**A-43**

# Effect of milking interval on concentrations of sodium and potassium in blood plasma and milk

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The Na and K balance between alveolar and blood compartments is conditioned by tight junction (TJ) integrity. Knowledge about how milking interval affects the permeability of TJ in goats traditionally milked once a day is required. For this reason the objective of this study was to evaluate differences in concentrations of Na and K in blood and milk at different milking intervals. 32 goats (16 primiparous and 16 multiparous) belonging to two dairy breeds (Majorera and Palmera) were divided into two groups, according to breed and parity. Group 1 was milked after 10, 24 and 28 h of milk accumulation, whereas, the Group 2 was milked after 10, 24 and 32 h. Both groups were milked in a double 12-stall parallel milking parlor (Alfa-Laval, Madrid, Spain). Milk and blood samples were taken at each milking. Concentrations of Na and K in milk were determined using atomic absorption spectrometry (AAnalyst 200 spectrometer, Perkin-Elmer, Norwalk, USA) in the Laboratory of Chemical Analysis of the Instituto Canario de Investigaciones Agrarias (Tenerife, Spain); and the concentrations of these ions in blood were measured by means of ion selective electrodes (Olympus AU2700 analyzer, Beckman Coulter, Tokyo, Japan) in the Laboratory LGS Análisis (Tenerife, Spain). An ANOVA (with repeated measures) procedure from SPSS was used for statistical analysis. Goat breed and parity affected ($P < 0.05$) Na concentration in blood plasma. On average, Majorera showed greater levels (145.53 vs. 144.76 mmol/L) than Palmera goats; and primiparous showed lower values (144.62 vs. 145.66 mmol/L) than multiparous goats. However, K concentration was not affected ($P > 0.05$) by these factors. Furthermore, Na and K were affected by milking interval; a decrease in Na concentration was observed between 10 and 24 h, whereas K concentration had increased at 24 h. In milk, breed and parity factors affected Na and K concentration. On average, Palmera showed greater levels of Na (20.49 vs. 17.39 mmol/L) but lower values of K (34.75 vs. 38.50 mmol/L) than Majorera goats. The primiparous goat had lower levels of both minerals (Na: 15.27 vs. 22.62 mmol/L; K: 35.45 vs 37.80 mmol/L) than multiparous goats. Milking interval did not have significantly effect on Na concentration, whereas, K concentration decreased at 24 h. In conclusion, the results described reflect an alteration in the transport of these ions across TJ due to milking interval, and depends on factors such as breed and parity.