CLOVER CORPORATION

Nu-Mega™ Ingredients
Delivering Active Nutrition

The Good Oil

NOVEMBER 2017

Nu-Mega participates in major USA and Australian trade shows

Nu-Mega Ingredients this year participated in two major trade shows in the USA and Sydney, promoting its full product range but with a special emphasis on high-concentration omega-3 DHA powders.

It was Nu-Mega's second showing at SupplySide West in the USA, where food manufacturers were targeting very high levels of DHA fortification in a range of products. At FoodPro in Sydney, opportunities were identified for use of Nu-Mega's ingredients in a wide range of new and novel applications.

SupplySide West, USA

Held in Las Vegas in October, SupplySide West featured some 1200 exhibiting companies, more than 10,000 ingredients and solutions, and attracted more than 15,000 industry participants.

Nu-Mega exhibited through its USA distribution partner, who focused on a sports bar and gummy sweets which had been fortified with extremely high levels of omega-3 DHA.

"The sports nutrition market in the USA is very strong, and the high-protein sports bars enabled us to demonstrate how our DHA products meet the needs of manufacturers wanting an effective delivery system for high levels of DHA fortification," says Bassam Hallak, Nu-Mega's Global Business Manager.

"At the levels of fortification we have achieved, which is about 325mg of DHA in the sports bar, the marine taste of the algal DHA oil would normally be very apparent. But it can neither be tasted nor smelt.

"Our patented encapsulation technique enables a higher potency of DHA to be captured in a very robust shell which doesn't break up until it reaches the stomach, so there is no smell or taste. It also provides stability from oxidation and doesn't impact on the fortified consumer product's shelf life."

Gummy sweets, which were fortified with about three times the amount of DHA achieved by most manufacturers, were also promoted.

"The gummies had about 100mg of DHA per gummy, whereas most manufacturers would achieve only 30 to 35mg," Mr Hallak says.

"There's a lot of growth in the vitamins delivery system in gummy format, because there are people who cannot swallow tablets, particularly the elderly and young children.

"A mother might give a couple of fortified gummies, in our case fortified with DHA, to a child who would happily eat them but would not want to take a tablet."

Both products were well received at SupplySide West, with Nu-Mega's distribution partner now following up manufacturers which expressed interest in the sports bar and gummy applications, and also for milk applications.

The next major Northern Hemisphere show at which Nu-Mega will promote its products is Vitafoods 2018 in Geneva. This show also focuses on key growth markets such as sports nutrition and bioactive ingredients in general foods.

FoodPro, Sydney

Held in Sydney in July for the first time in six years, FoodPro is the biggest food manufacturing show in Australia and New Zealand, and attracts many visitors from Asia.

A first-time exhibitor, Nu-Mega was one of around 360 organisations at this event, which attracted nearly 10,000 visitors and coincided with the Australian Institute of Food, Science and Technology conference.

"Our goals were to introduce the company to prospective customers, promote our product range and connect with key existing customers," says Belinda Smale, Nu-Mega's International Business Development Manager.

"We also established valuable connections with a potential oil supplier in the Pacific Islands, along with companies which have ingredients that are complimentary to Nu-Mega's. These connections all help to open up opportunities across a wider range of manufacturers.

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"We met a number of small companies working in new application areas, which has allowed us to extend our knowledge of our own product performance, as well as identifying opportunities for new product development within our own portfolio."

Interest in Nu-Mega products came from companies in Australia, New Zealand, Singapore, Vietnam and Indonesia. Most of the company's senior executives attended during the show, enabling research and development as well as business development staff to create new relationships and identify products which Nu-Mega may be able to use in conjunction with its own product portfolio.■

Two new patent applications for breakthrough technologies

Nu-Mega's ongoing innovation has resulted in two new international patent applications for breakthrough technologies which can assist clients in fortifying food and beverage products with extremely high levels of omega-3 DHA.

The technologies are:

New emulsion technology

"This emulsion delivery system is able to tolerate typical heat treatment and homogenisation processes such as in the Ultra-high Temperature (UHT) application," Nu-Mega Business Analyst Mek Cheng says.

"This allows manufacturers to fortify higher omega-3 DHA levels per serve without reconfiguring their manufacturing processes. The emulsion technology is currently under application shelf life trials."

