

Full-Fat Dairy Consumption to Improve Cardiometabolic Health and Prevent Diabetes and Cancer

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Abstract

The objective of this review article was to delineate the current and traditional contemplations on low vs. full-fat dairy consumption with effects on public health. Among the most common diseases causing death worldwide are cancer and cardiovascular diseases. Also, type 2 diabetes (T2D) is closely related to life style and nutritional habits. Traditionally and also according to general nutritional guidelines, low fat dairy products have been recommended to reduce risks from cardiometabolic issues. Generally, the intake of saturated fatty acids in dairy products are associated with increased prevalence of cardiometabolic diseases. However, scientific data supporting this nutritional guideline are not consistently justified. Growing evidence suggests that consuming full-fat instead of low-fat dairy products have neutral or even beneficial effects on cardiometabolic health and T2D. It is notable that dairy products such as milk and yoghurt are considered functional foods that are valued beyond their energy and protein contents. Dairy products consist of various elements including vitamins, minerals, probiotics, anti-inflammatory, and bioactive molecules which work together. Dairy products should be considered and valued in their complete form rather than partially by merely their saturated fatty acids. Therefore, to conclude, recommending low-fat dairy consumption as a nutritional rule needs to be revised.

Key words: dairy intake; cardiometabolic health; diabetes; cancer

Philosophy and Discussion

This article aimed to discuss how full-fat dairy consumption can have no or even beneficial effects on cardiometabolic health. Cancer is postulated to be prevented by full-fat dairy intake. Dairy products are a main part of family food basket and play an important role in growth and health of both young people and adults. Milk and its products mainly yoghurt and cheese are considered as nutrient-dense and healthy foods; nonetheless in public opinion, full-fat dairy consumption is associated with higher blood cholesterol, LDL and increased risk of atherosclerosis and T2D [1]. Earlier [2], it has been concluded that saturated fats (SFA) of dairy and meat products are closely associated with cardiovascular diseases and mortality. Relationships among SFA, cholesterol, and development of cardiovascular diseases (CVD) led to form 'lipid hypotheses or 'cholesterol hypotheses. As such, reduced or even free-fat dairy products were recommended by government nutritional guidelines [3]. However, this hypothesis has been challenged in recent years by various studies, indicating neutral or even positive effects of full-fat dairy products on CVD and T2d [4,5].

Recent studies have reported weaker correlation between dairy SFA and

incidence of CVD than that thought previously [3]. It seems that individual SFA have own biochemical functions and should not be considered as a single group. For instance, myristic acid (14:0) has a role as an activator of conversion of α -linolenic acid to docosahexanoic acid and also activation of proteins needed in biological activities. Similarly, myristic acid and lauric acid (12:0) show a strong potential to reduce blood cholesterol and LDL [6]. Stearic acid, a detrimental part of dairy fat in public opinion, is converted to C18:1n-9 via $\Delta 9$ desaturation which may describe why this acid is not a leading factor for higher blood cholesterol. It seems that SFA specially those with shorter chains possess a potential to increase HDL concentrations and improved LDL/HDL ratio as reported for yogurt [4, 7]. The notion that SFA cause higher blood cholesterol and increase CVD risk has been challenged during recent years. Apparently, many other factors including social bond, nutrition, lifestyle, smoking, and stress are involved in prevalence of CVD and cancer. Systemic inflammation seems to be a more important factor affecting cardiovascular issues and other health problems such as T2d and obesity [7]. It has been reported that polar lipids (phospholipid and sphingolipids present in milk fat globules) in dairy products exhibit anti-inflammatory properties which can be helpful in CVD control [7]. Moreover, Immuno-stimulatory and angiotensin-converting enzyme

(ACE) inhibitors in milk protein could reduce blood pressure and subsequent coronary diseases [8].

As we noted, whole dairy products should be considered as a unique complex because of their special functional and biological nature [5]. The term ‘food matrix’ refers to the nature of food structure and nutrients therein which would affect nutrient digestion and absorption. Contemplation on food matrices rather than single nutrients provides an accurate assessment for exploring dairy products effects on CVD and cancer. Authors have reported beneficial effects of dairy matrices on CVD and T2D [9]. In addition, an inverse relationship between whole dairy products consumption (milk, yogurt and cheese) and CVD and T2D was observed. Therefore, dairy nutrients altogether in a combined complex can impact digestion and absorption of nutrients, affecting biological function of the food [7]. Consequently, reducing fat content of milk or yogurt might lead to altered physical structure of dairy lipids, resulting in different biological and health outcomes.

In a study with 136,384 individuals from 21 countries and 5 continents, authors reported lower risk of mortality and cardiovascular issues in whole dairy consumers [10]. Neutral or positive effects of full-fat dairy consumption on CVD have been recently reviewed and lower risk of T2D incidence was associated with yogurt consumption [11]. Odd-chain SFA are considered as a biomarker of dairy fat intake and risk of cardiometabolic diseases. Pentadecanoic acid (15:0), heptadecanoic acid (17:0) and trans-palmitoleic acid (t16:1n-7) have a positive correlation with dairy fat consumption [12]. Measuring these biomarkers serially in older adults (>65 age) indicated an inverse association between dairy fat biomarkers with CVD and mortality [12]. The current state of knowledge support an inverse or neutral correlation between full-fat consumption and cardiometabolic diseases. This may have implications for cancer prevention through intake of full-fat dairy products.

Conclusions

According to the current knowledge on metabolic and biological functions of saturated fatty acids, it seems that full-fat dairy consumption has no detrimental effects on coronary health whereas other factors such as lifestyle, social bond, stress and inflammation or artery stiffness are stronger factors and predictors. Even, positive effects of full-fat dairy products intake on T2D have been reported in yogurt consumers. People should revise their mind about full-fat dairy consumption because these products may have neutral or even positive effects on cardiometabolic health. This may have implication on cancer prevention by consuming full-fat dairy.



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