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TRENDS IN DAIRY FATS WITH A FOCUS ON YOGHURT

When I was a newly qualified dietitian in the 1990s, the demon nutrients were definitely saturated fat and sugar. Now, more than a quarter of a century later, sugar is still on the hit list, but saturated fat seems to be heading for a reprieve. A beneficiary of this revised thinking is dairy, with milk and yoghurt emerging as healthier options whether or not they are fat-free. This article will look at the thinking behind this interesting trend and highlight research on yoghurt.



The hypothesis that saturated fat was a causative factor in cardiovascular disease (CVD) arose in the 1970s with the publication of the Seven Countries Study.¹ This multi-centred longitudinal survey found statistically significant associations between CVD risk and serum cholesterol, leading to total and saturated fat being identified as likely risk factors. Keys' hypotheses were later criticised, as they were based solely on observational findings and failed to account for potential confounders, such as trans fats and sugars. Some scientists claimed that Keys had pre-selected a limited range of countries that proved his hypothesis. Indeed, subsequent studies found that subjects with a similar serum cholesterol level nevertheless had widely different CVD outcomes,² suggesting an indirect or non-causative relationship between serum cholesterol and CVD risk.

This has been confirmed in subsequent studies such as the Minnesota Coronary Survey³ which tested the efficacy of a reduced saturated fat/reduced cholesterol diet on a randomised sample of 4,393 institutionalised adults over a 4.5 year period. Despite a fall in serum cholesterol in the reduced fat group, there were no significant changes in the incidence of myocardial infarctions, sudden deaths, or all-cause mortality. A meta-analysis found

contradictory evidence for the apparent CVD benefits of dietary fat reduction, except when polyunsaturated fat was increased at the expense of saturated fat.⁴ More recently, a Cochrane analysis concluded that, while saturated fat reduction lowered the cardiovascular events by 17%, the impact on total and cardiovascular mortality was less clear and statistically non-significant in many cases.⁵

DAIRY BENEFITS

Once branded as a high fat food category to eat with caution, dairy has been revolutionised as a result of processing techniques which allow varying amounts of fat to be removed, as well as growing evidence that the types of fatty acids in dairy foods may not pose a major health risk. Emerging research on dairy protein and satiety has indicated potential weight management benefits.

Saturated fat is a collective term for more than 30 individual fatty acids with single bonds in their chemical structure. Around 60% of the fatty acids in dairy foods are saturated with the most predominant being palmitic acid (16:0; making up 30% of the fatty acids), myristic acid (14:0) and stearic acid (18:0). Uniquely among animal foods, milk fats exist as globules with an oil-in-water emulsion, which may influence

Table 1: Summary of recent studies

Population/studies	Type of study	Outcome
1,868 adults (55-80 years) with high risk of CVD Involved in European PREDIMED study	Longitudinal with 3.2-year follow up ¹⁵	Higher consumption of yoghurt (low-fat and whole-fat) associated with reduced risk of metabolic syndrome
306 incident cases of metabolic syndrome occurring in the Spanish SUN cohort	Cohort with six-year follow up ¹⁶	No significant association between yoghurt consumption and metabolic syndrome, but central obesity lower in high consumers of yoghurt
2,636 adults involved in US Framingham Heart Study Offspring Cohort	Cohort with 17-year follow-up ¹⁷	Each additional serving of yogurt/day was associated with a 6% reduction in the risk of hypertension
>3,000 adolescents (12-18 years) involved in HELENA study	Pan European cross-sectional ¹⁸	Higher consumption of milk and yoghurt associated with lower body fat, lower risk for CVD, and higher cardio fitness
3,786 children (8-18 years) from US NHANES survey	Cross-sectional ¹⁹	Yoghurt intake associated with lower total fat and saturated fat intakes and lower body fat
All RCT on using yoghurt to treat antibiotic associated diarrhoea	Meta-analysis which involved two trials due to lack of data ²⁰	No consistent effect of yoghurt consumption for preventing diarrhoea
72 children (1-12 years) prescribed antibiotics	RCT giving 200g probiotic yogurt daily for duration of antibiotic treatment ²¹	Yoghurt effectively controlled diarrhoea
1,861 older adults involved in Study on Nutrition and Cardiovascular Risk in Spain	Cohort with four-year follow-up ²²	Participants consuming seven+ servings of low-fat milk and yoghurt per week had a 48% lower incidence of frailty
4,445 adults (>18 years) in Spain	Cohort with 3.5 year follow-up ²³	Habitual yoghurt consumption did not show an association with improved quality of life

how they are absorbed by the human gut.⁶

Studies suggest that dairy fatty acids are less likely than others to impact on CVD risk while specific dairy fatty acids, i.e. pentadecanoic acid (15:0) and margaric acid (17:0), could lower risk. A cohort of 2,837 US adults⁷ found that intakes of 14:0 and 16:0 were not associated with CVD risk, but each incremental increase of 15:0 in the diet lowered CVD risk by 19% on average. In addition, two reviews of the literature^{8,9} confirmed that the majority of observational studies do not link dairy food consumption with increased risk of CVD, coronary heart disease or stroke, regardless of milk fat level.

Protein is known to induce satiety and increase diet-induced thermogenesis which

could theoretically support weight management. A review¹⁰ collated studies on dairy protein (which is 80% casein and 20% whey) finding that whey in particular exerted metabolic effects which could promote satiety. These included stimulating the secretion of the hormones GLP-1 and glucose-dependent insulinotropic polypeptide. However, there was no clear evidence that dairy protein was superior to other sources of protein in relation to thermogenesis or other hormones, such as ghrelin, CCK or PYY.

FOCUS ON YOGHURT

Yoghurt is a traditional fermented food made using bacterial cultures such as *Lactobacillus bulgaricus* or *Streptococcus thermophilus*. Ferment-

ation alters the carbohydrate composition of milk to convert lactose to lactic acid, glucose and galactose, which explains why yoghurt is often tolerated by people with lactase deficiency.¹¹ Yoghurt may also contain probiotic bacteria which is known to have a beneficial influence on the gut microbiota.

A review published last year in *NHD*¹² identified several areas where yoghurt consumption appears to have a positive impact on health, such as CVD, bone health, Type 2 diabetes and weight management. However, most research arose from observational studies which cannot determine cause and effect. Since then, two reviews and nine studies have been published.

Glanville et al¹³ carried out a scoping exercise to examine the evidence-base for yoghurt health benefits. Focusing on randomised controlled trials (RCT), the review located 213 studies, mostly on nutrition or weight management outcomes, but including bone health, heart disease, cancer, diabetes, metabolic health and gut health. This highlights

the breadth of health outcomes that may be influenced by yoghurt consumption and bodes well for future meta-analyses.

A second review,¹⁴ focused on weight management, noting that yoghurt appears to facilitate the regulation of energy balance. Mechanisms were proposed, including the impact of protein and calcium on satiety as a consequence of the faster absorption rate of milk proteins, and the impact of milk constituents on hunger and satiety hormones, e.g. GLP-1 and PYY. Yoghurt may also have an impact on satiety due to interactions between culture bacteria and the host microbiota. It was also noted that consumption of yoghurt and lower fat dairy foods may displace less healthful, energy dense foods.

Other studies are summarised in Table 1, which add to previous evidence suggesting modest, consistent benefits for regular yoghurt consumption in relation to heart and metabolic health, as well as weight management. More emerging areas, such as tackling antibiotic-associated diarrhoea, require further work.

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