are a society of sugar addicts. This addiction is a key contributing factor in the obesity and diabetes epidemic.

According to WHO, it is estimated that over 380 million people today are living with diabetes. By 2040, projections show this number rising to some 642 million diabetics globally. This means that one out of 10 adults will have diabetes! Amongst the 382 million people affected with diabetes in 2013, over 200 million come from Asia, including four of the top 10 countries with the most cases of diabetes: China, India, Indonesia and Japan. Further, an Economist Intelligence Unit (EIU) report stated that the prevalence rate of diabetes between 2000 and 2030 is expected to more than double in the ASEAN Six – Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam.

With the escalating diabetes crisis in the region, governments are under growing pressure to 'do something' to reduce sugar consumption. A recent report from Euromonitor said that 19 countries had so far introduced taxes on sugary food and drinks and more would do so in the near future. India, Indonesia and Philippines are among the Asian countries mulling a tax on sweetened drinks. On the other hand, food & beverage makers are committing to reducing sugar in their products. More proposals to help tackle the crisis include reformulation; smaller portion sizes; certain restrictions on advertising and marketing; and further proposals for clearer labeling.

The silver lining here is that innovations to reduce sugar in processed foods are thriving more than ever. Nestlé recently developed a process that alters the structure of sugar to make it taste sweeter in smaller amounts. The new sugar is said to allow a reduction of as much as 40% of sugar in Nestlé's chocolates from 2018 onwards. Other candy makers are also starting to experiment with other innovative ingredients such as indigestible dextrin, an ingredient that has an ability to block the absorption of fat from food (read more product innovations on page 28).

It's clear that the sugar reduction movement is evolving quickly, and the industry is proactive in addressing it. As we go along, we will see more ingredients and product innovations to curb sugar consumption, as manufacturers push for more consumer choice rather than enforced legislation from governments.

Denice Cabel
Editor, Asia Food Journal

Asia Food JOURNAL

ISSN 2010-4200

PUBLISHER

Annie Tan
T: +65 6521 9781
E: annie.tan@contineomedia.com

WEB OPERATIONS EXECUTIVE

Franco Sevilleja
T: +65 6521 9778
E: franco@contineomedia.com

ASSOCIATE PUBLISHER

Susan Ng
T: +65 6521 9773
E: susan.ng@contineomedia.com

FINANCE MANAGER

Kenny Yeoh
T: +65 6521 9740
E: kenny.yeoh@contineomedia.com

EDITORIAL

EDITOR
Denice Cabel
T: +65 6521 9748
E: afj.editor@contineomedia.com

CEO

Raymond Wong
E: raymond.wong@contineomedia.com

JOURNALIST

Lim Guan Yu
T: +65 6521 9745
E: guanyu.lim@contineomedia.com

WORLDWIDE SALES OFFICES

JAPAN
Katsuya Watanabe
T: +81 90 5321 6881 F: +81 3 6823 8994
E: kwatanab@crocus.ocn.ne.jp

SALES & ADMIN

ACCOUNT MANAGER
Veronica Yang
T: +65 6521 9767
E: veronica.yang@contineomedia.com

AUSTRIA, GERMANY & SWITZERLAND
Erhardt Eisenacher
T: +49 2 28 2499860 F: +49 2 28 650076
E: info@eisenacher-medien.de

MARKETING EXECUTIVE

Ficus Zheng
T: +65 6521 9775
E: ficus.zheng@contineomedia.com

SCANDINAVIA

Bob Warren
T: +44 (0) 1442 87 77 77 F: +44 (0) 1442 87 06 17
E: bobw@lansdowne-media.co.uk

Kenneth Peh

T: +65 6521 9787
E: kenneth.peh@contineomedia.com

UNITED KINGDOM, BENELUX,

FRANCE & ITALY
Stuart Payne
T: +44 1932 564999 F: +44 1932 564998
E: stuart.payne@husonmedia.com

PUBLISHING SUPPORT

EDITORIAL PRODUCTION MANAGER
Pauline Goh
T: +65 6521 9772
E: pauline.goh@contineomedia.com

NORTH AMERICA

USA EAST COAST
Jim Lees
T: +1 610 626 0540 F: +1 610 626 0566
E: jameslees@prodigy.net

GRAPHIC DESIGNER

Olive Chan
T: +65 6521 9785
E: olive.chan@contineomedia.com

USA WEST COAST

Wayne Wiggins
T: +1 415 387 7784 F: +1 415 387 7855
E: w.wigginsjr@mindspring.com

ASIA FOOD JOURNAL IS PUBLISHED BY:

Contineo Media

CONTINEO MEDIA PTE LTD
61 Ubi Avenue 1, #05-17 UB Point Singapore 408941
T: +65 6521 9777 F: +65 6521 9788
www.asiafoodjournal.com



Printer by Times Printers Pte Ltd

ASIA FOOD JOURNAL is published six times a year by Contineo Media Pte Ltd, located at 61 Ubi Avenue 1, #05-17 UB Point, Singapore 408941. All rights reserved. Please address all subscription mail to ASIA FOOD JOURNAL at the above address, or Fax +65 6521 9766. For annual air-speeded subscriptions for non-qualified subscribers, please contact Circulation department at circulation@contineomedia.com. ASIA FOOD JOURNAL Volume 14. Number 4.



Contents



EVENT REVIEW

PG 10

EVENT REVIEW

- 10 THAIFEX-World of Food Asia 2017**
Industry experts led engaging discussions around product development, packaging innovations, and food technology.

PACKAGING

- 12 Safer Plastic Packaging**
As consumers become more concerned about possible migration from plastic packaging into food products, manufacturers have started to explore safer solutions that deliver superior cost-in-use.

INGREDIENTS

- 14 The Sweet Malternative**
Malt extracts offer food, bakery and beverage producers an alternative method of sweetening products using consumer-friendly natural ingredients.
- 16 Coloring Savory Food**
Plant concentrates are comparable to synthetic or natural colorants with regard to variety, brilliance or stability without having any impact on taste, texture or mouthfeel.
- 18 Spice Up Your Health**
A patent-pending highly bioavailable curcumin solubilisate paves the way for making the health benefits of a safe and well-researched ingredient conveniently available to consumers.
- 22 Fresh, Fermented and Fast**
Southeast Asia has a fermented dairy market in rapid growth. Changing lifestyles and innovative yogurt cultures are a continuous source of opportunities for new product development.

INTERVIEW

- 25 Specialty Food Labels**
An interview with Sebastian Chia, co-founder of Alternative Selection, a wholesaler and retailer of alternative gourmet, organic, and allergen-/preservative-free specialty foods in Singapore.

PACKAGING POLYMER ADDITIVES

PG 12



INGREDIENTS COLORS

PG 16

SPECIAL REPORT

- 28 Confectionery Makers Get Creative**
Why is the confectionery industry pursuing an "enjoy in moderation" narrative that mirrors the responsible consumption messaging of the alcoholic beverage industry?

PROCESSING

- 30 Hidden Waste in Milk Production**
Reusing treated wastewater for non-contact applications is attractive to manufacturers seeking to further cost and efficiency savings, while maintaining quality and hygiene standards.

IN EVERY ISSUE

- 01 EDITOR'S NOTE AND SALES OFFICE**
04 GRAB & GO
32 FRESH FOR THE FACTORY

Asia's dedicated nutraceutical event

where industry professionals
meet to do business

New
location
for 2017

5-6 September 2017

Sands Expo & Convention Centre,
Marina Bay Sands, Singapore



Vitafoods
Asia

The nutraceutical event for Asia



Source innovative
products &
ingredients

Do business
with 200+
global
suppliers

Discover
product
development
solutions

Meet
technical
experts

Including
Asia's
Nutraceutical
Conference

Translating
science into
business
excellence

REGISTER NOW FOR FREE ENTRY

vitafoodsasia.com

Part of:



GLOBAL HEALTH & NUTRITION NETWORK
expertise | connections | business results

For more information, please contact +65 6411 7723

Join us on:



@VitafoodsAsia #VFA17



Vitafoods Asia



@vitafoodsasia

Industry Updates

HUIHUANG FUJING RENEWS PARTNERSHIP WITH SACMI
 HuiHuang FuJing and the Sacmi Group have resolved their issues in the past and announced in a statement that their business relationship is stronger than it has ever been. Yongsheng XU, deputy general manager of HuiHuang FuJing New Material Technology, said: "Despite our protest which occurred during the CBB trade show in September 2016, we must recognize that Sacmi has never stopped to offer its commitment to solving the ongoing problems of our bottling line. Due to good demonstration of cooperation and honesty, we decided to continue to work with the Sacmi Group. We are glad to announce that we are purchasing additional machineries from Sacmi. The mutual goal now is to strengthen the relationship between HuiHuang FuJing New Material Technology and Sacmi Group."

Vezio Bernardi, general manager SACMI Beverage, said: The positive conclusion of this matter – in which our determination to work quickly and forthrightly with the customer to investigate any problems and resolve them effectively reinforces the Sacmi Group's policy of obtaining maximum customer satisfaction".

TOMRA SORTING FOOD LAUNCHES KOREAN WEBSITE
 The sorting and peeling equipment supplier has launched a Korean language website: www.tomra.com/ko/food, which provides visitors with an insight into the company's product innovations, latest news and event updates. Users can also download Korean-language product brochures and watch the machines in action on the video channel. TOMRA now has a total of 14 websites in different languages with additional languages in the pipeline, as the company strives to meet the demands of its customers in the competitive European, American and Asian markets.

■ PEOPLE

Firmenich appoints new head of ingredients



Firmenich

Firmenich has appointed Julien Firmenich as vice president of ingredients. In this role, he will lead the Ingredients Business Unit with a focus on breakthrough innovation, creativity and long term value creation. Based in Geneva, he will report directly to Armand de Villoutreys, president of perfumery & ingredients.

"I am delighted to be welcoming Julien to head up our Ingredients business globally," says Armand de Villoutreys, president of perfumery, Firmenich. "Julien's experience in Perfumery, cutting across Body and Home Care and Fine Fragrance, as well as his leadership in Ingredients, positions him well to drive our Ingredients growth strategy with a focus on shaping unique olfactive experiences."

"I am very proud to be leading our Ingredients business, and to keep on driving the richest and finest palette in the industry to delight our creators and customers," says Julien Firmenich. "Building on our leadership in green chemistry, sustainable naturals and breakthrough innovation, I am committed to taking our legacy forward."

Julien most recently held the position of VP, product strategy & promotion, ingredients, at Firmenich where he played an instrumental role in the business' successful transformation, with a focus on product lifecycle and innovation management. Prior to joining Ingredients, Julien took on roles of increasing responsibility within Perfumery, from Fragrance Development Manager, to Body and Home Care Commercial, followed by Fine Fragrance Sales. Across these roles he developed a broad understanding of the world of perfumery and ingredients, from creativity to consumer insights, all the way to customer intimacy.

A Swiss national, Julien holds a Masters in Economic Science from HEC Lausanne and an MBA from INSEAD in Singapore. He lives in Geneva with his wife and daughter.

Grab & Go

■ BUSINESS

Givaudan opens fragrance encapsulation center in Singapore

Givaudan laid the foundation for a new fragrance encapsulation center in Singapore, further demonstrating our ongoing commitment to invest in high growth markets. This investment is positioned to enhance Givaudan's leadership in encapsulation technology and production capabilities, and to collaborate closely with the company's customers in the region.

Gilles Andrier, CEO, said: "This investment is another step towards achieving our 2020 strategy ambitions. Consumers in high growth markets are increasing their demand for encapsulation technologies for their favorite fragranced products."

The new center will have a footprint of 500 square meters with four levels. Inside, a state-of-the-art development lab, cutting edge manufacturing technology, offices and a warehouse will be the region's manufacturing hub for encapsulated perfumes used in fabric and personal care. The new fragrance encapsulation center is expected to be fully operational by mid 2018 and complements the Fragrance Creative Centre and Production Hub that opened in October 2015.



Present at the ground-breaking ceremony Maurizio Volpi, president of Givaudan's Fragrance Division said: "We are thrilled to build this new capability in Asia which demonstrates our commitment to our customers in the region. The encapsulation center will complement the Fragrance Creative Center and production hub to offer our customers a seamless end-to-end delivery of the very best fragrances and technology."

Commenting on the new capabilities, Givaudan's regional head of fragrances for Asia Pacific, Ben Webb said: "The new fragrance encapsulation center is a significant investment which will be instrumental in developing new ways of delivering the magical scents to consumers in the region to enjoy each and every day."

High quality is main purchase driver for urban Thais

Although cheaper prices attract consumers in Thailand, it seems a product's quality is the highest priority when making a purchase decision. According to new research from global market intelligence agency Mintel, as many as three in five (58%) metro Thai consumers* rate high quality as a key purchase factor, making this the leading driver of buying decisions. Also ranking in the list of the top five purchase influences among metro Thais are convenience (42%), special offers (40%), durability (35%), and finally, their favorite brands (26%).

Thai consumers have seemingly become more cautious with their finances as Mintel research reveals three in five (59%) metro Thais said their personal goal in 2016 was to get their household finances in order. For the best bargains in town, 45% of metro Thais who are smartphone users say they use their devices to compare prices at other stores while out shopping, and 43% say they use their smartphone to research the best price of an item in their area before deciding where to make purchase.

Avanthi Ravindran, senior trend & innovation consultant, Southeast Asia and India at Mintel, said: "Thailand's consumers have become more prudent with their spending in recent years. In light of this, more and more consumers are turning to online channels that give them access to competitive offers and cheaper pricing. However, our research shows that high quality remains a key driver of purchases, and consumers are still willing to pay a premium for products that are safe and natural."

Furthermore, Mintel research shows that consumers are increasingly becoming more mindful of the environment and what they are consuming. Indeed, 37% of urban Thais prefer products that maintain fair trade regulations, while just over three in 10 (31%) prefer products that carry an environmental certification from a credible government or non-profit organization. Consumers are now also willing to pay a premium for 'safe to use' claims on products, as indicated by two in five (40%) metro Thai consumers. This is the second biggest factor behind consumers' willingness to pay a premium among urban Thais, following 'better product performance' (43%) which is the leading motivator. The third most important consideration for Thais to purchase products with a premium price tag is for them to be natural and formulated using pure ingredients; over one in four (27%) metro Thais said that they are willing to pay a premium for everyday products that are 'natural'.

Finally, convenience is the second most important purchase driver among urban consumers in Thailand, after high quality (42% and 58% respectively). While the digital age has made shopping easier for convenience-seeking consumers, especially as information is now just a click away, Thai consumers' busy lifestyles have also called for convenient and easy-to-use formats. Mintel research reveals that three in 10 (30%) metro Thai consumers prefer to eat out as they don't have time to cook their meals at home, while as many as one in four (24%) prefer to eat lunch at their desk at work as it helps them save time.

According to Mintel estimates, Thailand's ready meals retail market saw an increase of 2.1% in volume, and reached 50,170 tonnes in 2015. The market is expected to grow at a volume CAGR (compound annual growth rate) of 3% in the five years from 2016, to reach a volume of 58,700 tonnes in 2020.

