The dynamics of whey proteins concentration in cows' mammary secretion during colostral and early lactation periods

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Summary

The bovine whey consists of more than 200 types of proteins, being β-lactoglobulin, α-lactalbumin, serum albumin, immunoglobulins and lactoferrin the main ones. However, their concentrations are not stable due to the existence of protein dynamics during a transition from colostrum to mature milk. To evaluate the dynamics of whey proteins concentration in cows' mammary secretion during a colostral and early lactation periods and an influence of the number of lactations, 268 samples from 135 Jersey cows were selected through a traditional semiological examination. The samples were separated into 8 groups: 0- | 12 hours; 12- | 24 hours; 2nd day; 3rd day; 4th and 5th day; 6th and 7th day; 8th to 15th day and 16th to 30th day of lactation. Of this total, 117 samples being 50 of 28 primiparous cows and 67 of 32 pluriparous cows, which were divided into 3 groups: 18 primiparous cows and 29 pluriparous cows between 0- | 24 hours; 16 primiparous cows and 19 pluriparous cows between 24- | 48 and 16 primiparous cows and 19 pluriparous cows between 48 - | 72 hours of lactation. Whey was obtained by coagulation of the mammary secretion with rennet. The concentration of total proteins was determined by the biuret method and the protein fractions were determined by polyacrylamide gel electrophoresis in a 12% gel (PAGE 12%). Maximum concentrations of all protein fractions were observed in the first 12 hours of lactation, reducing over the course of the study. The modification on the protein predominance was also observed. The transition from colostrum secretion to milk occurred between 24 and 72 hours after calving. There was an influence of the number of lactations on the dynamics of whey proteins of cows that had better immunological and nutritional quality when compared to primiparous cows.