eda Fact sheet

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The role of dairy in helping to prevent lifestyle diseases

Naturally nutrient-rich

Dairy products are naturally nutrient-rich foods and are recognised as an important part of healthy and balanced diets.

Dairy matrix effect

The unique combination of constituents of milk and other dairy products probably contributes to the health effect known as "dairy matrix" and to the prevention of many diet-related diseases

Prevention of lifestyle diseases

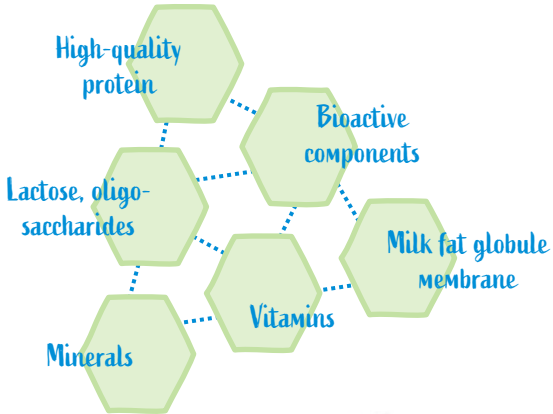
Thanks to the natural nutrient richness combined with the unique matrix effect, dairy foods contribute to good health.

I. Dairy is naturally nutrient-rich

Dairy products are **nutrient-rich** and are excellent sources of **high-quality protein**, as well as **calcium, phosphorous, potassium, iodine, vitamin B2 and B12**. They also contain small amounts of other nutrients such as **zinc**, **selenium** and **magnesium**; and other **B vitamins (B3, B6, B9)**, and **vitamin A**. [1,2] Therefore, they can play an important role as part of a **healthy and balanced diet.** [1,3,4] See our EDA Nutrition Factsheet: 'Nutrient-rich dairy, an affordable source of nutrition'.

II. Dairy matrix

The beneficial effects of milk and dairy products on health are becoming increasingly recognised. The combination of nutrients, bioactive components and how they interact with each other is known as the **"dairy matrix". Future dietary guidelines should consider the latest evidence of the effects of whole foods alongside that of individual nutrients**. Further research should be encouraged to investigate the mechanisms behind the food matrix and its health effects. [1,5,6]



III. Dairy contributes to numerous health benefits

Reduced risk of overweight and obesity [63]

Overweight and obesity are dramatically on the rise. They are defined as **abnormal or excessive fat accumulation that presents a risk to health**. Both are major risk factors for several chronic diseases, including diabetes, cardiovascular diseases and cancer.

It has been suggested that **calcium**, which is naturally present in high quantities in dairy products, may help binding fat in the intestine and thereby increase fat excretion from the body which leads to a **decrease in fat absorption**. [9,10] Calcium in the dairy food matrix may be more effective in this respect than other forms of calcium. [11]
Other components of the **dairy matrix** are also likely to be involved in dairy's beneficial health effects in relation to obesity. It has been suggested that some fatty acids, in particular medium-chain fatty acids, may have preventive effects. Moreover, preliminary evidence suggests that fermented dairy foods such as cheese, favour production of short-chain fatty acids in the gut, which may have positive effects on appetite regulation. [12-14]

Studies show that the inclusion of dairy in our daily diet can help to reduce the risk of overweight and obesity.

Dairy products content of high-quality protein may help prevent over-consumption due to its satiating effect and can play an important role in weight loss as it contributes to muscle protein synthesis and maintenance of lean body mass during energy restriction. [7,8]

Lower risk of metabolic syndrome

Metabolic syndrome is a **combination of risk factors for cardiovascular disease** and is therefore the major contributor to not only CVD but also type 2 diabetes. [25]

A systematic review has recently indicated that dairy consumption is inversely associated with the incidence and prevalence of metabolic syndrome. However, additional studies are needed to provide further evidence. [64]

Reduced risk of cardiovascular disease

A recent meta-analysis of the relationship of total dairy intake with cardiovascular disease (CVD) showed an **inverse relationship between total dairy intake and CVD.** Considering the limited number of studies in this regard, more studies are required to investigate the effect of different factors.[68] Moreover, an overview of systematic reviews and meta-analyses provided a high level of evidence that **dairy products are significantly associated with reduced risk of stroke.** [69]

Dairy includes **natural trans fatty acids**, such as **conjugated linoleic acid** (cis-9, trans-11 CLA) and trans palmitoleic acid (trans-C16:1) [16,17]. That in a context of dairy matrix, may have **beneficial effects on CVD risk factors such as blood lipids and markers of inflammation**. [75,76]

The focus on dairy foods and CVD is often in relation to saturated fat. However, the research shows that dairy foods, **including cheese, despite its content of fat and saturated fat, have a neutral or even a beneficial effect on CVD.** This can be explained by a complex composition of the dairy matrix. [15] Therefore, when testing a food's health effect, it is important to investigate the total profile and composition of a food, and not just its single individual nutrients.