"With metro consumers increasingly looking for convenient meal options, the opportunity for on-the-go formats has expanded, especially as Thailand's ready meals market is forecast to grow over the next couple of years. The relationship between quality and speed should be recognized; consumers are looking for high quality, fresh products that are delivered conveniently and quickly. Offering the right price and discounting as appropriate are also crucial; companies will need to branch out with their marketing efforts, tap into online channels, and go beyond traditional retail stores," Avanthi concludes.

drinktec 2017
Munich, 11 – 15 September
Hall B6

The factory of the future
starts now



We do more. KRONES

Industry Updates

HIBISCUS IS PREFERRED RAW MATERIAL FOR FLORAL FLAVORS

Latest report from Future Market Insights (FMI) estimates the global floral flavor market to expand at 7.8% CAGR from 2017 to 2027 and reach US\$1,566 million by 2027-end. While natural floral flavors will outsell its organic variants, the latter is projected to grow at a higher rate during the forecast period. The beverage industry will remain the largest end-user, and is projected to account for a market share of around 50% by 2027. Hibiscus will remain the preferred raw material, followed by rose and elderflower. While hibiscus will account for around 20% market share by 2027, rose and elderflower are expected to grow at CAGRs of 8.4% and 8.2% respectively during the forecast period. Asia Pacific Excluding Japan (APEJ) and Latin America will be the two fastest growing markets for floral flavors through 2027. Although China would maintain its dominance in the APEJ floral flavor market, India is expected to register the fastest growth in this region during the forecast period.

PREMIUM INGREDIENTS TO OPEN 2ND POWDER BLEND HUB

Premium Ingredients Food Services India, will open its second hub in Chennai to host food powder blends for the domestic market and introduce CloudBlending in Asia. CloudBlending is a new business model boosting an end-to-end supply chain system and giving companies access to food powder blends as a service anywhere in the world at the best price.

The new Indian plant is part of Blendhub's growing network that will localize 40 hubs in the coming years. The company has already operational hubs in Spain, Mexico and Dubai.

BUSINESS

ADM completes acquisition of Chamtor

Archer Daniels Midland Company (ADM) has completed the acquisition of Chamtor, a French producer of wheat-based sweeteners and starches.

"We are pleased to welcome Chamtor as the latest expansion of our global sweetener and starch footprint," said Pierre Duprat, president, Europe, Middle East and Africa. "France is well-known in Europe for its wheat production capabilities, and is a key destination market for starch-based products. The Bazancourt plant is ideally located at the heart of the cereal market and within reach of customers across Spain, Germany, France and Benelux. We are excited to add our global capabilities to an already-strong business so that we can together meet growing customer needs throughout the region."

Chamtor, founded in 1992, produces glucose, starch and proteins from wheat. The company is located in Reims, France and has about 210 employees. The French facility is the most recent in a series of enhancements to ADM's global sweetener and starch capabilities. In 2015, ADM purchased full ownership of corn wet mills in Bulgaria and Turkey, and a 50 percent stake in a wet mill in Hungary. Last year, the company acquired a sweetener and starch facility in Morocco, and announced expansion plans for the Turkey and Bulgaria plants.

"With increasing demand for sweeteners and starches in Europe, the Middle East and North Africa, ADM is expanding in the region to ensure we meet those growing customer needs," Duprat continued.

INNOVATION

Ferrero opens Singapore innovation center

Ferrero has opened its first Asian innovation center in Singapore. The new hub will house several strategic innovation functions in the areas of health and nutrition, new raw materials and product research and development, consumer insight and foresight activities.



At Ferrero's innovation center, which has been supported by the Singapore Economic Development Board (EDB), a multidisciplinary team of experts in food science, biotechnology, nutrition, consumer insights, material science and design will engage with the vibrant Singapore ecosystem to foster the innovation process.

Ferrero chief executive officer, Giovanni Ferrero, celebrating the opening of the new Ferrero innovation center, commented: "Innovation has always been a core value for Ferrero. Our products are the result of a strong passion for quality and research. The Singapore innovation center will support Ferrero in its continuous pursuit of cutting edge technological solutions to offer our consumers the best quality products that provide new taste dimensions".

The decision to place the Ferrero Innovation Center in Singapore was motivated by its strategic location in Asia and its prominent role within the global scientific research community, which includes among others, the Agency for Science, Technology and Research (A*STAR) and relevant universities.

BUSINESS

Ingredion invests US\$30mn in Thailand Facility

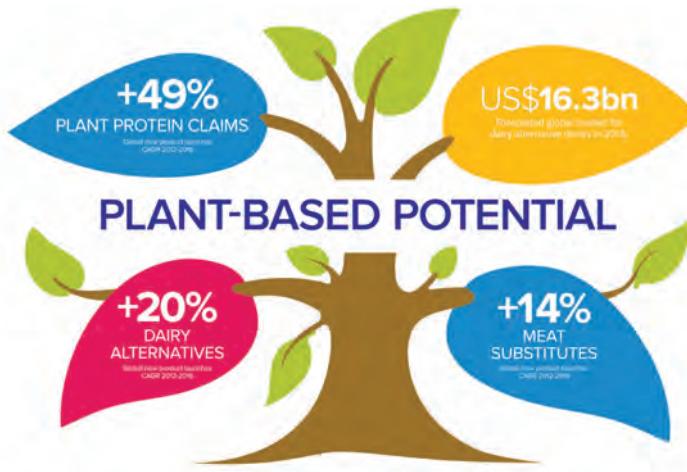
Ingredion has opened a new facility in Kalasin, Thailand, completing an investment of approximately US\$30 million. The investment was part of the approximately US\$100 million of worldwide capital expenditures announced in September 2014. The investment strengthens Ingredion's capabilities and production of its NOVATION functional native starches, a solution for clean-label food and beverage formulation.

The project commenced in August 2014 with over a million man-hours involved without any injuries upon completion. Within 2.5 years of its approval, the facility has produced its first batch of locally sourced NOVATION functional native starches. Ingredion operates four facilities in Thailand with over 800 employees.

The new facility is designed to increase the global manufacturing capacity, facilitate better supply control and optimize the efficiency of distribution in the Asia-Pacific region. Jorgen Kokke, senior vice president of Asia-Pacific and president of EMEA, commented, "Consumer demand for clean label foods has evolved from a trend to the mainstream. It is a global movement that was developed and established in the US and Europe that is now emerging in Asia, and this expansion will help our customers meet the growing demand for healthier, simple ingredients and wholesome foods."

■ MARKET TREND

Global plant milk market to top US\$16bn in 2018



Source: Innova Market Insights, 2017

The global market for dairy alternative drinks is expected to reach US\$16.3 billion in 2018, up dramatically from US\$7.4 billion in 2010. Significant developments in this area include the acquisition of WhiteWave in 2016, presenting Danone with the opportunity to further developing its interests in this dynamic market in both North America and Europe.

In another key region, Want Want, one of Greater China's leading food processing companies, recently announced its expansion into soy and other plant-based beverages. China is enjoying particularly strong growth for dairy alternative drinks, with a CAGR of 18.7 percent forecast between 2010 and 2018, reaching a market value of US\$6.7 billion, compared with a more modest, if still impressive, CAGR of 10 percent in the US.

Dairy alternative drinks accounted for 7 percent of global dairy launches recorded by Innova Market Insights in 2016, up from 6 percent in 2015. Actual global launch numbers more than doubled over a five-year period. Just over half of these launches were positioned as lactose-free, nearly 40 percent as vegan and just under a quarter as GMO-free.

"The dairy alternatives market has seen rising levels of interest in recent years, spurred mainly by consumers increasingly looking for lactose-free, dairy-free and plant-based/vegan options as healthy lifestyle choices, rather than regarding them as simply for those with allergies or intolerances," says Lu Ann Williams, director of Innovation at Innova Market Insights. "The category has been further boosted by the growing availability and promotion of plant-based options to traditional dairy lines, particularly beverages, but also cultured products such as yogurt, frozen desserts and ice cream, creamers and cheese."

"Plant Powered Growth" was one of Innova Market Insights' Top Trends for 2017, highlighting developments in plant-based foods, which are seeing increased demand from those who do not want to commit to a full vegan or even vegetarian lifestyle, but would rather pick and choose to suit their lifestyle, social life or health conditions.

According to Innova Market Insights, dairy alternative launches grew at a CAGR of 20 percent over the 2012-2016 period. Meat substitutes had a CAGR of 14 percent over this period, while the use of a vegan positioning in global food and beverage launches tripled from 2012 to 2016.

"In the move to offer something new, we are starting to see an increasing variety of non-soy plant-based alternatives, including cereals such as rice, oats and barley, and nuts – such as almonds, hazelnuts and macadamias – as well as more unusual options such as hemp and flaxseed," notes Williams.

WACKER

CREATING TOMORROW'S SOLUTIONS

FEEL FREE
TO DEVELOP NOVEL
FOOD CREATIONS



Innovative, tasty and healthy: CAVAMAX® W6 alpha-dextrin is a naturally occurring, soluble dietary fiber with emulsifying properties. It stabilizes oil-in-water emulsions such as egg-free mayonnaise type sauces, acts as a stabilizer in coconut-milk powder without sodium caseinate and allows whipping without fat or protein.



CAVAMAX® W6 offers convincing advantages:

- Excellent emulsifying properties
- 100% vegetarian grade
- Tasteless and free of all main allergens
- Stable even at low pH

For more information visit www.wacker.com/food

Wacker Chemie AG, Germany
info.biosolutions@wacker.com

CAVAMAX®

Singapore Representative Office:
Wacker Chemicals (South Asia) Pte. Ltd.
Tel. +65 6309 0757
www.wacker.com/socialmedia

Industry Updates

BÜHLER BUILDS INSECT PROCESSING PLANT
 Bühler Insect Technology will build its first industrial plant to process black soldier flies for animal nutrition together with its partner Protix in the Netherlands. Bühler will deliver the technology, equipment, and process know-how for the rearing and processing of the insects and the feedstock preparation. Start of operation is planned for the first half of 2018. Andreas Aepli, CEO of Bühler Insect Technology, says: "With this first industrial insect protein production plant, we will make an important step towards a more sustainable global food and feed value chain". In January 2017, Bühler and Protix founded the joint venture Bühler Insect Technology to serve the insect processing industry. Building the first black soldier fly processing plant in Europe together is the next step in this cooperation and will serve as a modular and scalable blueprint for future projects. The plant will be situated in the Netherlands and will serve customers in the feed industry. With construction starting this year, the plant is expected to be operational in the first half of 2018. It will produce protein meal and lipids that are used in the animal nutrition sector to feed pigs, chicken, fish, and domestic animals. The black soldier fly larvae are fed carefully selected organic byproducts from local distilleries, food producers and vegetable collectors in the Netherlands, which further underlines the sustainability of the process.

WHAT'S YOUR NEWS?
Tell us and we will tell the world
afj.editor@contineomedia.com

SUSTAINABILITY

BASF, Cargill, P&G and GIZ to drive production of sustainable coconut oil
 BASF, Cargill, Procter & Gamble (P&G), and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH have joined together in a development partnership under the develoPPP.de programme by the German Federal Ministry for Economic Cooperation and Development (BMZ). The partnership will help establish a sustainable certified and transparent supply chain of coconut oil in the Philippines and Indonesia.

Targeted regions are Southern Mindanao and Southern Leyte in the Philippines and Amurang in North Sulawesi, a province of Indonesia. The Philippines and Indonesia are the world's two largest producers of coconuts and exporters of coconut-based products. The majority of the coconut farmers are smallholders and tenants cultivating less than four hectares of land who are seldom organized in functioning farmer groups and cooperatives. This gives rise to a number of challenges: Little or no economies of scale, lack of financing and training resources, and a rigid supply chain, which increase the farmers' dependence on middlemen and perpetuates inefficient and unsustainable agricultural practices.

By working with the smallholder farmers and teaching them better practices, the main goal of the development partnership is to increase their incomes and economic self-sufficiency by improving the productivity of their farms. This will be achieved through trainings on Good Agricultural Practices (GAP), intercropping and enhanced farm management skills, and the strengthening of farmer groups. Around 3,000 smallholder farmers in the Philippines and 300 in Indonesia will benefit from the program. Out of this group, around 800 smallholder farmers will receive additional training on the Sustainable Agriculture Network (SAN) standards in order to apply for Rainforest Alliance certification. The partnership is also working on establishing a chain of custody for certified material to help increase transparency along the supply chain.

Cargill, which owns and operates copra-buying stations and crushing plants, is providing training to smallholder farmers and setting up the structures for certification. The crude and refined oil produced by Cargill is then further processed by BASF and P&G for ingredients in the home and personal care and in the nutrition and health markets. Together, the private partners bring in the understanding of and experience in the coconut oil market mechanisms and trends. GIZ contributes to the project with its expertise in capacity building on farmers' level as well as in implementing GAP and sustainability standards. GIZ also steers the project and manages its implementation on the ground, working closely with government agencies including Philippine Coconut Authority (PCA) and the Agricultural Training Institute (ATI) in the Philippines.

The project builds on a preceding development partnership – "Nucleus of Change" – implemented in General Santos in the Philippines by Cargill, BASF and GIZ from 2011 to 2015. During this partnership, over 1,000 smallholder farmers were trained and the first 300 coconut smallholder farmers became the world's first Rainforest Alliance Certified coconut farms.

INDUSTRY NEWS

SPRING, SMFSDO launch guidelines for developing food products

The Singapore Manufacturing Federation Standards Development Organisation (SMFSDO) and SPRING Singapore jointly launched the Technical Reference TR 58 – Guidelines for developing food products that qualify for approved nutrition or health claims today.

Health and wellness have been at the forefront of consumer food trends in recent years. One of the top trends impacting the global food and beverage market is consumer interest in functional food – or food with health and nutritional benefits such as reducing the risk of diseases and maintaining good health. With nearly 850 food and beverage companies in Singapore, these companies are poised to leverage this trend given Singapore's strong global reputation for food safety and quality.

These food companies can use TR 58 as a guidance document when they develop food products to meet the regulatory requirements set by Agri-Food & Veterinary Authority (AVA) on health and nutritional claims. The guidelines take reference from the Codex Alimentarius recommendations on health and nutritional claims⁴ (Refer to factsheet for more information on TR 58).

"The food manufacturing industry can leverage quality and standards as strategic tools to strengthen product innovation and Research & Development. TR 58 will accelerate Singapore companies' development and commercialization of functional foods. This is aligned with the vision of the Food Manufacturing Industry Transformation Map (ITM) which seeks to position Singapore as a leading food and nutrition hub in Asia by 2025," said Choy Sauw Kook, assistant chief executive, Quality and Excellence, SPRING Singapore.

Said Dr Loke Wai Mun, convenor of working group for TR 58, "By setting out the key processes of product conceptualization, product development and commercial production for applying functional ingredients in food products, this TR can help level the playing field for small and medium food manufacturers by providing them access to the recommended industry practices to overcome uncertainties or delays in new functional food product development."

China is world's biggest ice cream market

Whether it's gelato, sundaes or the more traditional Mr. Whippy, ice cream in all varieties has remained popular ever since Ancient Greece. And while sales of ice cream have largely been dominated by Western markets in recent years, it seems that rising sales of this dessert are rippling throughout the East.

Indeed, new research from Mintel reveals that the global ice cream market is expected to scoop sales of 13 billion liters in 2016, with India, Indonesia and Vietnam among the world's fastest growing markets. While India's ice cream market has experienced a CAGR of 13% over the past five years, in 2017, volume sales in India are set to overtake those of more established markets, including the UK. Ice cream sales in India are forecast to reach 381.8 million liters in 2017, with the market forecast to reach 657.2 million liters in 2021.

