Role of Cow’s Milk in Growth of Children

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Cow’s milk has a stimulating effect on growth in young children. This has been shown for linear growth [1, 2], and it might also have an effect on accretion of lean body mass. The strongest evidence comes from intervention studies in low-income countries. The effect seems to be through a stimulation of IGF-I and insulin. There are several components of cow’s milk that are suggested to have a stimulating effect on growth [3]. The high-protein-quality score with a high content of especially the essential amino acids is likely to play a key role. Furthermore, the high content of lactose may act as prebiotics having an effect on the gut microbiota and a positive effect on mineral absorption [4]. In addition, cow’s milk has a high content of calcium and minerals important for growth such as potassium, phosphorus, magnesium, and zinc. The effect of milk on linear growth is further supported by a study of male adult stature in 105 countries where intake of dairy protein was the most significant nutritional correlate of stature [5]. Some studies have also shown that children with milk allergy are shorter, and when they terminate avoidance of cow’s milk, they have a catch-up [6].

A high intake of cow’s milk and dairy products has potential negative effects in young children. It results in a high protein intake, which can increase the risk of overweight and obesity. This is especially a problem in high- and middle-income countries. Furthermore, a high dairy intake can limit the diversity of the diet. This can lead to iron deficiency, also because iron content is very low in cow’s milk, and cow’s milk has a negative effect on iron absorption. In low- and middle-income countries, there is also a risk that a high intake of cow’s milk might replace breast milk, which also during the second year of life has important effects in reducing infections. It has been suggested that the daily intake of cow’s milk and dairy products should not be above what equals 500 ml of cow’s milk.

The effect on linear growth is important in populations where stunting is prevalent, but in populations with no stunting, this might not have
important beneficial health effects. It has been suggested that the higher levels of IGF-I and insulin could increase the risk of some noncommunicable diseases later in life, but the evidence is not convincing.

In products for treatment and prevention of undernutrition, most products include dairy protein because of the well-documented effects on growth and recovery [3, 7]. In addition to the effects on growth mentioned above, products with dairy protein will typically contain less antinutrients from plant protein, which could also have a positive effect on growth. However, as dairy is an expensive ingredient, there have been efforts to identify the lowest content that can support catch-up growth. Furthermore, there are newer studies that have examined the effect of a mixture of plant proteins with a high protein quality or plant proteins with added crystalline amino acids.

In conclusion, cow’s milk and dairy products are from the age of 1 year an important part of a healthy diet providing important nutrients and supporting growth. A high intake has potential negative effects, especially an increased risk of later obesity, and should be avoided. In foods for treatment and prevention of undernutrition, dairy protein plays an important role, but the amount needed and the effects of alternative protein sources are discussed.

References