

Unique oligosaccharides: oligosaccharide profiles of cow's milk for the optimization of health beneficial properties

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Aim and Description:

The overall goal with the project is to utilize the free oligosaccharides that are present as a natural part of cow's milk and examine the potential for increasing these through selective breeding. Research has shown that humans are unable to digest free oligosaccharides, and rely on gut bacteria which are able to digest oligosaccharides thereby being stimulated and ensure a healthy digestive system. Furthermore, oligosaccharides enhance the immune system and can also stimulate brain development of newborns. Free oligosaccharides are abundantly present in human colostrum and milk. However, the complexity and the abundance of oligosaccharides in cow's milk are lower than in human milk. Infant formula is predominantly based on cow's milk. Thus, the beneficial *human* oligosaccharides are absent and it contains only minute amounts of bovine oligosaccharides, and the health promoting effects are thus minimized. Preliminary investigations have shown that there are structural and concentration differences between cow's milk from different breeds. The aim of the project is to elucidate oligosaccharides in milk from Danish dairy breeds collected within the Milk Genomics project, to identify oligosaccharides currently unknown in cow's milk, and to reveal opportunities for increasing desirable oligosaccharides in bovine milk. In the future, this knowledge can be used to produce infant formula with the health promoting effects of oligosaccharides – based on cow's milk.