India's strong CAGR is closely followed by Indonesia (11%), Vietnam (9%), Turkey (9%) and Malaysia (8%). On the other hand, sales of ice cream in other markets are flakey. Volume sales of ice cream in Switzerland have had a CAGR of -3% over the past five years, followed by Thailand (-2%), Denmark (-2%), the UK (-2%) and the US (-1%).

China is currently the world's biggest ice cream market, with sales estimated at 4.3 billion litres in 2016, followed by the US (2.7 billion liters) and Japan (756 million liters). However, in terms of individual ice cream consumption, Mintel research finds that Norwegian consumers are the biggest ice cream eaters, consuming 9.8 liters per capita in 2016, followed by Australia (9.4) and Sweden (8.9).

Alex Beckett, global food and drink analyst at Mintel, said: "Food historians credit China with inventing ice cream and Marco Polo for introducing it to Italy on his return from the Far East. Skip forward to the 21st century, and the rate at which Western ice cream makers are looking to the East for inspiration promises to see renewed momentum. The rapidity with which India's ice cream market is expanding is worth noting. The low per capita consumption of retail ice cream in India demonstrates the exciting potential in what is the world's second most populated country, although competition from street vendors should not be underestimated."

Indeed, with the East's love of ice cream thickening, one in three (32%) ice cream products were launched in Asia-Pacific in 2016, up from 26% in 2013. What's more, the share of ice cream products launched in North America fell from 19% to 14% in the same time period.

Clearly keen to get a scoop of the product innovation action, Western consumers are increasingly looking to try ice cream products with more Eastern inspired flavors. Over a quarter (30%) of Canadians would be interested in ethnically-inspired ice cream flavors, such as green tea or mango, while 23% would be interested in internationally inspired ice cream formats, such as Japanese mochi ice cream or Indian kulfi.

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

"In the US, mochi ice cream, the Japanese treat of frozen rice dough around an ice cream filling, is set to continue growing in profile in 2017. Meanwhile, Thai-style rolled ice cream also continues to gain food press headlines in North America, often pitched as the next big thing in desserts. The Middle East also promises to become more influential for ice cream innovation. In particular, booza, a traditional type of ice cream from Syria and Lebanon, has one clear advantage which should resonate the world over: it is very slow to melt," Beckett adds.

Growing appetite for vegan ice cream

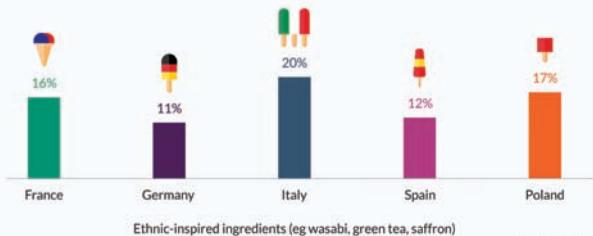
Mintel research shows that ice cream aisles throughout the world have been experiencing a dairy-free makeover. The share of global dessert and ice cream launches featuring a vegan claim has increased from 2% in 2014 to 3% in 2015 and 4% in 2016, with Europe accounting for 59% of all launches in 2016.

The rise in innovation comes as many consumers are looking to cut down on their dairy consumption. As many as three in 10 (29%) Italians say they are actively reducing their consumption or are avoiding dairy, followed by a quarter (23%) of French consumers, 16% of Polish consumers and 14% of Germans.

Germany, meanwhile, is a hotbed of non-dairy ice cream innovation, and accounted for 19% of global vegan dessert and ice cream launches in 2016 – more than any other country. This reflects Mintel research that 63% of German ice cream consumers express an interest in non-dairy versions.

"Consumers' aspirations to live healthier and 'cleaner' lifestyles are motivating them to increasingly prioritize fruits, vegetables, nuts, grains, spices and botanicals. Consequently, plant ingredients and vegan claims are becoming more prominent in a variety of food categories – including ice cream," Beckett concludes.

EUROPEAN CONSUMERS' INTEREST IN ICE CREAM WITH ETHNIC-INSPIRED FLAVOURS



SOURCE: MINTEL



**One stop solution that gives
your perishable products a
NEW life.**

NOVUS TECHNIK PTE LTD
8 Eu Tong Sen Street, #17-83, Office 2 @ The Central Singapore 059818
Tel No : +65 6838 5139 | +65 6225 3802 | +65 6526 5826 Fax No : +65 6491 6501
Email: comm@novus.com.sg

To be our distributor for Malaysia:
please email to sales@novus.com.sg

WWW.NOVUS.COM.SG

THAIFEX-World of Food Asia 2017

THAIFEX-World of Food Asia 2017, ASEAN's largest food and beverage trade show, culminated in a total of 55,111 visitors from 130 countries – a whopping 30 percent increase from 2016. An impactful show that showcased the synergistic partnership between the government and private sector to address growing F&B demands and concerns in Asia, the 14th edition of THAIFEX-World of Food Asia was jointly organized by Koelnmesse Pte Ltd, the Department of International Trade Promotion (DITP), and the Thai Chamber of Commerce (TCC).

Over the span of five days, the event was attended by 43,129 Thai visitors and 11,982 international visitors, all comprising of key decision makers and buyers in the F&B trade. They were not only treated to a wide array of food products and technologies, but also access to insights that could help extend their businesses throughout ASEAN and beyond.

The trade show saw the number of international exhibitors grow by 14 percent, with representatives from countries such as Scotland, the USA, Australia, Poland, Japan, Turkey, and Vietnam. This is the first time that the number of international exhibitors matched that of Thai exhibitors, indicative of a powerful show for the region and beyond.

Mathias Kuepper, managing director, Koelnmesse, organiser for THAIFEX-World of Food Asia 2017, said, "The record-breaking number of visitors is testament to the fact that the F&B industry continues to see the trade show as the place to be. This year's show proved to be more than just a platform for networking between buyers and exhibitors, but also an avenue for everyone to collaborate, share thoughts, and exchange knowledge about issues facing the industry."

Acknowledging the huge potential in Asia for Western products, Scottish Development International's head of Southeast Asia, Neil McInnes, said, "We have been seeing an increase in demand from Thailand and Asia as a whole for Scottish products, ranging from Scottish smoked salmon and seafood to shortbread, biscuits, cheese and craft beer. THAIFEX-World of Food Asia has given us the opportunity to showcase these and other innovative Scottish products and capitalize on the demand for high quality, premium products in Thailand and beyond."

For the first time this year, an exclusive group of Asian top buyers were also hosted on-site for one-on-one business matching and networking.

Said Simon Chuen, director and general manager of Dah Chong Hong Holdings, "We're thrilled to be part of the exclusive group of hosted buyers. Many valuable connections were established and we are confident that they will help us in generating successful business deals post-show. The varied profile of exhibitors that we met certainly expanded our horizons as we were not aware of some of the products prior to attending THAIFEX-World of Food Asia. It was indeed an enriching and engaging show for us."

Echoing similar sentiments is Vo Thanh Vin, international business manager, VINAMILK, "This is our 4th year exhibiting at THAIFEX-World of Food Asia, and we were very impressed by the hosted buyers' program. It gave us the opportunity to engage



with major retailers from around the region, and it was a fruitful session meeting buyers from both supermarkets and hypermarkets across Thailand."

Innovation

Innovation took centerstage as a key theme throughout the trade show. Together with Innova Market Insights, THAIFEX-World of Food Asia's official knowledge partner, top F&B trends, as well as hot button issues, were presented to all attendees.

For the first time, the THAIFEX Innovation Zone and Seminar Series were organized to spur conversations about these trends that are set to take the F&B industry by storm.

Industry experts led engaging discussions around product development, packaging innovations, and food technology.

Kevin Xiao, analyst at Innova Market Insights said, "We understand the need for industry leaders to leverage these trends for business opportunities. The first-ever Innovation Seminar Series thus sought to provide crucial insight into the forces that will shape the demand and supply of food for the year ahead, allowing businesses to anticipate changes and adapt accordingly. We made sure that the spotlight was also cast on important topics like food packaging, technology, sustainability in the industry and flavor drivers."



Recognizing the increasingly niche and changing demands of consumers, the top 50 most innovative products from leading companies, such as Kasel GmbH, Compagnia Alimentare Italiana SPA and Black Isle Brewing Co., were unveiled by an independent panels of judges and industry leaders. Identified products included organic quinoa nuggets, rice oil spray and gluten-free beer.

Mohammed Reza Selazade, CEO of Kasel GmbH, said, "The Asian taste bud has been changing drastically in recent years, and in line with Innova Market Insight's findings, the themes of Clean Supreme and Disruptive Green stand out to us. One of the top innovation products at THAIFEX-World of Food Asia this year was our organic quinoa nuggets, which was developed for the health-conscious consumer looking for a gluten-free, vegan and healthy, high-protein alternative product."

Industry think-tanks convene

Lauded for its reputation as a thought leadership platform, where visitors can look for fresh inspiration, THAIFEX-World of Food Asia 2017 stood true to its name with its multitude of interesting and engaging conferences.

Into its third and fifth editions respectively, the Asian Food Franchising Forum and 3/4 World of Food Safety Conference were well-attended by key business decision-makers. The very first SGF/IFU Asia Juice Seminar opened its doors to an overwhelming response, where current trends and future developments in the fruit and vegetable juice industry were discussed. In total, more than 3,000 participants signed up for over 35 different conferences, held over five days.

The next edition of THAIFEX-World of Food Asia 2018 will be held from 29 May – 2 June 2018. ■

Einar®
polymers.palsgaard.com

Create safer plastic packaging with sustainable food emulsifiers

A 100 year-old invention, originally designed to reduce spattering in margarine, has proven to be a key in creating safer plastic packaging for the food industry.

Applied in polymers, vegetable-based emulsifiers have different functionalities, making them highly suitable as anti-fogging and anti-static agents as well as dispersing aids.

"As it is, commonly used food emulsifiers, are not only safer and more sustainable, they also offer several additional benefits such as improved performance, faster production runs and superior cost-in-use compared with conventional additives"

Bjarne Nielsen, Business Development Manager, Non-food



Palsgaard®
Heart working people

POLYMER ADDITIVES

Safer Plastic Packaging

As consumers become more concerned about possible migration from plastic packaging into food products, manufacturers have started to explore safer solutions that deliver superior cost-in-use.

Consumers are not just becoming increasingly interested in food ingredients and how they're produced, but also in the safety of food's plastic packaging. Applying the capabilities of vegetable-based emulsifiers to packaging materials presents an easy, affordable way to lift safety and ease production.

Invented in 1917 by Palsgaard's founder, Einar Viggo Schou, the modern emulsifier was originally intended to reduce spattering in margarine. Since then, the use of emulsifiers has become much more widespread, with applications ranging from prevention of heat shock in ice cream, to viscosity control in chocolate, and aeration in baked goods – and most recently, as a functional polymer additive.

Ask a polymer producer which emulsifiers he is using, however, and he will most likely not know what you are talking about.

"Essentially, emulsifiers allow oil and water to mix and form a stable emulsion, which is very useful in food production," explains Bjarne Nielsen, business development manager for non-food products at Palsgaard. "When used in polymers, however, emulsifiers have different functionalities, making them suitable as anti-fogging and anti-static agents, as well as dispersing aids," he continues.

Traditionally, petrochemical-based additives have been used to deliver these functionalities but, as consumers become increasingly concerned about possible migration from the plastic packaging into food products, plastic manufacturers have started to explore safer and more sustainable solutions.

"As it is, commonly used food emulsifiers such as polyglycerol esters (E475) and mono- and diglycerides (E471), known as glycerol mono stearate (GMS) in the polymer industry, are not only safer and more sustainable, but also offer several additional benefits such as improved performance, faster production runs and a superior cost-in-use compared with conventional additives," says Nielsen.

Maintaining a clear view

Various types of polyethylene (PE) films are used in food packaging. But to create a more appealing presentation of the product and avoid adverse effects on food quality or freshness, the films need to be modified to prevent the formation of water droplets on the under surface.

By adding vegetable-based anti-fogging agents, the anti-fog will migrate to the polymer's under surface and lower its surface tension, resulting in water no longer condensing as small, discrete droplets but as a continuous film of water. This will not only make



Polymer producers can have their products tested with anti-fogging and anti-static agents, as well as color dispersing aids, in Palsgaard's large-scale polymer application center.

the packaging more transparent, but also prevent the collection of moisture, protecting product quality and extending shelf-life.

No more dusty packaging

Just as consumers tend to avoid products with an unclear, condensed under surface, so too are they put off by dust-covered packaging. Due to the static nature of plastic packaging, it easily attracts dust, particularly in low humidity, and can potentially damage the aesthetic appeal of the product. In addition to attracting dust, the build-up of static charges in plastics can cause problems for plastic packaging manufacturers:

- Film manufacturers, for example, face reduced production speed limits due to static problems during film rolling.
- Manufacturers of plastic bottles, closures and containers are often faced with handling problems during stacking, as well as packaging instability and congestion on conveyor belts.
- Static can also lead to difficulties in sealing packages for powdered foods.
- Furthermore, extruded films used for packaging of consumer electronics must not be statically charged, as this can potentially damage the product.

"Efficient anti-static agents can dissipate charge from a polymer surface and prevent a static charge build-up, which means that dust and other fine particles will not be drawn to the packaging surface and the product will maintain a clean and attractive appearance," explains Nielsen. Anti-static agents work by migrating to the polymer



Without anti-fogging agents, water droplets stemming from the food will form on the inner surface of the film, creating an unclear layer that will make the product look less appealing. The moisture may also damage the food and affect its shelf-life. Anti-fogging agents don't prevent the moisture from occurring but minimize the droplets and make them spread on the film surface.

surface, where they interact with ambient moisture, creating a conductive layer that can dissipate charge.

Safer color dispersion

Supported by 100 years of experience in developing and perfecting emulsifiers used in food, Palsgaard's R&D staff have unique insight into the molecular behavior of the many different substances that make up emulsifiers. This has enabled the development of innovative, efficient, safe and sustainable possibilities for the polymer industry – and Palsgaard's series of dispersing aids is a good example:

Traditionally, powdered, petrochemical-based waxes have been used to coat the color pigments and help distribute them in the polymer product. Mixing the waxes with the expensive color

pigments, however, is a dusty affair. This is likely to be a concern for workplace safety – and to result in sub-optimal distribution of the color pigments. By adding Palsgaard's patented, liquid emulsifier-based dispersing aid, color masterbatch manufacturers can achieve a safer production process and much better distribution of color pigments. In fact, the emulsifier is so efficient that pigment loadings can be significantly reduced while still delivering the desired color strength, allowing considerable cost-savings as well as a more sustainable polymer profile. As an added benefit, color masterbatch producers will also be able to improve production processes since the equipment becomes much easier to clean when switching to other colors.

"Our products are even produced in a sustainable manner," Nielsen elaborates. "Palsgaard has a declared goal to achieve CO₂-neutrality for all our production sites around the world, and we reached a major milestone last year when our plants in Denmark and Mexico became CO₂-neutral."

The company also sources sustainable raw materials and is a frontrunner in the food industry when it comes to using RSPO-certified segregated palm oil in its emulsifiers, a practice that also extends to its polymer additives.

