

COMPARISON OF MILK OLIGOSACCHARIDES IN HOLSTEIN-FRIESIAN COWS AND WATER BUFFALOS DURING EARLY LACTATION

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Holstein-Friesian cows and water buffaloes are important livestock in the dairy industry. In addition to important nutrients, their milk contains numerous bioactive molecules, such as lactoferrin and immunoglobulins. Milk oligosaccharides (MOs) are another important group of biomolecules supporting numerous beneficial processes in the offspring. For example, MOs positively influence the maturation of the microbiome and immune system. Furthermore, MOs are able to inhibit the adhesion of various pathogens to epithelial cells. In addition to the benefits for the offspring, MOs play an important role, when milk is used for the production of functional food and infant formula.

Due to these beneficial effects, we characterized in detail the structure and distribution of MOs in Holstein-Friesian cows and water buffaloes during early lactation. The MOs of colostrum (the first milk after parturition), transitional (first week of lactation) and mature milk were analysed by LC-MS. In colostrum of both livestock, the majority of MOs were sialylated. However, the amount of sialylated MOs rapidly decrease during transition phase in Holstein-Friesian cows and water buffaloes. Interestingly, only fucosyllactose was detectable in bovine milk, whereas several different fucosylated MOs were present in buffalo milk. In general, there was a higher structural diversity of MOs in the milk of water buffaloes. Thus, we observed distinct differences in the composition and distribution of MOs between the two livestock.