The relationship between concentrations of vitamin D-binding protein (DBP) in serum and colostrum of mares and in serum of their foals in the neonatal period

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Abstract

Vitamin D-binding protein (DBP) participates in the actin scavenger system, it is a carrier of vitamin D and its derivatives, it manifests the capacity to bind mainly monounsaturated and saturated fatty acids, it binds to the surface of several cells and enhances chemotactic activity of C5a of the complement. The present study was aimed at answering the question whether serum DBP level in mares is related to levels of this protein in colostrum and in serum of its progeny. For this purpose, sera from 77 mares, colostra from 72 mares and sera from 69 Thoroughbred foals were collected. Mother's age, number of deliveries experienced in the past, month of delivery, feeding of foals with colostra were recorded. Blood of the foals was sampled from the umbilical vein during delivery (0h) and 36-48 h after delivery from the external jugular vein, colostra of the mares were obtained after delivery and blood of the mares was sampled 36-48 h after delivery. Concentration of DBP was estimated by a self-designed ELISA. In the present study, DBP concentrations in newborn's serum were found independent of their concentrations in mother's serum, her age and number of parities experienced in the past. Colostrum DBP level was found to be lower than that in the mare's serum and was not correlated to the concentration of this protein in mare's serum. There was no effect of colostrum feeding on DBP level in the foal serum. These results indicate that serum DBP concentration in newborn foals depends on factors which act directly on the foal. Because of the lack of correlation between plasma and colostrum concentrations of DBP, it can be assumed that DBP is synthesised in the mammary gland and/or specific transport mechanisms exist in the mammary gland.

Key words: vitamin D-binding protein, DBP, horse, colostrum, ELISA

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