For plastics manufacturers and their polyolefin suppliers, working with a partner such as Palsgaard can open a door into a profitable future, introducing a wide variety of new products and product variations that find favor with today's producers and consumers.

In addition, with its focus on absolute safety, the company will continue to provide products that are a perfect fit for the current green, sustainable and safe agenda in polymer functional agents. ■

THIS ARTICLE IS BY PALSGAARD A/S.

MSE 2017

MANUFACTURING SOLUTIONS EXPO

• The Future of Manufacturing •



The High Value Manufacturing Solutions in the ASEAN Region

25 – 27 October 2017
Singapore EXPO

ms-expo.com
 LIKE US!
Manufacturing Solutions Expo

The 4th edition of MSE expects to attract manufacturers across Asia and beyond to:

- Discover industry-leading innovative solutions and cost-effective technologies
- Source and purchase the latest solutions to help boost productivity and sustainability in the manufacturing value chain

EVENT HIGHLIGHTS:



> 4,000 sqm
Floor Space
> 4,500
Quality Trade Visitors
> 120
International & Regional Brands
> 25
Participating Countries

Organised by:



Partners:



Silver Sponsor:



Reserve Your Preferred Booth Space Today!

SWEETENERS

The Sweet Malternative

Malt extracts offer food, bakery and beverage producers an alternative method of sweetening products using consumer-friendly natural ingredients.

Malt has been made for thousands of years, it is a natural product made by simply growing cereals and heating them to stop the growth. We probably eat it every day and yet most people know little about the properties and benefits of this simple, natural ingredient. Malt brings a number of benefits to foods and beverages in addition to its more obvious use – that of adding the natural flavor of malt itself and, in particular, can be used as a natural sweetener.

For sweetener applications, after malting the raw grain, malt undergoes an extraction process to develop and concentrate the sugars that are produced naturally during this malting process. The most common cereal used to make malt is barley, mainly because it is an ideal cereal for malting. The outer husk is also an ideal medium for the filtration process and offers high potential sugar yield.

Once the barley has been malted, it is crushed to expose the starch and allowed to stand in hot water where enzymes released during malting work on the exposed starch, converting them into a range of sugars. The resultant liquid is clarified either using the residual grains as a filter medium or, in more modern plants, by using a mash filter. The liquid is then evaporated under vacuum to concentrate the natural sugars into a malt extract.



Colin Whitehouse

On label ingredient declarations, an extract of barley malt is declared as: 'barley malt extract'. This is the first notable benefit of using malt extract as a sweetener – it can be used to replace either a proportion of sugar in a recipe or in some cases all of the sugar, supporting 'reduced sugar' claims. But is this a good thing or are we just fooling the consumer? Malt extract comprises a wide range of sugar types. The typical sugar spectrum for malt extract is shown in **Figure 1**.

As can be seen, there is a relatively high level of trisaccharides and higher sugars; very notable when compared with glucose or sucrose, simple sugars. It is well known that more complex sugars such as trisaccharides have a lower glycemic index (GI) and produce a lower glycemic load than simple sugars, but what does this mean in practical terms?

To the consumer, what this means is that malt sugars offer a more sustained energy release – not a sugar 'high.' Importantly, however, there is also less sugar to attack the teeth, and foods and drinks carry a reduced level of imparted sweetness.

It should be noted that the perceived level of sweetness for malt extract is about half that of sugar and this will need to be taken into account when formulating recipes. This is clearly shown in **Figure 2**, where relative sweetness for each sugar type is plotted for a typical malt extract. Higher sugars have not been considered as they offer no appreciable contribution to sweetness.

Superficially, adding malt extract in place of sugar increases the cost, as more is needed to impart the same perceived level of sweetness. Whilst this is true on the surface, there are other benefits in addition to cleaning up labels and reducing dental bills. Malt extract acts as a natural flavor enhancer; improves mouth-feel; imparts shine into sauces; and improves hygroscopicity in baked goods, helping to extend shelf life. Only a small percent of malt extract is needed to achieve these benefits, therefore keeping any additional financial burden to a minimum.

So far we have been looking at malt extract as a single product – an extract of barley malt, but of course there is a wide range of malt and cereal extracts available with varying intensities of malt flavor and color, all made from malting barley carefully designed to impart different characteristics for specific applications. A light flavor, low color extract proves to be an ideal product where

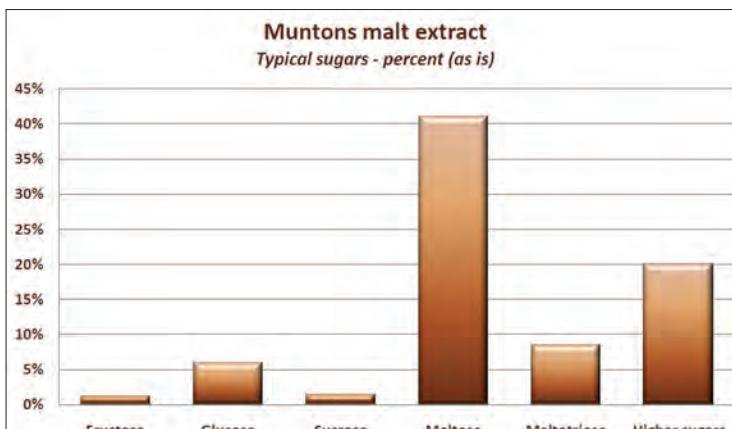


Figure 1: Typical sugar spectrum for malt extract.



Sweetness relative to sucrose	Conversion factor	Typical percentage in malt extract	Final relative sweetness contribution
Sucrose	1	2.6%	2.6%
Fructose	1.7	2.1%	3.5%
Glucose	0.7	10.3%	7.2%
Maltose	0.45	70.4%	31.7%
Maltotriose	0.35	14.6%	5.1%
Total		100%	50.1%

Figure 2: Relative sweetness for each sugar type.

straight sugar replacement is sought; whereas an intense colored extract made from roasted barley malt can be used in fruit cakes and puddings, imparting a subtle bitterness whilst adding a rich color. Not only is there a wide range of malt and cereal extracts available but, for larger users, it is possible to have bespoke products tailor made.

Adding malt extract in its liquid form may not suit the smaller user, so there are also ranges of dried malt extracts available made either by spray drying or vacuum band dried. These products are much easier to handle and weigh out and remain color stable over

extended periods. They offer the same benefits as their liquid extract counter-parts but inclusion rates can be reduced as they are typically 18 percent more concentrated.

In summary, malt extracts in all their variety of forms offer the food, bakery and beverage producers an alternative method of sweetening products using consumer-friendly ranges of natural ingredients made from natural cereals. ■

THIS ARTICLE IS WRITTEN BY COLIN WHITEHOUSE, GENERAL MANAGER OF JJ-MUNTONS (THAILAND) LTD, A JOINT VENTURE BETWEEN JEBSEN & JESSEN INGREDIENTS AND MUNTONS INGREDIENTS.

EXPOALIMENTARIA 2017

27, 28, 29 September
Lima - Peru

MORE THAN

1,590 products from Latin America to the world, 650 exhibitors from more than 26 countries; 247,570 ft² of exhibition area

www.expoalimentariaperu.com

• T: (51-1) 618-3333 - ext 5213 - 5232 - 5234 E: international@adelperu.org.pe •

Organizer

ADEX
ASOCIACIÓN DE EXPORTADORES

Co-organizers

PERU

promperú

PERU

PERU

MRE
Ministerio de Relaciones Exteriores

Media Partners

SEMANA Económica

Perú Exporta

Perú

Coloring Savory Food

Plant concentrates are comparable to synthetic or natural colorants with regard to variety, brilliance or stability without having any impact on taste, texture or mouthfeel.



Going natural without having to compromise on performance or appeal – the savory market is about to change.

Until recently, manufacturers in the savory market mostly had to choose between two options when it came to coloring their products: additive colorants or spices. With the former, problems arise due to the strongly growing demand for natural, wholesome products with clean labels. In fact, the remodeling of food towards a more healthy character and packaging is one of the major trends in all savory segments, from soups to sauces and snacks.

The latter option – spices – leaves manufacturers with limited options for the appearance of a product since they have no standardized coloring properties. They had to pick their lesser evil.

True natural color concentrates for savory products

A solution that has already gained significant importance in other food categories is now capturing the savory market: a complete and truly natural color range for savory products has been launched. The new EXBERRY line is based exclusively on vegetable and plant concentrates.

When looking at recent developments in consumer expectations and nutrition trends, it becomes clear that such a change of the situation was much-needed. On the one hand, the number of consumers demanding products free from additives, such as colorants, within the overall savory area is increasing rapidly. According to a market research conducted on behalf of the GNT

Group, two-thirds of consumers around the world already attach great importance to a healthy and natural choice of food. Artificial additives are judged critically and avoided if possible. Sixty percent consider it very important for a product to be free from artificial colorants. Consequently, a great majority of consumers are willing to pay more for clean label.

On the other hand, society is setting greater value on visual experience. Color is the primary indicator for quality and taste and thus highly important for the purchase decision. In fact, it determines 75 percent of the first impression of food and beverages. Manufacturers cannot make compromises on the appeal of their products. With vegetable and plant concentrates for color, manufacturers can finally leave additive colorants such as carmine, caramel or copper chlorophyllin behind, without having to make such compromises.

A solution for all requirements

The color concentrates for savory can be used in all savory applications ranging from meat and meat analogs, UHT and instant soups, wet and dry mix sauces to dips and dressings, as well as pickles and seasonings – a market worth more than 220 billion Euros. Producers can choose between liquid and powder solutions, all of which are free from allergens, GMO and palm oil. The vegetable and plant concentrates are available in yellow, orange, red, pink, brown, blue and green, which can be mixed to any desired shade and cover every imaginable nuance of savory products.



EXBERRY Savoury Solutions are manufactured exclusively from recognizable vegetables that fit well with the flavor association of savory recipes.

Moreover, they are convenient for vegetarian, vegan and halal diets. Thanks to a complete vertical integration of the supply chain, full traceability and sustainability are also guaranteed. The new savory color portfolio line is suitable to meet any requirement.

Precise color concepts and visual opportunities

Like all coloring foods used, for example, in beverages, confectionery, dairy or bakery products, the new concentrates have standardized coloring properties. This allows for a highly accurate dosage and gives full control over the appearance of foods.

Manufacturers can take the next step towards new and richer visual concepts, as well as innovative recipes for multi-sensory experience. They can finally catch up with other industry segments which are already taking the growing relevance of color into account: products explicitly reference color in their name or even create unusual looks, for example by mixing up color and flavor.

The opportunities for savory are manifold: next to the general masking of food processing, new possibilities for product differentiation open up. Green, for example, can support the appealing impression of dips or sauces based on vegetables. Appetizing red or purple solutions can set red wine cooking sauces apart from the existing offer, which typically has a brownish appearance. Exotic categories with premium ingredients such as superfoods can also be targeted with a perfectly adjusted color concept.

Recognizable ingredients for clean labels

During the production of the savory solutions, only vegetables, plants and gentle physical methods are used. The process itself is derived from common household methods: the raw materials are chopped, pressed, filtered and concentrated. Synthetic additives, chemicals or solvents are strictly excluded.

Therefore, the concentrates are not additives but food with coloring properties. Unlike colorants, which are required to be declared on the ingredient list, they can simply be labeled as food, e.g. "concentrate of paprika" or "concentrates (paprika)". An additional benefit is that only recognizable raw materials are selected that fit well with flavor associations of savory recipes, such as carrots, radish or turmeric. This creates a perfectly clean and understandable ingredient list.

High performance and easy handling

These are not the only advantages: vegetable and plant



The new color concentrates for savory products offer enhanced color opportunities to manufacturers.

concentrates are comparable to synthetic or natural colorants with regard to variety, brilliance or stability without having any impact on taste, texture or mouthfeel of the final product. Ringing and separation is decreased because the new savory solutions are water dispersible, making an emulsion unnecessary. Furthermore, there is no staining of process equipment during the handling, which significantly facilitates production processes.

How to switch from spices and additives

In order to successfully reformulate with vegetable and plant concentrates or develop a new recipe including these ingredients, it is important to be familiar with the characteristics of natural colors and with how different ingredients in the recipe can affect their performances.

Even though the solutions are easy and uncomplicated to handle, every application has its own specifics. Having developed the first coloring foods in 1978, GNT has the required experience and know-how. The company's experts support manufacturers with tailor-made support throughout the entire product development process.

The process starts with a detailed discussion of the recipe: Which color shall be replaced? Which shade achieved? Which active ingredients, such as vitamins or minerals, have to be taken into account? What are the pH value, acidity, density, water and fat content? Where is the product supposed to be sold; how is it packed and how long is the shelf life?

After analyzing these specifics, the experts propose the ideal concentrate for the desired shade from the portfolio or provide a customized mixture. It will then undergo extensive testing to make sure the best possible solution regarding shade, intensity and stability has been achieved. Regulatory and handling advice, for example, on the ideal processing equipment and right moment for adding the color is also provided.

A new industry standard

Thanks to their high performance, universal application and easy handling, coloring foods have long arrived in the food market. In many categories, they are already becoming the industry standard. Now, manufacturers in the savory market also have the opportunity to combine naturalness with performance and variety. The market is expected to become significantly more natural, with enhanced visual appeal. ■

CURCUMIN

Spice Up Your Health

A patent-pending highly bioavailable curcumin solubilisate paves the way for making the health benefits of a safe and well-researched ingredient conveniently available to consumers.

Public interest in potential health effects of spices and herbs has increased greatly in recent years due to emerging research demonstrating benefits in various health ailments. One such ingredient is curcumin, a golden-yellow, lipophilic phenolic compound found in turmeric.

Turmeric is derived from the roots of *Curcuma longa*, a member of the ginger family (*Zingiberaceae*). It has traditionally been used as spice and colorant particularly in Indian cuisine. Furthermore, the dried root of the turmeric plant has a long history of use as a component of Chinese and in Ayurvedic medicines as a remedy to treat various inflammatory conditions.

From traditional to modern medicine

Attracted by ancient uses of turmeric, modern research has started to recognize its importance. Subsequently, thousands of turmeric and curcumin related publications have come out during the last 25 years, including more than 65 human clinical studies investigating curcumin (1). Curcumin is the principle curcuminoid in turmeric and generally regarded as the most active one (2). Further curcuminoids found in turmeric comprise demethoxycurcumin and bisdemethoxycurcumin.

Curcumin has been studied for its safety and potential role in the prevention and treatment of various pro-inflammatory chronic diseases including metabolic, autoimmune, cardiovascular, neurodegenerative, pulmonary and malignant conditions. New evidence is emerging to support its benefits related to stress.

The suggested mechanisms of curcumin include anti-inflammatory (3) and immune-modulatory properties (4) which are based on the modulation of transcription factors such as nuclear factor kappaB (NF- κ B; 5), cytokines, growth factors and enzymes (see Figure 2).

Curcumin is also known to exert an anti-oxidant effect by removing free radicals, inhibiting inflammatory enzymes and an increasing glutathione activity, which is important for the cellular adaption to stress (6).

Lately, curcumin has also been reported to be anti-microbial, anti-proliferative, and anti-angiogenic (7), as well as to have hepatoprotective, nephron-protective, thrombosis suppressing, hypoglycemic and anti-rheumatic effects (7, 8).

