

Concentration of Lactoferrin and Transferrin throughout Lactation in Cow's Colostrum and Milk

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Summary: The evolution of the concentration of lactoferrin and transferrin was studied in cow's colostrum and milk throughout lactation. The highest concentrations of both proteins were found in the first milking (0.83 mg/ml for lactoferrin and 1.07 mg/ml for transferrin), decreasing sharply during the first days of lactation (colostral period). Thereafter, the concentrations of these proteins decreased

slowly, reaching their definitive values during the third week post-partum (0.09 mg/ml for lactoferrin and 0.02 mg/ml for transferrin). The ratio transferrin/albumin in colostrum (first milking), mature milk, milk from mastitic cows and serum was determined, and found to be four times greater in colostrum than in mature or mastitic milk, suggesting a specific transport of transferrin from blood to milk.

Konzentrationen von Lactoferrin und Transferrin während der Lactation in Colostrum und Milch der Kuh

Zusammenfassung: Untersucht wurde der Verlauf der Lactoferrin- und Transferrin-Konzentration bei Kühen im Colostrum und in der Milch während der gesamten Lactationsperiode. Für beide Proteine wurden die höchsten Konzentrationen in der zuerst sezernierten Milch gefunden (0.83 mg/ml für Lactoferrin und 1.07 mg/ml für Transferrin), gefolgt von einem scharfen Abfall während der ersten Tage der Lactation (colostrale Periode). Danach sanken die Konzentrationen beider Proteine langsam

weiter und erreichten ihre Endwerte während der dritten Woche post partum (0.02 mg/ml für Transferrin und 0.09 mg/ml für Lactoferrin). Das Verhältnis Transferrin/Albumin wurde im Colostrum (erste Milch), in reifer Milch, Milch von eutererkrankten Kühen und im Serum bestimmt. Es war im Colostrum viermal so hoch wie in reifer Milch oder in Milch eutererkrankter Kühe, was für einen spezifischen Transport aus dem Blut in die Milch spricht.

Key words: Colostrum, milk, transferrin, lactoferrin.

Colostrum secretions have quite a different composition from that of mature milk. Immunoglobulins are the main proteins in colostrum and, in general, milk proteins which are derived from blood, are present in higher levels in colostrum than in mature milk^[1]. In contrast, milk proteins synthesized in the mammary gland are generally found in higher levels in mature milk^[2].

Transferrin and lactoferrin, two iron-binding proteins, have been found in cow's colostrum and milk^[3]. Transferrin is synthesized in the liver and mainly located in blood, though it can also be found in other biological fluids^[4]. Milk transferrin is thought to come from blood^[3]. Lactoferrin, not present in blood, is found in various external secretions and is synthesized in the corresponding tissues^[4].