Polar lipid encapsulation technology

Existing polar lipid encapsulation technology does not provide efficient encapsulation, therefore powder containing a very high level of surface free fat requires a secondary coating to prevent oxidation of the surface polar lipids.

"We have developed a new encapsulation formulation which can provide more efficient and more stable encapsulated compositions of phospholipid-containing oils (such as krill, herring and roe oil), and lipid compositions suitable for both nutritional and pharmaceutical applications, such as krill oil in chewable tablet form. This encapsulation technology is currently undergoing further process optimisation and assessment," Ms Cheng says.

Nu-Mega already has a number of patents granted for its technologies. These two new applications have now been filed under the international PCT (Patent Cooperation Treaty).

Nu-Mega sample products which have been fortified with extremely high levels of DHA through these technologies, such as muesli bars and gummies, have been attracting high levels of interest at recent trade shows including Supply Side West in the USA and FoodPro in Sydney.

At FoodPro in Sydney: Nu-Mega's Grace Shao, Business Development and Dr Samaneh Ghasemi Fard, R&D Technologist and Research Liaison Officer.

Nu-Mega strengthens industry links through influential Infant Nutrition Council

With the Australian and New Zealand infant formula industries experiencing significant growth, Nu-Mega has joined the influential Infant Nutrition Council (INC) to ensure the company keeps abreast of regulatory issues impacting local infant formula manufacturers and ingredient suppliers.

"Involvement with the group will allow closer interaction with local infant formula manufacturers on a technical and regulatory level," says Glenn Elliott, Nu-Mega Research, Quality and Regulatory Affairs Manager.

"Australia and New Zealand also account for a large proportion of Nu-Mega's sales to infant formula manufacturers. These countries are significant exporters of infant formula into China, and the continual uncertainty regarding Chinese import regulations also means it is important for us to stay well connected."

INC represents the major manufacturers and marketers of infant formula in Australia and New Zealand as well as local companies who are manufacturing products for export, and has more than 30 ordinary and associate members.

It has strong relationships with key Australian and New Zealand government departments and agencies, and works in partnership with government to protect Australian and New Zealand brands. INC also supports public health goals for the protection and promotion of breastfeeding and, when needed, infant formula as the only suitable alternative.

INC works with local and international regulators to advance infant nutrition, advocating to ensure the regulatory environment considers global research, global trade and harmonisation with international food standards.

Bassam Hallak, Nu-Mega's Global Business Manager, says the company's Technical and Regulatory team will become involved in the council's regulatory and scientific research activities, with a particular focus on the adequate supplementation of infant formula with DHA.

"We are the DHA experts in this region," Mr Hallak says. "The sales and marketing team will also make input into how Australasian products are marketed into key markets such as China."■

Leading scientific speakers emphasise importance of DHA during Infant Nutrition Lipids Workshop

The importance of DHA in normal brain development in infants was highlighted by leading scientific speakers from Australia and New Zealand at an Infant Nutrition Lipids Workshop during the Australasia Section of the American Oil Chemists' Society (AAOCS) conference in South Australia in September.

The AAOCS conference program covered the latest science and industry updates relating to edible oil and ingredient supply, lipidomics, biotechnology, manufacture of fat-based products and nutritional research.

"An informative workshop focusing on Infant Lipid Nutrition highlighted new developments in science and technology within infant nutrition, and provided information on areas such as manufacturing, regulatory affairs, possible contaminants and innovations, "Dr Samaneh Ghasemi Fard, Nu-Mega Research Liaison Officer and workshop coordinator, said.

Professor Robert Gibson, Director of the FOODplus Research Centre University of Adelaide, highlighted results from many studies that concluded DHA is essential for normal brain development in infants. He said there is "consistent evidence that long chain omega-3 given in the last trimester results in a range of clinical benefits to the child".