Its excellent safety, even at very high doses (10-12g) has been proven in various animal models and human studies (6, 2). In the United States, turmeric is generally regarded as safe (GRAS) by the FDA.



Unfortunately, a key hurdle to the development of curcumin for the use as an efficient ingredient for functional foods and dietary supplements is its low oral bioavailability.

Curcumin is nearly insoluble in water and the efficacy of native curcumin extracts (powders) has only been demonstrated with very high dosages (8-12g), which are difficult to meet in market products. Maximum plasma concentrations in humans, even upon intake doses as high as 10-12g, remain in the nanomolecular range below 160 nmol/l (9).

The low systematic bioavailability of curcumin can be ascribed to its poor solubility in the aqueous phase of the digestive tract and its rapid metabolism and excretion from the body. Mostly



PROCESSING & PACKAGING
07TH-10 NOVEMBER 2017
SHANGHAI

MEMBER OF INTERPACK ALLIANCE

The Entire Value Chain At One Trade Fair



Register now
as a visitor!

swop-online.com

CONTACT US

Messe Düsseldorf (Shanghai) Co., Ltd.
+86-21-6169 8388 / 8317
+86-21-6169 8301
swop@wids.cn

Adsale Exhibition Services Ltd.
+852-2811 8897 / +86-21-5187 9766
+852-2516 5024 / +86-21-6469 3665
swop@adsale.com.hk

China Center for Food and Drug International Exchange
+86-10-8221 2886
+86-10-8221 2857
swop@ccfdie.org

Supported by



Organized by



metabolites of curcumin, instead of curcumin itself, are detected in plasma or serum following oral intake. Curcumin is conjugated to curcumin glucuronides and sulfates, or reduced to hexahydrocurcumin in the intestine and liver (10, 11).

Bioavailability

According to first in vitro and in vivo data, curcumin metabolites may have less bioactivity than curcumin itself underlining the importance of the bioavailability of the parent compound (12). When considering the potential health benefits of curcumin, different strategies have been investigated to improve its biological availability. For example, its incorporation into lecithin liposomes increased the absorption of curcumin about 4-fold in healthy volunteers compared to native curcumin (13).

The concomitant delivery of the adjuvant piperine with curcumin and the application of crystalline curcumin resulted in a 20 to 28-fold rise of bioavailability (14, 15). Recently, a unique technology, NovaSOL, has been developed that makes water insoluble compounds such as curcumin much more soluble by creating a nature like micelle structure.

Human study demonstrates superior bioavailability

The NovaSOL solubilization gives curcumin a nature-like micelle structure resulting in unique properties which result in a fast absorption and very high bioavailability compared to native curcumin extracts. The superior bioavailability of the material has been recently proven in a well-designed human crossover study (16). Healthy volunteers randomly supplemented a single oral dose of 500mg curcuminoids as native powder, micronized powder or solubilisate (NovaSOL Curcumin) mixed into woodruff syrup, and blood samples were collected for the next 24 hours after supplementation.

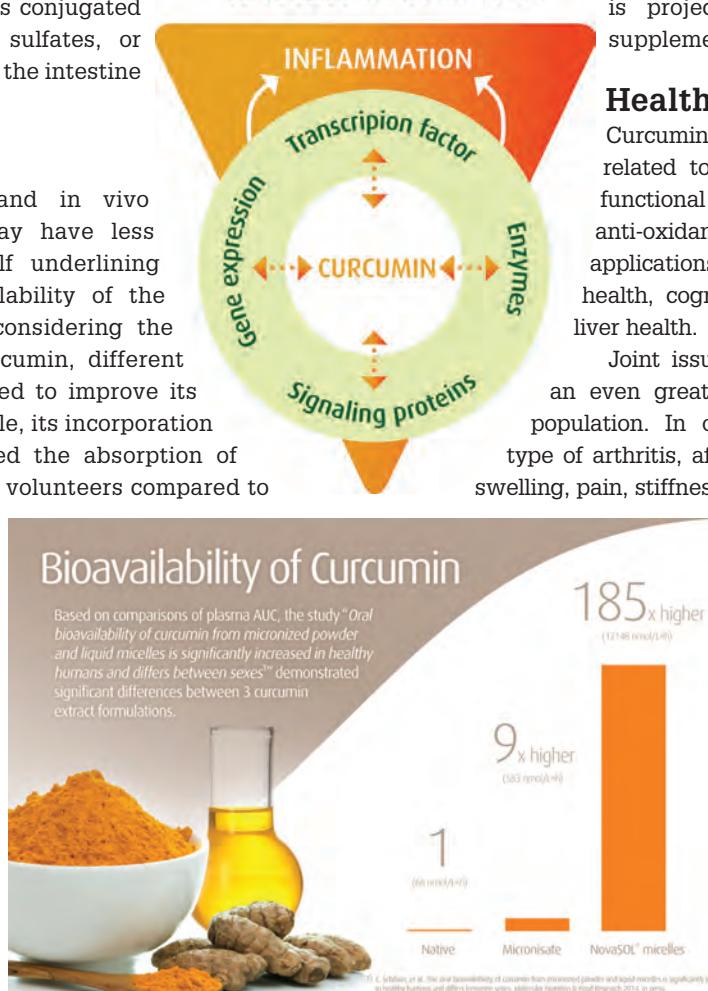
Measuring the area under the plasma concentration time curve (AUC), the most reliable measure of biological availability, the micronized curcumin was nine-fold more efficiently absorbed than the native curcumin. Exceptionally, the bioavailability of the liquid micellar curcumin was 185-fold better compared to native curcumin without altering safety parameters (**Figure 3**).

Curcumin solubilisate

NovaSOL curcumin, examined in an independent major European Research Project and marketed by Frutarom, presents an attractive solution to the food and dietary supplement industry by allowing the use of effective low-dosage curcumin in various applications (a dosage of 670mg is bioequivalent to approximately 8g of a standard curcumin extract). Thanks to the unique and nature-like micellar structure, NovaSOL curcumin results in a clear dissolution in both water and oil along without any chemical modification or use of nanoparticles. In addition, the solubilisate offers high stability.

Having overcome the hurdle of limited bioavailability, the market for curcumin products may expand rapidly. Consumers are becoming more aware of the benefits of curcumin and embrace the

Mechanism of curcumin to reduce inflammation



idea of naturally occurring health benefits from food (17). Thus, it is not surprising that curcumin is projected to be among the best-selling supplements through 2016 (18).

Health benefits

Curcumin's health benefits are closely related to two of the strongest markets in the functional food and dietary supplement arena: anti-oxidants and inflammation. Main applications for curcumin are currently joint health, cognitive health, as well as digestive and liver health.

Joint issues are highly prevalent and becoming an even greater health problem in an aging global population. In osteoarthritis (OA), the most common type of arthritis, affected joints are characterized by heat, swelling, pain, stiffness and limited mobility.

The etiology of OA is multifactorial involving an imbalance in cartilage degradation and repair as well as inflammatory and anti-inflammatory pathways. *In vitro* studies in chondrocytes indicated that curcumin inhibited pro-inflammatory genes, e.g. cyclooxygenase 2 (COX-2) and pro-inflammatory mediators such as prostaglandin-2 (PGE2), nitric oxide (NO) and interleukins (IL-6 and IL-8).

Further mechanisms that may be related to the beneficial effects of curcumin for OA are an effect on cell survival and anti-apoptotic

potency. With promising preclinical data, first clinical studies investigating the efficacy of curcumin in subjects with OA have reported a positive influence of curcumin on mobility and pain (19, 20) as well as a reduction of inflammatory markers (20).

Chronic inflammation

Another interesting field for curcumin may be obesity-related low-grade chronic inflammation.

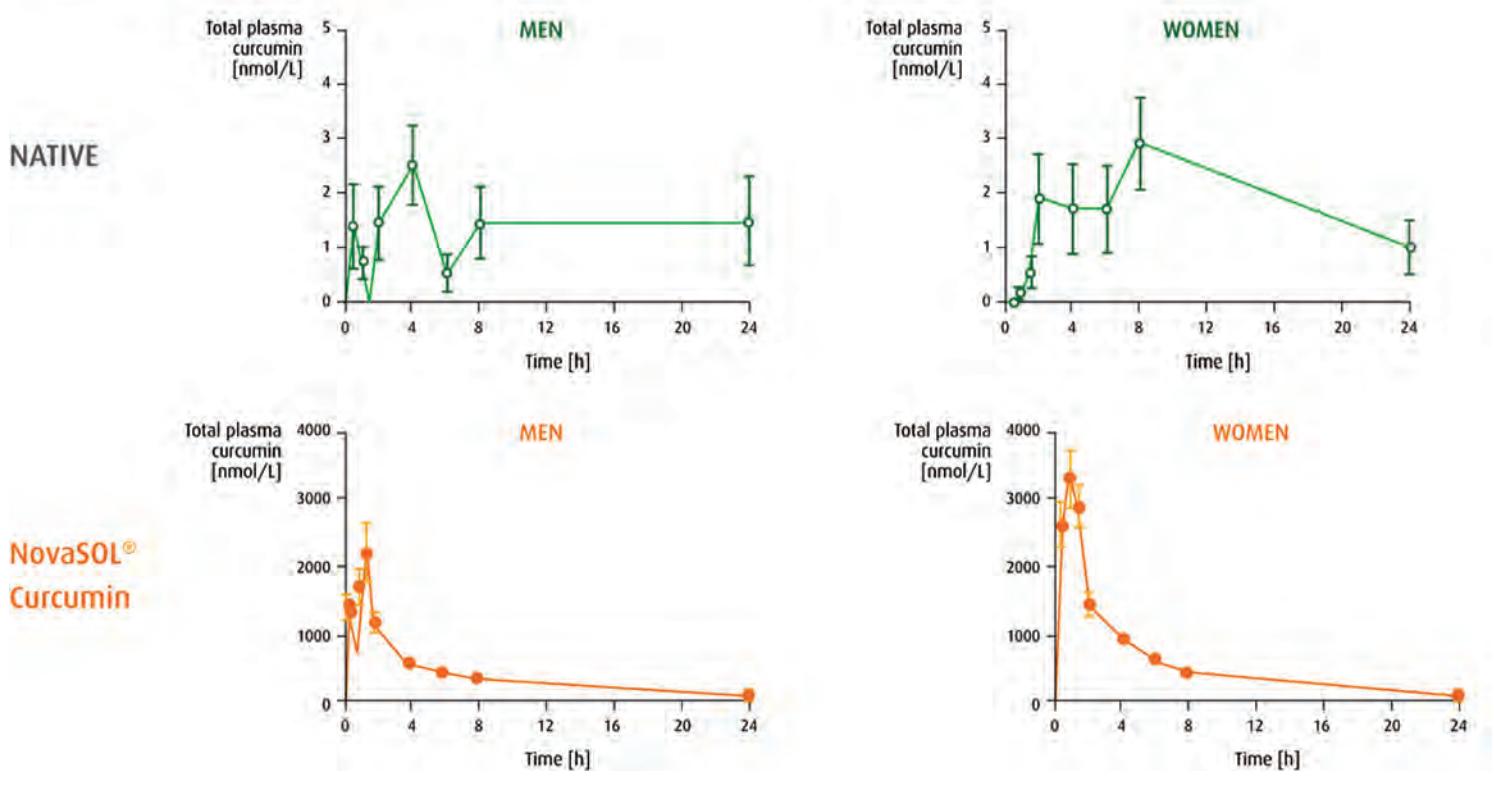
The obesity epidemic is growing worldwide and is responsible for an increased incidence of cardiovascular diseases. Chronic inflammation within the adipose tissue is seen as a common feature for many health complications coming with obesity.

Recent research illustrated that curcumin directly interacts with white adipose tissue to suppress chronic inflammation. Curcumin inhibited macrophage infiltration in adipose tissue and nuclear factor κB (NF-κB) activation induced by inflammatory agents. In addition, curcumin attenuated the expression of the potent pro-inflammatory adipokines, including tumor necrosis factor-α (TNFα) and monocyte chemoattractant protein-1 (MCP-1), while inducing the expression of the principal anti-inflammatory agent secreted by adipocytes adiponectin.

Curcumin has also been described to inhibit adipocyte differentiation (21) and to favorably affect most of the aspects of diabetes, including insulin resistance, hyperglycemia and necrosis (22).

Inflammation has also been revisited as an important factor in the etiology of mood disorders, as elevated levels of pro-inflammatory cytokines have been repeatedly reported in major depressive disorders and bipolar disorders (23). However, the anti-depressant effects of curcumin have been primarily reported in stress-induced depression models.

Curcumin plasma kinetics



The modes of actions contributing to the anti-depressive and neuroprotective effects are suggested to be multifactorial involving an increase in biogenic amines such as dopamine, serotonin and norepinephrine as well as a decrease in pro-inflammatory cytokines (24).

All in all, curcumin has come under the scientific spotlight as not only its traditional use but also various lines of preclinical and clinical evidence highlight the potent anti-oxidant and anti-inflammatory activities of curcumin. Oxidative and inflammatory processes are known to be involved not only in the pathophysiology of many (chronic) diseases but also in the process of aging, making curcumin an interesting candidate for a variety of applications.

However, the low bioavailability of curcumin has limited its eligibility for use as a preventive and therapeutic measure so far, since bioavailability is key for effectiveness and thus long-term market success. Thanks to a unique technology, NovaSOL curcumin now offers superior bioavailability along with an excellent stability and solubility profile.

