

Mineral composition of donkey milk during the first ten days of lactation

Rosario Licitra, Federica Salari, Iolanda Altomonte & Mina Martini

Department of Veterinary Science, University of Pisa, Pisa, Italy. Interdepartmental Center for Research in Agricultural and Environmental Sciences "Enrico Avanzi", University of Pisa, Pisa, Italy. Interdepartmental Research Center Nutrafood "Nutraceuticals and Food for Health", University of Pisa, Pisa, Italy.

Corresponding author: Rosario Licitra: rosario.licitra@vet.unipi.it

In mammals, colostrum represents the first food and an essential source of nutritional, growth, immune and anti-inflammatory compounds. In addition, colostrum stimulates the onset of the digestive system activity and meconium excretion. Colostrum minerals are essential components for the correct development and for the maintaining of the offspring good health status. However, no information on colostrum mineral contents and variations are available in the literature for asinine milk. The aim of this study was to analyse the variations in the mineral composition of donkey milk during the first ten days of lactation.

Milk samples of four Amiata jennies were collected during the first ten days after foaling. In particular, the sampling was performed immediately after parturition and then at 6, 12, 24, 36, 48 hours and at 3, 4, 6, 8, 10 days. Macro-element (Ca, P, Mg, Na, K) and micro-element (Zn, Fe) content was evaluated by atomic absorption spectrophotometry and UV spectroscopy, using the AOAC methods (2000). Data were analysed by ANOVA using JMP software (SAS Institute, 2008). The content of all macro-elements, except calcium, significantly changed during the experimental period, while zinc and iron contents were constant. The maximum phosphorous value was found at 3 days (913 mg/L), magnesium and sodium contents were higher ($P \leq 0.01$) during the first 6 hours (267-333 and 359-410 mg/L, respectively) and potassium showed the highest values during the first 36 hours of lactation (1183-1569 mg/L). Zinc and iron contents were between 0.91-4.44 and 2.08-6.75 mg/L, respectively. In donkey colostrum, all the analysed elements, except zinc, showed higher concentrations compared to the mature milk. Moreover, our results on donkey appears similar to mare colostrum, with the only exception for the iron, which was higher in the donkey colostrum than in mare. The high content of magnesium during the first 6 hours, as suggested in dairy cows, seems that facilitates the expulsion of meconium, thanks to its laxative activity. Our findings appear useful to formulate an appropriate donkey colostrum replacer and contribute to expand the knowledge on donkey colostrum, a new potential ingredient for human nutrition.

Tabular data are presented in the poster.