How to obtain the nutritional benefits of milk without the undesirable effects.

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B-Unique®, a milk substitute, is now available for people who cannot tolerate casein, one of the main proteins in cow’s milk or lactose, the major sugar in cow’s milk but want the nutritional value of a drink with a protein, fat, and calcium content similar to whole milk.

One of the main components of milk is a protein called casein. Like all proteins, casein is made up of a unique sequence of 20 different amino acids. The sequence of amino acids is determined by the genetic code in the DNA of the cow. Cow’s milk became a major source of calcium, protein, carbohydrates and fats once they were domesticated by humans in the Middle East. Humans became the only mammals to continue to drink milk after they were weaned from their mother’s milk.

The major sugar in milk is lactose. At first, humans could not tolerate milk because their bodies stopped producing the enzyme lactase that digests lactose after the age of weaning. After a significant period of time, human populations who consumed milk as a common food source evolved to produce lactase after weaning. However, some ethnicities still have a hard time digesting milk. The majority of adult Asian, African-American, Jewish, Mexican-American, and Native American adults are lactose intolerant. Native populations in other regions where the cow was not domesticated also commonly possessed lactase deficiency. Lactase deficiency is so common that many people who are milk-intolerant mistakenly believe that lactase deficiency is the only cause of milk intolerance.

A major event regarding milk tolerance occurred several thousand years ago. Dairy cows carrying the A2 variety of beta-casein mutated into the A1 version European dairy herds. A change in gene encoding occurred (beta-casein protein was switched from proline (pro) in A2 casein to histidine (his) in A1 or B casein - Figure 1). This mutation resulted in common digestive enzymes releasing a powerful peptide with opiate activity called casomorphin from casein A1 or B (Figure 1). These peptides fit on the opiate receptors in the brain which can impact behavior and functioning.
Casein B is found in Jersey cows and is considered a subtype of casein A1. The cause for concern with milk containing A1 or B beta-casein is the digestive enzymes releasing the powerful peptide casomorphin as discussed above. This peptide has opiate activity and also alters serotonin metabolism and the amount of this peptide in urine correlates with the severity of autism based on the Childhood Autism Rating Scale (CARS).

Casomorphin is not generated from casein A2 when this casein is acted on by common digestive enzymes (Figure 1). B-Unique® resolves the potential harmful effects of casomorphin derived from casein A1 and B by removing the casein and replacing it with pea protein so that the product has comparable protein to whole milk. Children with autism spectrum disorder taking B-Unique had much lower amounts of casomorphin (also called caseomorphin) in the urine after being on B-Unique for eight months. The median % decrease in casomorphin in the group of children with autism (n=18) was 80%.

Figure 3. The caseomorphin value of the Y-axis is given as ng caseomorphin per mg creatinine X 10\(^2\).
Harmful effects of milk containing caseins A1 and B

Additionally, in 1993 Bob Elliott, a professor of child health research at the University of Auckland proposed A1 milk as a factor in disease. Elliott believed that consumption of A1 milk could account for the unusually high incidence of type-1 diabetes among Samoan children growing up in New Zealand. He and a colleague, Corran McLachlan, later compared the per capita consumption of A1 milk to the prevalence of diabetes and heart disease in 20 countries and came up with strong correlations, shown in bullet points below.

- In rabbits fed different caseins in the presence of 0.5% dietary cholesterol, the thickness of the aortic arch lesions was higher (P<0.05) in 5, 10 and 20% casein A1 fed animals compared with their A2 counterparts, while other parameters were not significantly different. The researchers concluded that beta-casein A1 is atherogenic compared with beta-casein A2. Rabbits fed beta-casein A1 had a higher percent surface area of aorta covered by fatty streaks than those fed beta-casein A2 (p<0.05) and the thickness of the fatty streak lesions in the aortic arch was significantly higher (p<0.05).

- The incidence of Type 1 diabetes is lower in Iceland than in the other 4 Nordic Countries. Earlier studies have shown that the cow milk proteins A1 and B beta-casein, suggested to be diabetogenic, are in lower amount in Icelandic cow milk than in milk from the other 4 Nordic Countries, and the per capita consumption of these proteins correlates with the incidence of Type 1 diabetes. It was observed that consumption of A1 "like" variants (A1A1 and A1A2) significantly increased (p < 0.01) the levels of Myeloperoxidase, MCP-1, IL-4, total IgE, IgG, IgG1, IgG2a and leukocyte infiltration in the intestine. TLR-2 and TLR-4 mRNA expression was also up-regulated (p < 0.01) on administration of A1 "like" variants.

Compare B-unique to a popular potato based drink and other drinks used as a milk substitute.

A popular potato based milk substitute has no fat, no cholesterol, and no protein. It is, in fact, nothing but carbohydrates and sugar with some added vitamins and calcium. The high sugar and carbohydrate content make it problematic for some special needs children with gastrointestinal Candida overgrowth although it does have the benefit of being gluten- and casein-free. The high carbohydrate content of the potato product also dulls the appetite for other more nutritious foods. B-Unique® has the equivalent protein, calcium, fat, and cholesterol of whole milk but no gluten or casein. In addition, B-Unique® is superior to almond milk that has high amounts of oxalates and soy milk that contains oxalates, plant estrogens, and proteins that can be converted to opiate peptides called soymorphins. Soymorphins have been shown to depress the appetite and to depress intestinal motility. Having an adequate amount of fat is also essential for the growth of children’s bodies and brains. B-Unique provides the balanced nutrition without the common problematic issues that milk can cause.
References