NovaSOL's strong basis in science – additional studies are ongoing and publications anticipated in 2017 – coupled with its intellectual-property protection add to its appeal, offering brands the advantage of marketing a well-known branded ingredient. Thus, the golden ingredient curcumin has now become a marketable opportunity. ■

REFERENCES

- (1) Gupta SC, Kismali G, Aggarwal BB. Curcumin, a component of turmeric: from farm to pharmacy. *Biofactors* 2013; 39(1):2-13
- (2) Sharma RA, Euden SA, Platten SL, Cooke DN, Shafayat A, Hewitt HR, Marcylo TH, Morgan B, Hemingway D, Plummer SM, Pirmohamed M, Geescher AK, Steward WP. Phase I clinical trials of oral curcumin: biomarkers of systemic activity and compliance. *Clin Cancer Res* 2004; 10:6847-6854
- (3) Jurenka SJ. Anti-inflammatory properties of curcumin, a major constituent of Curcuma longa: a review of preclinical and clinical research. *Altern Med Rev* 2009; 14: 141-53. Anti
- (4) Aggarwal BB, Surh YJ, Shishodia S (Eds.). The molecular targets and therapeutic use of curcumin in health and disease. *Adv Exp Med Biol* 2007; 595
- (5) Prasad S, Tyagi AK, Aggarwal BB. Recent developments in delivery, bioavailability, absorption and metabolism of curcumin: the golden pigment from golden spice. *Cancer Res Treat* 2014; 46(1): 2-18
- (6) Zheng S, Yumei F, Chen A. De novo synthesis of glutathione is a prerequisite for curcumin to inhibit hepatic stellate cell (HSC) activation. *Free Radic Biol Med*. 2007; 43(3):444-453
- (7) Anand P, Kunnumakkara AB, Newman RA, Aggarwal BB. Bioavailability of curcumin: problems and promises. *Mol Pharmaceut* 2007; 4(6):807-818
- (8) Aggarwal BB, Kumar A, Bharti A. Anticancer potential of curcumin: preclinical and clinical studies. *Anticancer Res* 2003; 23:363-398
- (9) Vareed SK, Kakarala M, Ruffin MT, Crowell JA, Normolle DP, Djuric Z, Brenner DE. Pharmacokinetics of curcumin conjugate metabolites in healthy human subjects. *Cancer Epidemiol Biomarkers Prev* 2008; 17:1411-1417
- (10) Baum L, Lam CW, Cheung SK, et al. Six-month randomized, placebo-controlled, double-blind, pilot clinical trial of curcumin in patients with Alzheimer disease. *J Clin Psychopharmacol*. 2008; 28(1):110-113
- (11) Pan, M. H., Huang, T. M., Lin, J. K., Biotransformation of curcumin through reduction and glucuronidation in mice. *Drug Metab. Dispos.* 1999; 27, 486-494
- (12) Ireson C, Orr S, Jones DJ, et al. Characterization of metabolites of the chemopreventive agent curcumin in human and rat hepatocytes and in the rat *in vivo*, and evaluation of their ability to inhibit phorbol ester-induced prostaglandin E2 production. *Cancer Res.* 2001; 61(3):1058-1064.
- (13) Cuomo J, Appendino G, Dem AS, Schneider E, McKinnon TP, Briwn MJ, Togni S, Dixon BM. Comparative absorption of a standardized curcuminoid mixture and its lecithin formulation. *J Nat Prod* 2011; 74:664-669
- (14) Shoba G, Joy D, Joseph T, Majeed M, Rajendran R, Srinivas PS. Influence of piperine on the pharmacokinetics of curcumin in animals and human volunteers. *Planta Med* 1998; 64: 353-356
- (15) Sharma RA, McLellan HR, Hill kA, Ireson CR, Euden SA, Manson MM, Primohmed M, Marnett LJ, Gescher AJ, Steward WP. Pharmacodynamic and pharmacokinetic study of oral Curcuma extract in patients with colorectal cancer. *Clin Cancer Res* 2001; 7:1894-1900
- (16) Schiborr C, Kocher A, Behnam D, Jandasek J, Toelstede S, Frank J. The oral bioavailability of curcumin from micronized powder and liquid micelles is significantly increased in healthy humans and differs between sexes. *Mol Nutr Food Res* 2014; 58(3): 516-2
- (17) IFIC 2013. Functional Food Consumer Survey. www.foodinsight.org
- (18) Nutraceuticals World <http://www.nutraceuticalsworld.com/issues/2014-03/view-trendsense/getting-ahead-of-the-curve-turmeric-curcumin/>; 30.04.2014
- (19) Kulkarni RR, Patki PS, Jog VP, Gandage SG, Patwardhan B (1991) Treatment of osteoarthritis with a herbomineral formulation: a double-blind, placebo- controlled, cross-over study. *J Ethnopharmacol* 33(12):91-95
- (20) Belcaro G, Cesarone MR, Dugall M, Pellegrini L, Ledda A, Grossi MG, Togni S, Appendino G (2010) Efficacy and safety of Meriva(R), a curcumin-phosphatidylcholine complex, during extended administration in osteoarthritis patients. *Alternative Med Rev. J Clin Therapeutic* 15(4):33
- (21) Bradford PG. Curcumin and obesity. *Biofactors* 2013; 39(1): 78-87
- (22) Zhang DW, Fu M, Gao SH, Liu JL. Curcumin and diabetes. *Evid Based Complement Alternat Med* 2013; 636053
- (23) Rosenblat JD, Cha DS, Mansur RB, McIntyre RS. Inflamed moods: a review of the interactions between inflammation and mood disorders. *Prog Neuropsychopharmacol Biol Psychiatry* 2014; 53C: 23-34
- (24) Hurley LL and Tizabi Y. Neuroinflammation, neurodegeneration and depression. *Neurotox Res* 2013; 23(2): 131-144

*NovaSOL is a registered trademark of AQUANOVA AG, Germany.

YOGURT CULTURES

Fresh, Fermented and Fast

Southeast Asia has a fermented dairy market in rapid growth. Changing lifestyles and innovative yogurt cultures are a continuous source of opportunities for new product development.

Few industrial food products have benefited so much from that intrinsic property known as 'a healthy glow'. Whether the recipe is slimline or indulgent, yogurt continues to enjoy an unblemished reputation around the world as a naturally functional whole food that can only do good for the consumer – while being an absolute joy to eat.

That's how it has been for decades in the established dairy markets of the West and, today, increasingly in the emerging dairy markets of Southeast Asia as well. Here, a growing number of yogurt products are finding their way onto grocery store shelves. Yogurt starter cultures play an essential role in the fermentation process that tailors each one to a certain taste and texture preference and legal definition.

It's a trend that is set to continue. According to global market intelligence provider Euromonitor, yogurt and sour milk products accounted for 19 percent – US\$77.6 million – of the US\$400+ billion global dairy market in 2016. While annual growth over the past decade averages out at a solid 6.7 percent, the growth forecast up to 2021 is even higher at just over 8 percent a year – making yogurt and sour milk the fastest growing dairy category. The biggest growth is expected in the Asia-Pacific region where, until now, per capita consumption has been relatively low.

Lifestyles drive growth and innovation

The growth trend has a direct link to changing lifestyles. As consumers have become more conscious of the relationship between diet and health, manufacturers have promoted yogurt as a flagship for healthier diets, sparking a wave of innovation. Today, the many better-for-you varieties on the world market radiate health in a variety of ways – from the locally-produced, all-natural product to a protein-rich sports drink, fat-free dessert or lactose-free breakfast. All fit comfortably under the 'goodness of dairy' umbrella.

But health benefits are not the only inspiration for yogurt innovation. Yogurt is today enjoyed on a variety of eating occasions, whether breakfast, dessert or as a between-meal snack, beverage or cooking ingredient. This versatility fits well with the move towards increasingly sophisticated consumer tastes, which generate a rolling demand for novel products that deliver a new flavor, texture or look.

Experience also shows that consumers are often willing to pay a premium price for brands that deliver the right benefits and have the image they are looking for.



'Naturally functional' has premium potential

Fermented products with a 'naturally functional' image have such premium potential because consumers see them as healthy, indulgent, traditional and clear-label foods all in one. A perfect example from the yogurt category is rich and creamy Greek yogurt, which has enjoyed huge success as the ultimate combination of health and enjoyment in a dairy snack.

The perception of yogurt as intrinsically healthy means consumers may even be willing to overlook a high sugar and fat content in premium yogurts with a gourmet positioning. They still see their purchase as a healthier choice.



Food ingredients Asia



Natural
ingredients

13-15 September 2017

BITEC, Bangkok, Thailand

Register Today! www.fiasia.com

The Most Important Meeting Place
for the South East Asian Food
and Beverage Ingredients Industry

**Fi Asia 2017 - The biggest gathering of
ingredients suppliers in the ASEAN market!**

Fi Asia is a convenient one-stop event, where the food and beverage industries come together to find solutions, solve problems and connect with world-class suppliers.

- **700+ local, regional and international exhibitors** from all sectors of the food and beverage ingredients industry, from more than 56 countries
- **7 international pavilion** including Thailand pavilion, USA pavilion, Japan pavilion, Chin pavilion, Taiwan Pavilion, India pavilion, NI pavilion
- 4 exhibition halls. **Show expands over 35% bigger than 2015**
- 17,000 local and regional professional buyers
- 3 innovative activities
- 60+ Conferences & Technical Seminars
- **New Feature!**
 - Start -Up Innovation Product Competition
 - The Sensory Box
- Business Matching Program

****Wondering where to stay,
Visit our website to plan your trip.**



#FiAsia2017 #FiAsia #FoodingredientsAsia

ADMISSION

- NO ADMISSION FEE
- MINORS BELOW AGE OF 16 YEARS OLD ARE NOT ALLOWED ADMISSION
- BUSINESS ATTIRE IS REQUIRED
- REGISTER FOR ADMISSION TO THE SHOW



twitter
#FiAsia



FI Global
FI Asia



LinkedIn
Search for
Food Ingredients



YouTube
FI Global

Supported by:



**ASEAN RISING
TRADE SHOW 2017**
THINK BIG X GO BEYOND

www.fiasia.com

Officially Supported by:

At the moment, the shift towards more indulgent yogurt concepts is mostly evident in Western markets. Southeast Asia has yet to take this trend on board, perhaps because consumers here continue to seek health and nutrition benefits. Traditional taste and texture preferences could be another factor. Compared to creamier, mild-flavored yogurts found in Europe, for instance, Southeast Asian varieties are typically sharper and tangier in taste and lower in viscosity.

However, that's where the generalization should end. If anything, the markets of Southeast Asia stand out for their diversity – and their challenges.

Regional brands focus on health

Top brands in the region emphasize a range of benefits for digestive and bone health, children's health and active lifestyles. Flavors are primarily fruity, with berries and summer fruits topping the flavor chart in 2016, according to Mintel market research. Coconut & pineapple, passion fruit & peach, and banana & strawberry are among the top emerging flavor combinations for yogurt.

Legal definitions of yogurt vary from country to country. The requirements for milk fat and solids content, starter cultures, and other ingredients must be met before a new product can be launched. Common fermented dairy product formats range from spoonable and drinking yogurts to cultured milk drinks.

Hurdling the challenges to success

Yogurt manufacturers face various distribution and packaging challenges depending on the market. Much of this has to do with the cold chain. While refrigerators exist in around 80 percent of households in Thailand, only around 33 percent have them in Indonesia and the Philippines, and 50 percent in Vietnam. A poor cold chain also makes it difficult to transport chilled dairy goods from one end of the country to the other.

Another obstacle that gets in the way of effective distribution is the retail infrastructure. Although modern retail outlets are growing in Indonesia, consumers still buy most of their daily household goods from traditional small grocers and markets – which means the market is fragmented.

Despite the hurdles, the market statistics document the many opportunities for yogurt brands to succeed and grow in Southeast Asia. Shelf-stable ambient drinking yogurts are among the success stories, influenced by China where sales grew 70 percent in 2015 and are forecast to reach US\$5.6 billion in value by the end of 2017. Learning from China, manufacturers in Southeast Asia have both penetrated the ambient market and are now introducing chilled variants with a more premium image.

Most of the ambient drinking yogurts target digestive health and rely on flavors to capture consumer attention. Since late 2016, more new products have been launched with a naturally fermented claim. Texture is still largely unexplored territory – and this is where new yogurt starter cultures developed for the Southeast Asia market can help manufacturers give their products a special point of difference.

The architects of taste and texture

The essential role of the starter culture is to catalyze the fermentation process during yogurt production. Starter cultures from the DuPont Danisco range, for example, are composed of a single strain or combinations of lactic acid bacteria. The species most commonly used are *Streptococcus thermophilus* and *Lactobacillus bulgaricus*, both of which are recognized in the formal definitions of yogurt laid down by regional market legislation. Probiotic cultures may also be included for an added health benefit.

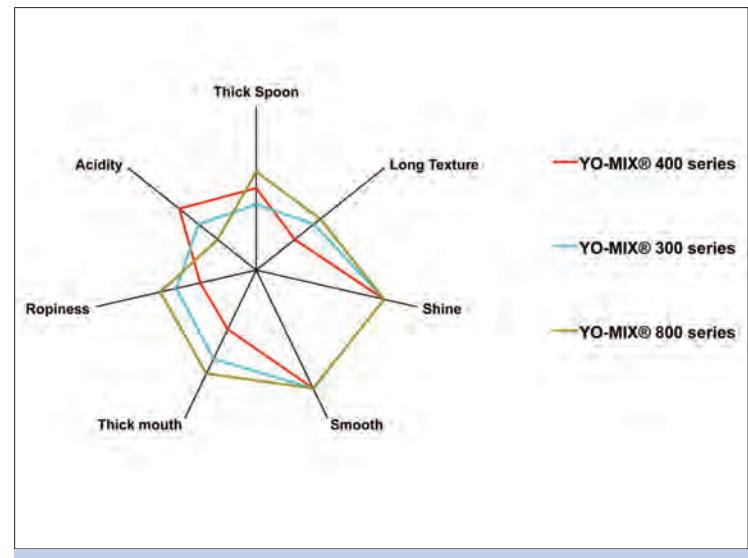


Figure 1: Influence of different cultures on yogurt taste and texture profiles.

It is during fermentation that the yogurt base pH is reduced to 4.6 or below and aroma compounds develop, giving the yogurt its distinctive flavor characteristics.

Other fermentation by-products are exopolysaccharides – or EPS. A key element in textural development, EPS have a strain-specific ability to enhance viscosity, creating anything from a light and refreshing yogurt drink to a thick and indulgent Greek-style yogurt. In other words, the target taste and texture profile is an important consideration when selecting the culture for a given product, including European yogurt types such as kefir, quark and ryazhenka. If local yogurt legislation allows, additional stabilizers and thickening agents may be added to fine-tune the texture further.

One of the processing challenges yogurt manufacturers face is that taste and texture are sensitive to variations in, for example, fermentation time and temperature, acidity level and sugar content. Yogurt viscosity also increases in line with increasing sugar content. This is why every new product development project must include application trials to determine which starter culture gives the optimum performance all round – producing a yogurt that stands out in the marketplace. Figure 1 illustrates how different cultures affect the final taste and texture of yogurts.

Much potential to explore

While developers of yogurt starter cultures continue to break new ground and create new opportunities for fermented dairy manufacturers, the concept of fermentation is as old as the hills – and bears all the natural, healthy, clean-label characteristics that are carrying yogurt forward on a wave of consumer popularity.

In Southeast Asia, innovative culture development already has a track record of enabling staggering market growth without the cold chain logistics and retail infrastructure that support the Western dairy industry. Today, this versatility has turned Southeast Asia into the driver of global yogurt growth, with much more room for taste and texture innovation in the years ahead. It seems that consumers have got much to look forward to – and manufacturers have a lot of fermented dairy potential to explore and make their own. ■

THIS ARTICLE IS WRITTEN BY NG WAN-TING, APPLICATION SPECIALIST, DUPONT NUTRITION & HEALTH, SINGAPORE. SHE MANAGES THE DAIRY, BEVERAGE & FROZEN DESSERT APPLICATION TEAM IN SINGAPORE AND PROVIDES TECHNICAL SUPPORT FOR SOUTHEAST ASIAN CUSTOMERS. SHE HAS A DEGREE IN APPLIED SCIENCE (FOOD SCIENCE AND TECHNOLOGY) FROM NATIONAL UNIVERSITY OF SINGAPORE AND 11 YEARS OF FOOD INDUSTRY EXPERIENCE IN ALL.

ORGANIC & GLUTEN-FREE

Specialty Food Labels

Asia Food Journal interviews Sebastian Chia, co-founder of Alternative Selection, a wholesaler and retailer of alternative gourmet, organic, and allergen-/preservative-free specialty foods in Singapore.

What are the main challenges of running a specialty food label business?

Firstly, compliance with regulatory requirements. This means a need to understand compliance requirements laid down by food regulators worldwide, allergen/allergic labeling requirements, organic certification requirements, and even food handling processes.

