

1 Motivation

In Denmark, it is being recommended that children and adolescents consume ½ Liter of skimmed milk daily in order to obtain an adequate amount of dietary calcium for healthy bone development. However, milk may have potential effects beyond the effects on bone health. Epidemiological studies indicate that children drinking high amounts of milk have a lower risk of having the metabolic syndrome (met-s) risk factors than children drinking low amounts of milk (1-3). The associations, however, may also be a result of other dietary components or a lifestyle associated with being a low-milk drinker. Thus, from the association studies we do not get information as to whether it is actually beneficial to increase the amount of milk in low milk-drinking children and a recent systematic review of observational studies concluded that: “the majority of the literature suggest a benefit of dairy consumption on odds of having met-s but evidence from high-quality randomized controlled trial are needed to examine the effects of long-term consumption of low-fat dairy on met-s risk” (4).

The possible beneficial effects of milk on risk factors of met-s have for a long time been thought to be mediated via the high calcium content (5). However, it has been shown that dairy products have effects beyond the effects of calcium (6), and girls on high-calcium diets have been shown to gain weight at the same rate as girls on a low calcium diet (7). Thus, it has recently been suggested that potential beneficial effects of dairy products may be due to the protein content of dairy products (8).

Therefore, in the MOMS study, we investigate whether it is beneficial for overweight adolescents with a habitual low milk intake to increase the intake of skimmed milk above the currently recommended level and we study whether potential beneficial effects of milk are mediated via the milk proteins, whey and casein.