Prevention of hypertension

Dairy consumption has a beneficial effect on blood pressure and contributes to the prevention of hypertension. [66] **The Dietary Approaches to Stop Hypertension (DASH) diet** is recommended for the management of high blood pressure and consists of fruit, vegetables, whole grains and **low-fat dairy products**. [18,21] Studies show that **substituting low-fat dairy with full-fat dairy in the DASH diet may have the same favourable effect on blood pressure**. [65]

Recent research has focused on the importance of **bioactive peptides** in regulation of blood pressure. A group of peptides released during digestion of casein proteins in the gut or by fermentation, have been shown to have **anti-hypertensive properties** and to regulate blood pressure. [22-24] Dairy is also a source of **potassium** which contributes to the maintenance of **normal blood pressure.**

A recent meta-analysis [71] show an inverse association between yoghurt intake and risk of type 2 diabetes. The benefits of fermented dairy products (cheese and yoghurt) in relation to type 2 diabetes may be due to their effect on the gut microbiota. [72,73]

Other studies [74] identified that whey protein (primarily in milk and yoghurt) can reduce postprandial (occurring after a meal) plasma glucose concentration in type 2 diabetic subjects.

Reduced risk of type 2 diabetes

Type 2 diabetes occurs when the body becomes resistant to insulin and/or does not produce enough insulin to reduce blood sugar levels properly.

Different components of the **dairy matrix** could potentially be involved in the protective relationship between dairy and type 2 diabetes [67]. The **beneficial effects on glycaemic control** can be explained by the interaction of different nutrients in the dairy matrix, including calcium and magnesium [27-29], high-quality protein [30-33], bioactive peptides, a form of vitamin K [34] and dairy fatty acids. [35-41] Similarly, dairy products may indirectly modify diabetes risk through beneficial effects on body weight, body fat and on muscle mass and function.

Prevention of osteoporosis

Osteoporosis is a skeletal disease characterised by a decrease of bone mass and changes in bone structure which leads to increase risk of fractures. Osteoporosis has **three main factors:** advanced bone loss in women after menopause or in aged men and women; deficient bone growth during childhood or adolescence; and bone loss due to a disease, eating disorder or medication. [46]

Dairy consumption contributes to achieving peak bone mass in early adulthood, which helps to prevent fractures later in life. Several studies showed that dairy food lead to an increase in bone mineral density, have a beneficial impact on bone metabolism and attenuate bone loss. [46,47-49] The role of dairy products for bone mineral content or bone mineral density has been sufficiently established in **girls and women**. [70]

The importance of calcium in bone development and maintenance is well established. [42,43] Milk and dairy products make the largest contribution to calcium intake in the European diet. Only few other foods naturally contain as much calcium as dairy. Nevertheless, **calcium from dairy is known to be one of the most bioavailable to the human body**. [44]

While it can be assumed that supplementation with the same amount of calcium from different sources have comparable effects on bone health, dairy products may have greater benefits [50-52] and skeletal benefits may persist longer than the equivalent calcium in the form of supplements. [45] Similarly, the science increasingly indicates that the greater benefits of dairy may be due to the nutrients in the **dairy matrix** which work together to help maintaining healthy bones. [53-61]

Cancer

Colorectal cancer is the second most commonly occurring cancer in women and the third most commonly occurring cancer in men. In line with the latest **WCRF/AICR Report (2017), there is strong evidence that consumption of dairy products decreases the risk of colorectal cancer.** [62]

Moreover, milk and dairy products may also be associated with a reduced risk of **bladder cancer** and **premenopausal breast cancer**; within dairy subgroups particularly yoghurt and low-fat dairy were found to be inversely associated with the risk of developing breast cancer. [77] As calcium and vitamin D supplementation was previously shown to reduce risk of breast cancer in the Women's Health Initiative [78], these nutrients could be involved in the underlying mechanisms.

European Dairy Association

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