Secondly, gaining knowledge that is needed for navigating the specialty food industry. Customers may not understand the benefits of organic and free-range meat, or even what gluten-free means. We are in the business of selling premium priced specialty food in a commodity price based market, so we need to educate customers on why there is a higher price tag for such specialty foods.

Thirdly, having to ensure even the ingredients needed for our value-added products are organic. To provide organic value-added products, we have to ensure that the secondary ingredients needed for the products' production such as pepper, breading, etc. have to be organic. This means we need to secure organic sourcing for more than just our core products.

Lastly, sourcing long-term partners and staff who share the same values and passion as Alternative Selection. Our partners and staff need to be committed to providing the same level of care and transparency when dealing with specialty produce, so our customers can always place their trust in us.

Why should food and beverage businesses pay attention to these labels?

There is an increase in the number of people with food intolerances in Singapore. Consumers are not just becoming aware of their intolerances, they are recognizing the negative implications of eating chemically treated foods, as well as the inhumane treatment of animals in the food production cycle.

This has resulted in an upward demand for organic food and ethically sourced produce. Food and beverage businesses need to pay attention to these labels so they can respond to the trend, which is particularly prevalent amongst the younger generation.

How can food and beverage businesses cater to the demand for specialty foods?

With the rise in demand for specialty foods due to change in



The company's journey began when founders Sebastian and Wendy Chia learned of their child's intolerance to gluten, dairy, nuts, soy, egg and yeast. Since then, they searched beyond the local market, sourcing through online retailers and traveling overseas to look for dietary products to help customers with intolerances.

consumer habits – consumers are dining out more frequently and are increasingly well-versed and exposed to international fare – food and beverage businesses can differentiate their outlets through the ingredients they use and adapt their menus to cater to the demand for specialty foods. With Alternative Selection, which offers organic meats and a diverse portfolio of gluten-free and organic products, sourcing becomes a reliable, one-stop shop.

How big is the organic and gluten-free food market in Singapore in terms of demand and sales revenue?

The organic and gluten-free trend is a growing one that no longer applies to just the affluent community. More people are changing their eating habits for health and personal reasons. This is a global observation, with Europe growing at 7 percent CAGR until 2020.

For Singapore, a study by Spire Research and Consulting together with the S.P. Joint Center of Management, Singapore, found that, from the small market in 2002 worth just about S\$10,000, the organic market grew to S\$68 million in 2008. This growth trend is expected to continue at the rate of 20 to 30 percent per year.

What are the benefits of going 'organic'? How does it compare to traditional raised/produced food?

Organic foods do not contain chemicals, pesticides, hormones, anti-biotics or GMO. Aside from tasting better, this makes going organic a better choice for personal, environmental and animal health.

On average, organically grown foods provide: 21.1 percent more iron (than their conventional counterparts); 27 percent more vitamin c; 29.3 percent more magnesium; 13.6 percent more phosphorus. Organic meats in particular have more nutrients – vitamins, minerals, enzymes and micro-nutrients.

Healthy fats are crucial for health, and organic meats have reportedly higher levels of omega 3 fatty acids, which can help reduce inflammation, improve cardiovascular health, fight depression and help with ADHD.

Conventional meat and dairy, on the other hand, are the highest risk foods for contamination by harmful substances. A study by the US Environmental Protection Agency found that more than 90 percent of the pesticides Americans consume are found in the fat and tissue of meat and dairy products.

Are consumers here aware of these benefits?

Consumers are aware of the importance of nutrition for general health and overall well-being. However when it comes to organic foods, there is still a need to break down in detail the health benefits that come from consuming a natural product.

What needs to be done to raise awareness of organic products in Singapore/APAC?

Education is key. Introducing an organic section (whether at retail or food and beverage venues) as an alternative selection for consumers helps drive awareness of the organic segment. More information on packaging can also serve to inform consumers on the differences between organic and factory farmed products.

Are there many people with gluten intolerance/sensitivity in Singapore?

Currently, there is no statistical information regarding the number of sufferers of celiac disease in Singapore. In the US, approximately one in 133 people suffer from Celiac disease (about 1 percent of the population), an autoimmune disorder that is triggered by consuming a protein called gluten found in wheat, barley and rye.

On average, organically grown foods provide: 21.1 percent more iron (than their conventional counterparts); 27 percent more vitamin c; 29.3 percent more magnesium; 13.6 percent more phosphorus.

If we include gluten sensitivity, from the research by University of Maryland's Center for Celiac Research, the percentage of population affected can range from 5 to 10 percent.

Can you name some of your best-selling products?

The organic beef range, which includes prime cuts, minced beef, patties and shabu shabu. Additionally, the full line-up of free-range pork, which includes prime cuts and bacon, as well as house-made preservative-free sausages are also very popular.

What is driving the demand for these products?

The exceptional taste derived from organic animals that live in low stress environment and are fed with high-quality, natural produce. Alternative Selection provides the quality and value that caters to a growing demand for healthy, ethically sourced foods.

Where do you source the products that you sell?

From boutique farms and producers in Australia that share our values and passion for ethical foods; these farms and producers work with us exclusively to export their products.

How important is packaging/labels in marketing food products?

Packaging and labels are important because they not only differentiate food products; they serve to educate and protect consumers from the prevalence of fake products in the region. Today's consumers are alert and stringent with their purchases and tend to pay attention to packaging and labels to ascertain if the products are trustworthy.

Alternative Selection offers two types of packaging and labels to cater to the needs of the retail and food services sectors. For meats, the former is skin-packed to ensure freshness and includes sleeves for brand and product information. The latter is packaged in business-friendly sizes for the HORECA sector and can be customized for business partners.

How do you assure consumers that your brand can be trusted?

Our products come with relevant and recognized accreditation – HACCP, Australian Certified Organic, USDA Organic, AVA approved. They are also sourced from trusted countries, farms and producers. We personally visit every farm and producer to understand and verify their farming practices before listing their products. Additionally, we ensure we have qualified personnel on the team, such as our Master Butcher, to ensure the meats are produced according to the most stringent standards.

Do you plan to grow your business in the region?

Currently, Alternative Selection's priority is to grow the specialty food segment in Singapore. However, we are constantly on the lookout for potential partners who can complement our business growth with their expertise in other markets. ■

Korea - Pharmaceutical Powerhouse of the Future

Growing Korean Market Size
2011: US\$15.8 Bln.
2017: US\$23.7 Bln.
2020: US\$32.5 Bln.



Increasing Overseas Export of Medicine
2011: US\$1.7 Bln.
2017: US\$9.7 Bln.
2020: US\$20.2 Bln.

Reinforced Investment in R&D
2011: US\$0.9 Bln.
2017: US\$2.6 Bln.
2020: US\$5.3 Bln.



Production Scale
2011: US\$13.5 Bln.
2017: US\$26.4 Bln.
2020: US\$43.9 Bln.



The road to growing into a global top-seven pharmaceutical power



Developing Global New Drugs
4 in 2017
10 in 2020

CPhI korea

iCSE

P-mec

BioPh



Health ingredients Korea

22-24 August 2017 • COEX • Seoul

www.cphikorea.com

Contact our team:

Jina Kim • jina.kim@ubm.com salesoperations@ubm.com

Organised by:



UBM K P T A

CONFECTIONERY TRENDS

Confectionery Makers Get Creative

Why is the confectionery industry pursuing an “enjoy in moderation” narrative that mirrors the responsible consumption messaging of the alcoholic beverage industry?

At first glance, the marketing of confectionery products would seem to have little in common with the marketing of alcoholic beverages. Over-consumption of alcoholic beverages has obvious and sometimes dire health and safety consequences, which is why consumers are encouraged to “drink responsibly” and enjoy products in moderation.

So why are confectionery makers pursuing an “enjoy in moderation” narrative that mirrors the responsible consumption messaging of the alcoholic beverage industry?

Growing pressure to ‘do something’

The answer is that the confectionery industry is under growing pressure to ‘do something’ to combat chronic global health issues like obesity. As a result, confectionery innovation has become a high-wire act with the industry now “walking the tightrope” to balance what are conflicting initiatives. Indulgence and sensory benefits have always been crucial for confectionery, but health and wellness concerns now loom large, as does government regulation.

Industry initiatives like Australia’s ‘Be treatwise’ allude to the conundrum. Established in 2006, Be treatwise maintains that confectionery can be enjoyed as part of a balanced diet and active lifestyle as a ‘treat food’.

But repositioning confectionery as an occasional treat may not be enough. With the global ranks of the obese swelling six-fold between 1975 and 2014, according to Imperial College London, pressure on industry and government to act is growing.

Changing lifestyles and consumer behavior

Changes in consumer behavior contribute to the sense of urgency. Lifestyles have become more sedentary. A recent study from the University of Strathclyde in the UK found that physical activity levels for children begin to decline by the age of seven, much earlier than expected. Screen time now substitutes for physical activity.

Snacking behavior is on the rise as meal skipping grows and schedules dictated by three main meals erode. More consumers are snacking between meals, and snacking earlier in the day is rising. According to GlobalData, the percentage of consumers in the Asia-Pacific region that say they snack between breakfast and lunch rose by 10 percentage points between 2014 and 2016, from 22 to 32 percent.

Governments are stepping in the battle obesity, including governments in emerging markets not known for proactive health

legislation. India is considering higher taxes and stricter labeling on fatty or sugary foods, including candies. The Philippines is readying a tax on sugar-sweetened beverages that mirrors similar efforts in Mexico and elsewhere.

It is unlikely that taxation efforts will stop at sweetened soft drinks. In the UK, Action on Sugar is lobbying to extend the 2018 sugar tax on soft drinks to confectionery. In Australia, the University of Melbourne’s Centre for Health Policy recently concluded that taxing foods high in sugar could add over one year of “healthy life” per 100 Australians.

Ingredient innovation

Facing these pressures, the confectionery industry is finding new ways to respond with ingredient innovation. Nestle recently created a new process that alters the structure of sugar to make it taste sweeter in smaller amounts. By hollowing sugar crystals and making them less uniform, Nestlé says it can cut the sugar level in chocolate by up to 40 percent without affecting the perception of sweetness.

Nestlé’s new sugar crystal has yet to materialize in the Asia-Pacific region, but the company did launch its first product featuring the ingredient in the UK with a “healthier” KitKat variant.

The new KitKat bar has just four fewer calories than the previous recipe, and just 0.7 fewer grams of sugar. Flagged “now with extra milk & cocoa,” the bar says nothing about sugar reduction on the front of the pack. The launch followed an announcement by Nestlé that it would reduce sugar use by 10 percent across its confectionery portfolio by 2018 through a variety of means, including reformulation.

“Rare sugar” is another ingredient innovation that could jump start confectionery innovation. Rare sugar is a type of sugar that is only available in small quantities in nature, and includes sugars like xylitol, D-allose and D-psicose.

With roughly 70 percent of the sweetness of sugar, but almost none of the calories, rare sugar sounds compelling. A recent breakthrough enabling the mass production of rare sugar (also known generically as allulose or psicose) could change the game. Developed and popularized in Japan, rare sugar is just beginning to enter global ingredient markets with soft candies, chewing gum and confections among the more promising applications.

Also emanating from Japan is a fiber ingredient said to suppress the absorption of sugar and fat by the body. Indigestible dextrin has



earned its stripes in the soft drink market where recent innovations like Coca-Cola Plus in Japan take advantage of the ingredient's unique ability to block the absorption of fat from food.

Candy makers are beginning to experiment with indigestible dextrin. Eliza Glico Company launched Libera brand chocolate in Japan in 2016, noting indigestible dextrin's unique ability to suppress the absorption of sugar and fat by the body, all without changing the taste of the chocolate. Early sales results have been promising.

Ingredient innovation is about more than just sugar. Fat is also the target of change. Epogee brand fat replacement was launched in the US in 2016 and represents the first big news in this area in nearly 20 years. When used for chocolate coatings, the ingredient is claimed to reduce calories by one-third and saturated fat by two-thirds.

Confectionery products are also emerging as delivery systems for "better for you" ingredients like probiotics. In Japan, Lotte Sweet Days chocolate is a shelf-stable chocolate that can help maintain bowel health thanks to the use of a heat-resistant form of lactic acid that can survive at room temperature in chocolate.

Lotte worked together with Nitto Pharmaceutical to develop the lactic acid bacteria that is said to survive in the stomach 100 times better than regular lactic acid can. Sweets Days debuted in Japan in October 2015 and nearly hit the equivalent of US\$200 million in sales just six months later.

New product innovation

Confectionery makers are using a variety of other techniques to "walk the tightrope" and balance wellness and sensory concerns. Adding "better for you" iconic health ingredients like probiotics (as noted above) is one approach that resonates with younger consumers.

According to a Q4 2015 GlobalData survey, 43 percent of 25- to 34-year-old consumers in Asia-Pacific either somewhat or strongly agree that they would feel less guilty about consuming unhealthy foods or drinks if they contained a healthy ingredient, compared to just 22 percent of 65+ year olds.

Adding so-called "superfruits" to confectionery can improve health or wellness credentials. Hemelzs Chocolat praline dark chocolate with real durian shows that the choice of superfruit can suit local preferences. These 80 percent dark chocolate candies feature the taste of durian which is known in Malaysia as the "king of fruits."

This sweet fruit is well known for its unique taste and nutritional value in Asia as it is rich in vitamins B1, B6, and C, as well as potassium and magnesium. The fruit is also known for its strong odor, so much so that fresh durian has actually been banned from public places, including some hotels.

Ingredients like green tea or collagen also show promise. The former includes Nestlé KitKat Bites green tea wafers (new in Malaysia) which leverage an ingredient that 79 percent of Asia-Pacific consumers believe has a positive impact on health, according to a GlobalData Q1 2017 global survey. The latter has gained traction as a "beauty from within" ingredient, paving the way for launches like Xuelici Xiaoyan Dolce shredded coconut and collagen marshmallow in China.

Even older FMCG brands can ride this wave. Wrigley's Doublemint brand has been around for decades, but has been reinvented with a new mint flavor chewing gum in China with "visible mint leaf." The use of actual mint leaf may persuade consumers that the gum is more natural than regular chewing gum and "better for you."

Using hot, spicy or savory flavors to shift the focus away from sugar to "walk the tightrope" mirrors similar innovation that is gaining ground in soft drinks.

The habanero pepper is one of the hottest peppers in the world, making it a novel ingredient for Fujiya Look habanero pepper chocolates from Japan. Cheese is a popular savory flavor, though not usually paired with chocolate but is with Morinaga Koeda premium cheese-flavor chocolate. Seaweed is yet another popular savory flavor, one blended with white chocolate for Cuixiangmi brand crispy rice centered white chocolate which is new in China.

It is no accident that this type of flavor innovation is more common in chocolate than other types of candies. According to a GlobalData Q3 2016 survey, Asia-Pacific consumers are nearly twice as likely to often try new and different flavors of chocolate as they are for chewing gum, by a 31 percent to 16 percent margin.

Using flavors or textures that are popular in foods competing for "share of stomach" with confectionery products is an enticing way to "walk the tightrope."

Cheesecake is a delicious dessert, but is rich in calories and fat. Tirol-Choco baked cheesecake chocolate is a new chocolate product from Japan that tastes like cheesecake, but is portion controlled, so it is less likely to break the calorie bank. Heating it up in a toaster oven prior to eating is said to enhance appetite appeal.

