The more we know about the properties of milk, the better we can use it to develop more and improved products that will add value to the lives of all our consumers – and the better we can market these products to those very same consumers by informing them of the benefits of including these in their diets. We are then no longer selling products, but rather health and wellbeing.

A number of international research studies have recently published interesting results relating to the health and nutritional aspects of milk and dairy foods. Here are just a few examples of interest to the South African dairy processing industry.

**Ice-cream gets a health boost**

Researchers at the University of Guelph in Canada have found that ice-cream formulated with an emulsion that contains healthier unsaturated oils has the same melting properties as that made with saturated fats.

Comparisons were made between ice-creams with a 10% fat content of different levels of fractionated palm kernel oil as saturated and high oleic sunflower oil as unsaturated fat content, using glycerol monooleate emulsifier.

"Emulsions containing saturated fat or unsaturated oil were combined in the preparation of ice cream; solid fat droplets contributed to the structure-forming properties and stability, while protein-stabilised liquid
droplets acted as inert fillers, producing so-called two-stream ice creams,” researchers explained.

The results showed that the two-stream ice-creams were identical to other ice-creams used as controls with regard to particle size and melt stability. When the levels of glycerol monooleate was increased, it resulted in greater particle size and higher destabilisation of the formulation, which was found to increase the creaminess of the finished product.

“A growing body of evidence from observational studies suggests all types of dairy foods have a neutral or even beneficial effect on the risk of heart disease and diabetes”

The study was published in the August 2011 edition of the International Dairy Journal. The authors, Carlos Mendez-Velasco and Douglas Goff, noted that more and more, consumers are opting for healthier versions of their favourite foods, and while saturated fats in ice-cream may be substituted by unsaturated oils like high oleic sunflower oil, this changes the structure of the ice cream, and “results in a product with less body, which is also perceived as less creamy”.

“Hence, the replacement of solid fat with ‘healthier’ or liquid fractions is a major challenge in the production of high quality ice-cream because the texture, probably the most sought after quality in this product, is highly compromised.

“This study aimed to produce acceptable ice-cream with lower amounts of solid fat in higher unsaturated fat formulations.”

**Butter and cream are good**

In a groundbreaking Australian study conducted by the Baker IDI Heart and Diabetes Institute in Melbourne, it was found that the consumption of butter, cream and milk actually lowered the markers that are indicators of heart disease and diabetes.

Researchers said the unexpected decline in the concentrations of a number of biomarkers, in particular after consumption of butter and cream, remains unexplained.

According to Australian dietitian Glenys Zucco, these results contradict previous beliefs that high fat meals increased the levels of markers related to heart disease and diabetes and suggest that dairy fat has different effects than other types of fat. She said: “A growing body of evidence from observational studies suggests all types of dairy foods have a neutral or even beneficial effect on the risk of heart disease and diabetes.”

**Dairy builds muscle**

In a study conducted by scientists at the McMaster University, Canada, it was found that the consumption of dairy products in conjunction with dieting and daily exercise, led to muscle gain and weight loss by women.

The scientists compared three groups of 90 overweight and obese, but otherwise healthy women, who exercised seven days per week over a period of four months. The different groups’ diets consisted of high protein, high dairy, adequate protein, medium dairy and adequate protein, low dairy intake respectively.

At the conclusion of the study it was found that the high protein, high dairy group gained nearly 1.5kg more muscle than the low dairy group and also lost twice as much belly fat than the low dairy group.

The study’s lead author, Andrea Josse, said: “One hundred per cent of the weight loss in the higher protein, high dairy group was fat – and the participants gained muscle mass, which is a major change in body composition.”
**Dairy helps you think**

Another study published in the *International Dairy Journal* concluded that the frequent intake of dairy products enhances mental performance.

Researchers from the University of South Australia and the University of Maine said that the results obtained from a group of 1,000 people in the United States show that a daily intake of dairy is associated with marked improvements in a range of mental functions, including working memory, visual-spatial memory, abstract reasoning and organisation. They concluded that the results may be due to the nutrient content of dairy foods, including vitamin D, phosphorus and magnesium.

The research team assessed the dietary habits of the study participants using the 41-question *Nutrition and Health Questionnaire* originally developed for the European Prospective Investigation into Cancer (EPIC) and evaluated participants’ mental function with a series of tests for visual-spatial memory and organisation, scanning and tracking, verbal episodic memory, working memory, executive function and similarities (a measure of abstract reasoning).

Participants who consumed dairy at least once a day achieved “significantly higher scores on multiple domains of cognitive function compared with those who never or rarely consumed dairy foods”. Researchers noted that over the past 20 years, the intake of dairy has declined significantly worldwide.

“This shift in dietary patterns is alarming with regard to the quantity of energy consumed, risk for excess weight gain and obesity, and inadequate nutrient intake,” wrote the researchers, led by Georgina Crichton.

“Consistent with this dietary pattern in children, our data in an adult population suggests that low dairy food consumers may engage in other less healthy lifestyle and dietary habits, and that this is one possible explanation of their poorer performance, aside from missing the positive aspects of dairy food consumption.”

**Milk trumps water**

Researchers at MacMaster University in Canada, led by research director Brian Timmons of the university’s Child Health and Exercise Medicine Programme, have found that milk is more effective in countering dehydration than a sports drink or even water.

The study focussed on active children aged eight to ten and measured them for hydration following rigorous exercise in a climate chamber and consumption of a drink.

“Children become dehydrated during exercise and it is important they get enough fluids, particularly before going into a second round of a game. Milk is better than either a sports drink or water because it is a source of high quality protein, carbohydrates, calcium and electrolytes,” said Brian, adding that milk replaces sodium lost in sweat and helps the body retain fluid better. It also provides protein needed by children for muscle development and growth, an ingredient not found in the other drinks.

He also noted that active children and adults usually don’t drink enough to stay hydrated during exercise, so they often have a “hydration disadvantage” when they start their next period of exercise. He said that one per cent dehydration can cause up to a 15% decrease in performance, with an increased heart rate, higher core temperature and lower ability to keep going. More significant dehydration comes with an increased risk of heat-related illness such as heat stroke."