Amongst the leading speakers at the AAOCS Infant Nutrition Lipid Workshop were (left to right) Professor Stewart Forsyth, DSM; Professor Robert Gibson, Director of the FOODplus Research Centre University of Adelaide; Professor Clare Wall, University of Auckland; Professor Karen Campbel, Deakin University; Professor Maria Makrides, Theme Leader for Healthy Mothers, Babies and Children at the South Australian Health and Medical Research Institute (SAHMRI); Professor Barbara Meyer, University of Wollongong; Dr Samaneh Ghasemi Fard, Nu-Mega R&D Technologist and Research Liaison Officer; Jan Carey, CEO of the Infant Nutrition Council; Professor Bing Wang, Charles Sturt University.

DHA critical for foetal brain development

Professor Barbara Meyer, University of Wollongong, reported that there is rapid accumulation of DHA and arachidonic acid (ARA) in the brain during the last trimester of pregnancy. She highlighted the critical requirement for DHA for foetal brain development, and said the "poor efficiency of its synthesis in humans was a metabolic problem to be overcome in pregnancy".

Deakin University's Professor Karen Campbell spoke on early childhood feeding and obesity, observing that of solid foods introduced to toddlers at different times, vegetables and fruit were introduced first and fish and eggs last.

"The later introduction of fish and meat products showed there was not an effective vehicle in the weaning foods that could deliver DHA to infants from 6 months," Dr Ghasemi Fard said. "Therefore the addition of DHA to follow-on formulas, including 6-12 months, was necessary to reach the recommended DHA level of 100 mg per day."

Jan Carey, CEO of the Infant Nutrition Council (INC), said a growing body of evidence showed the first 1,000 days of life provided a critical window of opportunity where a healthy environment, especially good nutrition, could improve mental wellbeing and positively influence lifelong health by reducing the risk of obesity, allergies, type-2 diabetes and cardiovascular disease.

Mothers with low level of omega-3 during pregnancy

Mr Ismail said DHA was a vital nutrient for infant development. If mothers chose to given formulas to infants and toddlers not fortified with DHA, it was a matter of "discrimination" against lower social economic classes, as their children were not getting the best nutrition possible.

Mr Ismail said that formulas without omega-3 DHA and EPA caused very low omega-3 status in various areas of the body, including the brain. Human milk as a standard contains DHA, therefore DHA enriched infant formula was needed for those born to mothers with low level of omega-3 during pregnancy, specially when mothers were unable to breastfeed or decided not to do. The needs of these babies could not be met fully by neonatal long chain polyunsaturated fatty acid synthesised from Linoleic acid and alpha-Linolenic acid.

Glenn Elliott, Nu-Mega Quality & Regulatory Affairs Manager, made a comprehensive comparison of current and new infant formula health claims, and spoke on EU infant formula regulation, China regulatory updates, DHA sourcing and use in infant formula, and environmental and processing contaminations.

The European Food Safety Authority has approved the health claim that "DHA contributes to normal brain

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development". To carry this health claim, foods must contain 100 mg DHA per day in one or more servings for 6-24-month old children, and 250 mg DHA per day in one or more servings for 2-18 year old children.

In February 2016, the European Union (EU) released a new Infant Formula Regulation (EU 2016/127) in which DHA becomes a mandatory ingredient at a minimum of 20mg/100kcal and up to 50mg/100kcal for 0-12 month baby formula.

"The current DHA levels of EU infant formula brands are lower than the new regulations, therefore they need to be increased by adding permitted DHA sources such as refined tuna oil or algal DHA oil," Mr Elliott said. ■

Dr Samaneh Ghasemi Fard, Nu-Mega R&D Technologist and Research Liaison Officer with Adam Ismail, Executive Director of the Global Organization for EPA and DHA Omega-3 (GOED).

Nu-Mega Ingredients

Nu-Mega Ingredients is a wholly owned subsidiary of publicly-listed Australian company, Clover Corporation. It specialises in the manufacture and supply of omega-3 DHA and omega-6 ARA powders, the nutritional ingredients which are added to infant formulas, general foods and pharmaceuticals.

Clover Corp has a tuna oil refinery in Melbourne, where it takes crude tuna oil from various supply sources and converts it into a food and infant grade quality tuna oil.

Nu-Mega's spray dried microencapsulated powders use a CSIRO patented technology to stabilise the sensitive omega 3 and 6 oils which can then be dry blended into a variety of foods, infant formulas and pharmaceutical products. The oils can be heated with little or no impact on product smell or taste, and have a shelf life of two years.

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