Chocolate candies with the texture and flavor of cookies have become a new direction for chocolate candy innovation, though much of this innovation has occurred outside of the Asia-Pacific region. Cadbury Dairy Milk Silk Oreo candy bar is an exception – a chocolate bar with vanilla filling and biscuit pieces recently launched in India.

Using cookie ingredients or adding a cookie texture to chocolate may help boost chocolate consumption earlier in the day. Cookies are much more likely than chocolate to be consumed then, creating a consumption gap that could be shrunk with new product innovation.

Adding new sensory features to confectionery can put the focus back on fun (where many would say it belongs) and offers a final way that companies can "walk the tightrope."

Carbonation gives soft drinks their "fizz" and this sensation is beginning to power confectionery innovation. In Japan, Kabaya Forbidden Cola chocolates take flavor cues from soft drinks with a cola-flavored "fizzy powder center." In Australia, Wizz Fizz Fizza Ballz candies have a chewy sherbet center for a fizzy taste sensation in every bite. The ball shape also enables consumers to use the candies as a dessert topping.

Mondelez in particular seems to be enamored with the concept, launching Cadbury Dairy Milk Marvellous Creations candy bars featuring popping candies in Australia and India. The firm's Spider choc lemonade variety in Australia combines milk chocolate with lemonade flavored crème with fizzy flavored candy. In India, jelly popping candy uses rounded candy pieces for effect that "roll off the roof of your mouth" and offer a contrasting sensation to the melting of milk chocolate in the mouth.

These methods and others like focusing on functionality, taking innovation cues from popular snack foods, and adding value to make indulgence "worth it" suggest that "walking the tightrope" need not be a daredevil act for confectionery marketers. ■

DAIRY WASTEWATER

Hidden Waste in Milk Production

Reusing treated wastewater for non-contact applications is attractive to manufacturers seeking to further cost and efficiency savings, while maintaining quality and hygiene standards.

Packed with calcium and vital nutrients for bone-building, milk plays a key role in a healthy and balanced human diet. Milk was first consumed some 7,500 years ago, and the practice has continued to grow even until today. In 2015, 107.4 billion liters of milk were consumed globally (source: Dairy Reporter), pointing to a strong milk-drinking culture around the world. The wholesome superfood is now widely available, and is also the primary raw material for various dairy products such as cheese, yogurt and icecream.

As global demand for dairy products continue to escalate, dairy manufacturers have to intensify production, further increasing consumption of raw ingredients – one of which is water, a major resource necessary for processing milk. Used as a primary raw material in manufacturing dairy products, water is also intensively utilized in applications such as wash water for sanitizing processing equipment, heating dairy products, and cooling water.

Did you know?

It is no secret that water is needed for milk production, but did you know that up to 4 liters of water is required to produce 1kg of dairy product? Even more startling is the sheer volume of wastewater discharged from dairy processing – just 1kg of dairy product generates up to 14 liters of wastewater.

Dairy wastewater is often loaded with organics, fats, oils and grease (FOG), and suspended solids, making it unsuitable for direct discharge into the sewer systems or seawater. If left untreated, excessive soluble materials in the effluent can adversely impact the environment, depleting a water body of oxygen, suffocating aquatic life forms and limiting water resources for human consumption.

Separately, wastewater from a dairy farm presents a valuable opportunity for manufacturers. As it is, business owners have to

contend with factors such as higher production costs, price volatility of dairy products, competitive pressures, and growing environmental concerns. The prospect of reusing treated wastewater for non-contact applications is attractive to manufacturers seeking to further cost and efficiency savings, while maintaining quality and hygiene standards.

Maximizing every dairy drop

Given the legal, social and economic factors, dairy manufacturers are encouraged to process their effluent and optimize their water usage.

To help dairy producers reduce their external water consumption needs, professional providers have developed innovative water saving technologies to optimize usage and to treat water at the source, through refreshment of internal process water. For instance, the recovery of condensate generated from the evaporation of dairy products is an easy starting point that manufacturers can consider. Using hygienic reverse osmosis (RO) systems, the benefits of condensate recovery extends to savings in water consumption and heat energy recovery.

Vapor condensate can be reused in different applications including boiler and cooling tower feed water, cleaning in place (CIP) water, reconstitution of powdered dairy products, and even for cheese curd wash water. A good source of heat energy, condensate also allows manufacturers to gain significant savings in heating costs by reusing recovered heat energy for pre-heating product or boiler feed water.

The recovery of steam condensate for use in boilers and steam distribution systems also reduces operating costs, chemical use, and boiler makeup water requirements. Additionally, a condensate return system reduces energy costs as the hot condensate does not require much reheating.

In treating dairy wastewater before discharge, a broad range of technologies such as the moving bed biofilm reactor (MBBR), moving bed reactor (MBR), and sequencing batch reactor (SBR) can be applied. Depending on the complexity of the dairy wastewater, innovative granular technologies with capabilities that can remove more than 98 percent COD and total suspended solids for exceptional effluent quality, and an overall better performance with significant operating cost savings can be integrated onsite with a minimal footprint.

As a bonus, these technologies offer additional ‘green’ benefits to dairy farmers due to their ability to produce renewable energy



Case application

Woodlands Dairy removes up to 95% of effluent COD

Located in Humansdorp, Eastern Cape, on the eastern seaboard of South Africa, Woodlands Dairy's facility was in need of a viable processing solution to mitigate its growing process effluent stream. Apart from a cheese factory, the dairy facility also houses a milk sterilization and packaging plant. As production volume rose, Woodlands Dairy found that it had a correspondingly larger volume of process effluent to handle in its combined effluent sump.

To effectively mitigate the manufacturer's wastewater processing needs, Veolia proposed a resource recovery plant (RRP) that is capable of processing 36 million liters per day (MLD) of effluent. The RRP features Veolia's Biothane Membrane technology, a simple and fully automated system that delivers a significant total operating cost reduction when compared to conventional technologies.

Combining anaerobic biological treatment and membrane separation, the Memthane technology is an innovative and environmentally friendly wastewater processing system that is capable of maximizing COD and total suspended solids (TSS) removal, minimizing disposal costs, and generating methane-rich biogas. With Veolia's support, Woodlands Dairy managed to tackle its growing effluent demand and also achieved plant effluent concentrations well below that of municipal standards.

Arla Foods strives to create first zero-carbon fresh milk processing facility

Arla Foods is a global dairy company and a co-operative owned by dairy farmers, with production facilities in 12 countries. At its new dairy plant in Aylesbury, Buckinghamshire, UK, Arla processes one billion liters of milk annually. The company was keen to incorporate advanced wastewater treatment and water recycling technologies, in a bid to create the first zero carbon fresh milk processing facility globally. To support the client in achieving its vision, Veolia proposed the implementation of the Biothane Memthane bioreactor, an innovative technology that combines the advantages of anaerobic treatment with external crossflow ultrafiltration. Capable of treating 500 cubic meters of wastewater per day and removing 99 percent COD, the reactor also maximizes TSS removal, eliminates disposal costs, and generates methane-rich biogas.

Arla was able to treat low strength wastewater and grey water in a reverse osmosis plant for reuse in its dairy facility. Additionally, the biogas generated was used to fuel the onsite combined heat and power (CHP) plant, bringing the client one step closer to its goal of being carbon neutral.



and biogas. Derived from the natural breakdown of organic matter, biogas – when utilized as a fuel – has a double environmental benefit. When harnessed, biogas is a carbon neutral fuel that can provide the same advantages as gas-fired combined heat power (CHP) plants. This process also minimizes the release of methane into the atmosphere, where it is potentially more harmful to the environment.

Not every dairy facility operates in a similar fashion, so professional water solutions providers who can design a process turnkey solution to cater to unique treatment needs will be able to provide manufacturers with additional value. For example, when it comes to treating high-strength effluents generated during cheese and whey production, Veolia's Memthane Anaerobic MBR is an effective solution. The technology uses cross-flow ultrafiltration membranes to remove high chemical oxygen demand (COD), suspended solids (SS), and fats, oils and grease (FOG), successfully treating high-strength and high-solid waste streams that were previously considered untreatable.

Separately, for manufacturers looking to treat their wastewater for reuse, their treatment needs would be rather different. In an earlier project with Nestlé, Veolia installed its Aquantis membrane bioreactor, a polishing system that produced a filtrate virtually free from solids, and further integrated a reverse osmosis treatment to retain dissolved solids and salts. Nestlé was able to reuse the treated water for cooling, cleaning, and industrial uses, effectively contributing to water savings of 1.6 million liters of groundwater each day, which is equivalent to the average daily water consumption of 6,400 Mexicans. These are just two examples of how advanced wastewater technologies can help manufacturers to mitigate wastewater challenges and improve environmental performance.

Responsible wastewater management positively impacts the environment by eliminating potentially harmful contaminants in waste streams. Leading dairy companies like Nestlé and Danone have imposed strict effluent standards across global factories, pledging their commitment to environmental sustainability. This has influenced smaller dairy factories to follow in their footsteps and comply with local discharge standards, resulting in a concerted effort to mitigate wastewater challenges in the dairy industry.

In tackling dairy waste, it is important for manufacturers to understand that it is not simply a case of replicating another producer's approach to wastewater treatment, as their needs can differ greatly even if their plants manufactured the same type of dairy product. Factors including wastewater volume, plant size, and local discharge standards should be taken into consideration when integrating wastewater technologies. Producers seeking to upgrade secondary effluent for reuse will generally require more sophisticated solutions than those focusing on treating dairy waste for discharge. These issues can and will be addressed by leading water treatment providers.

Apart from enabling dairy manufacturers to focus on their core business, professional water providers ensure that dairy plants comply with hygienic standards and regulatory requirements for wastewater treatment. The latter is especially important as it enables dairy manufacturers to safeguard their social licenses required to operate their businesses, preventing companies from getting penalized by local authorities.

Undoubtedly, dairy companies have much to gain in turning to professional water solutions providers. As dairy consumption continues to grow, manufacturers looking to further develop their business can potentially turn dairy waste into a substantial additional source of renewable resource through wastewater treatment solutions, benefitting the industry and the environment as a whole. ■

Tipper for mobile bins

A new TIP-TITE hydraulic tipper from Flexicon discharges bulk solid materials from mobile bins at controlled rates into downstream process equipment or storage vessels free of dust. With lid open, the bin is rolled into a receiving frame, which positions it over a lifting tongue centered inboard of the castors. Side bracing prevents lateral movement of the bin during tipping.

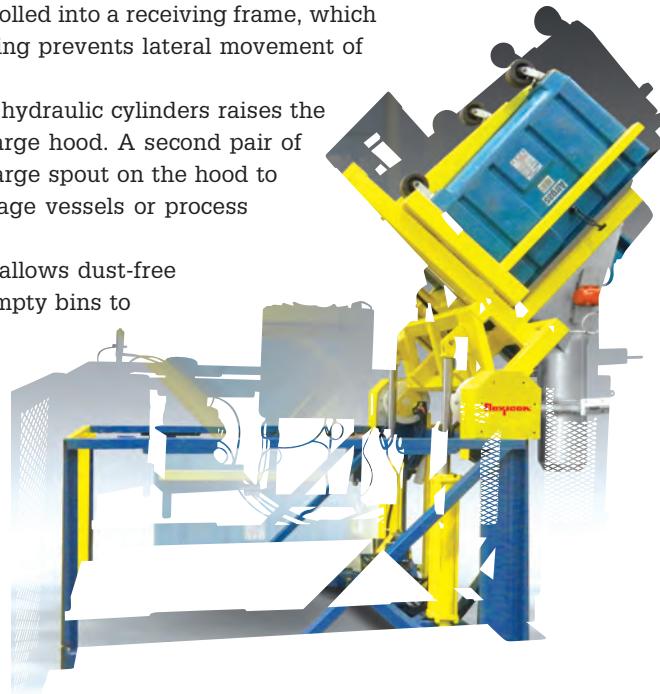
After securing the bin in place with a safety-interlocked door, a pair of hydraulic cylinders raises the bin vertically, seating its rim against the underside of a rectangular discharge hood. A second pair of hydraulic cylinders then elevates and tips the assembly, causing the discharge spout on the hood to mate with a gasketed inlet ring fitted to the lid of receiving hoppers, storage vessels or process equipment for total dust containment.

Opening a pneumatically-actuated slide gate valve at the spout outlet allows dust-free discharge at controlled rates. Closing the valve allows empty or partially empty bins to be returned to the plant floor with no dust emission.

The unit can be sized to accommodate bins with rim dimensions up to 1,220mm on a side, and up to 1,117mm in height. It is constructed as standard of carbon steel with stainless steel material contact surfaces, or in all stainless steel finished to food, dairy, pharmaceutical or industrial standards.

Optional receiving hoppers are available integrated with the company's mechanical or pneumatic conveyors to transport discharged material to any plant location.

www.flexicon.com



Fresh for the Factory

In-line blender improves consistency, saves costs

Tetra Pak has launched a new in-line blender that helps dairy manufacturers improve consistency, ensure product quality and cut costs. At the heart of the new In-line Blender D is a sophisticated automation platform that continuously collects data and controls the precision of blending.

"Ingredients for formulated products can be expensive. Precision of blending means consistent quality, less ingredient give-away and more cost savings for customers, and that is exactly what this new machine seeks to offer," said Helen Sellar, product manager, Tetra Pak Dairy & Beverage Systems.

"Take the typical scenario of milk production with 3.0 percent fat. The new Tetra Pak In-line Blender D produces at a minimal variation of +/- 0.015 grams per 100 ml, down from the average 0.050 grams in a conventional system. With a production capacity of 20,000 liters per hour, operating 20 hours per day and 350 days per year, that alone means an annual saving of up to 180,000 for a manufacturer," explained Sellar.

Working principle

Continuously controlling ingredients in an automation control loop, achieves precise ingredient composition in formulated dairy products. Upon receiving signals from transmitters in the ingredient line, a computer calculates the ingredient composition in relation to set points and flow rates. It then transmits control signals to the flow-regulating component. This controls the ingredient composition whenever required in the formulated dairy product.

The base blending and standardization operation is based on flow measurement and an analysis of the composition in the ingredient tank. A mass flow transmitter can be installed, for in-line measurement of the composition from the ingredient tank.

The In-line Blender D handles the widest range of ingredients in the industry and can be customized to handle a variety of recipes, including flavored milk, cheese milk, standardized milk for dairy powders, lactic acid drinks, condensed milk and liquid formulated products, amongst others.



www.tetrapak.com

Connecting the Supply Chain



- Over 14,000 Qualified Subscribers
- Quarterly Issues in Print and E-Book
- Daily Website Update and Weekly E-Newsletter
- Latest News, Technologies, Market Trends

LOGISTICS INSIGHT ASIA



www.logasiamag.com



For advertising opportunities, please contact:

Caroline Yee, Assistant Sales Director
(65) 6521 9751
caroline.yee@contineomedia.com



For subscription, please visit www.logasiamag.com/subscribe

Spoiled?



Never with us.

If you're worried about your perishable cargo's freshness being compromised, don't be. We've got it covered.

Shipment integrity is top-of-mind with our range of innovative Emirates SkyFresh solutions for temperature-sensitive cargo. Coupled with state-of-the-art transit and cool-chain facilities in Dubai, super quick transfers and our network of over 150 destinations across 6 continents, all professionally powered by our dedicated team of experts - would you want it any other way?



skycargo.com/skyfresh

