

FORGING NEW FRONTIERS FOR NUTRITIONAL BEVERAGES

Obesity is the most common nutritional disorder in the world; 65% of the planet's population live in countries where overweight and obesity are major contributors to mortality. And, according to WHO, global obesity levels have nearly doubled since 1980 with 1.4 billion obese adults in the world



We find little comfort when we look to the younger population; more than 40 million children under the age of five were overweight or obese in 2012 (WHO). Obesity is a multifactorial condition with behavioural and environmental factors — such as urbanization and government policy — that play a huge role in the epidemic.

Raised body mass index (BMI) is a major risk factor for cardiovascular diseases (mainly heart disease and stroke), diabetes, musculoskeletal disorders (especially osteoarthritis) and some cancers (endometrial, breast and colon). The good news is that obesity is preventable — by making healthier food choices and getting regular physical activity. Nutrition interventions to address the metabolic dysregulations associated with obesity are of increasing relevance. Foods to be avoided are those that are high in saturated fats, trans fats, cholesterol, salt (sodium) and added sugars. Healthy eating plans advise staying within your recommended daily calorie needs and typically emphasize heart healthy fats such as monounsaturated and polyunsaturated fatty acids, fibre and wholegrain.

Wholegrain intake, which is essential for a balanced diet, has been associated with an approximate 26% lower risk of diabetes, lower BMI and lower central adiposity (USDA); however, most individuals are not getting enough wholegrain in their diet. Kerry has been researching and developing nutrition

solutions for more than 30 years. For example, we formulate nutritional beverages that are designed to help a growing number of people achieve their goals of reaching and maintaining their optimal weight in a healthy and sustainable manner. To successfully develop a beverage from an initial marketable idea to a successful consumer-preferred product relies on many technical aspects, such as compatibility of raw materials, ease of factory processing and long-term shelf-life considerations (flavour and colloidal stability, for example). At the very least, consumers expect the product to be great tasting, whilst addressing their nutritional needs.

In general, the more complex the formulation, the more difficult this is to achieve. Nutritional beverages require even more careful consideration when formulating. Let's take wholegrain as an example. Formulating wholegrain into a liquid beverage is certainly not a straightforward task. This is because when heated, cereal starch granules absorb water and swell, and the beverage solution will become viscous and difficult to process. For fibre fortification, it is necessary to carefully consider solubility, dispersability and both heat and acid stability to achieve a beverage that remains stable throughout its shelf-life. Likewise, developing a protein-based beverage is not without challenges.

Several factors, such as compatibility with other ingredients, the pH of the beverage, the

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buffering effect of the protein, the taste impact, the viscous effects of the protein and long-term colloidal stability, demand consideration. The downstream effects of ultra-high temperature (UHT) processing on the flavour and stability of the beverage must also be evaluated. To address these formulation concerns, Kerry has developed a palette of nutritional solutions that are custom-designed for nutritional beverages.

WHOLEGRAIN AND FIBRE SOLUTIONS

Harvest Solutions was developed with the goal of offering the goodness of wholegrain in a nutritional beverage. Our proprietary beverage technology means that the wholegrain can be delivered in a smooth, great tasting and convenient format. Further benefits of wholegrain include improved digestive health, improved weight management and heart health. Harvest Solutions is compatible with cow's milk, soy milk and skim milk proteins. In addition, it can be incorporated into acidic juice-based beverages or dry instant beverage formats. It delivers the wholegrain nutritional benefits of grains such as oat, rice and quinoa in a beverage compatible format.

Harvest Solutions can be further enhanced with EmulGold Fibre, Kerry's soluble dietary fibre solution. The importance of adequate fibre intake as part of a balanced diet is widely known. EmulGold Fibre is gum acacia fibre of 100% plant origin, which is all-natural and GMO-free. EmulGold Fibre has a high concentration of soluble dietary fibre, with a minimum content of 90% guaranteed. It contains no sugar or net carbohydrate and has a low caloric value, making it beneficial for weight management applications. It has a glycaemic index of zero, an important consideration for diabetics and can be used in a wide range of applications. It has no taste, smell or odour and is an easy-to-use agglomerated powder, which has no reduction in efficacy under mechanical stress, in extreme temperatures or pH. EmulGold Fibre can be used in dairy or juice-based formulations and, compared with other fibres, is resistant to acid hydrolysis.

DAIRY PROTEINS

Emerging evidence has strengthened the case that dairy protein plays a beneficial role in body weight management, glycaemic management and metabolic control. A source of dairy peptides, Kerry's Ultrator MPI/MPC products are ultrafiltered, intact, spray dried proteins.

Dairy peptides have been shown to have bioactive properties, which are beneficial to the immune system. Ultrator MPI/MPC have excellent functional characteristics with clean, neutral flavours. They exhibit enhanced stability in ready to drink (RTD) applications, with excellent dispersion characteristics and superior emulsification properties. They contain 100% dairy based protein sourced from Ireland, world renowned for its natural and sustainable dairy production.

TASTE IS KEY

Worldwide, 57% of females and 48% of males are concerned about their body weight and shape (Datamonitor) and, as a result, are looking for products to help them reduce their overall energy intake while still meeting their nutrient requirements; however, they are not willing to sacrifice taste for health benefits. Taste remains the most important motivator for consumers when choosing food or beverages. One of the key challenges associated with making healthier products is that it often has a negative impact on taste and consumer enjoyment of the food or beverage. Kerry takes an integrated approach that combines science, innovation and applications expertise to enable our customers to develop low sugar, salt and fat, as well as functional, products, without compromising on taste, texture and ultimately consumer enjoyment.

Our industry leading portfolio of flavour technologies includes fruit flavours, botanical extracts, *fmt* (flavour modulation technology), freeze-dried fruit and vegetable powders, brown sweet notes and dairy flavours. Our range of fruit flavours (100% FTNFs) includes citrus, orchard, red fruit, berries, tropical and superfruit flavours. We have a wide range of brown sweet flavours spanning vanilla, chocolate, coffee and other notes such as nut, biscuit and cereal. Kerry's *fmt* is a proprietary flavour modulation technology designed to provide customers with solutions around health and wellness. *fmt* imparts flavour and interacts with the taste receptors on the tongue to manipulate overall taste perception, taste impression and flavour profile. Modulation application includes sugar, fat and salt reduction, masking, mouthfeel and texture. It can mask the attributes of high intensity sweeteners and undesirable notes such as bitterness, saltiness and metallic notes from vitamins, minerals, and protein.

With our fundamental scientific understanding of ingredient functionality and our unmatched processing capabilities, Kerry's range of specialty functional ingredients is designed to help our customers create healthier products with optimal flavours and textures that optimize the overall taste experience for consumers. 

CONTACT
Declan Goode
Director of Beverage
Applications
Kerry
www.kerry.com