

Intramammary administration of lipopolysaccharides at parturition affects colostrum quality

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In this study, 20 Majorera dairy goats were used. The TRT group (n=10) received an intramammary administration (IA) of saline (2 ml) containing 50 µg of lipopolysaccharides (LPS) from *Escherichia coli* (O55:B5) in each quarter at parturition. The CON group (n=10) received an IA of saline (2 ml) without LPS. Rectal temperature (RT) was recorded, and a blood sample collected at parturition (before the IA). In addition, RT was recorded, and blood and colostrum/milk samples were collected at 3 and 12 hours, and on days 1, 2, 4, 7, 15 and 30 relatives to IA. Plasma immunoglobulin (Ig) G and M and serum β-hydroxybutyrate, glucose, calcium, free fatty acids, lactate dehydrogenase and total proteins concentrations were determined. Colostrum/milk yield as well as chemical composition, somatic cell count (SCC) and IgG and IgM concentrations were measured. The MIXED procedure (SAS 9.4) was used, and the model included the IA, time, and the interaction between both fixed effects. Statistical significance was set as $P \leq 0.05$. Goats from the TRT group increased RT after the IA, while the CON decreased RT ($P_{IA \times T} = 0.007$). Serum biochemical parameters, and plasma IgG and IgM concentrations were not affected by IA. Colostrum and milk yield as well as chemical composition were not affected by IA, except for milk lactose that was lower in the TRT group compared to the CON group ($P_{IA} = 0.026$). Colostrum SCC was higher in the TRT group than in the CON group (3.5 ± 0.09 and 3.1 ± 0.09 cells $\times 10^6$ /ml, respectively; $P_{IA} = 0.009$). Similar results were observed for milk SCC ($P_{IA} = 0.004$). The TRT group showed higher IgG ($P_{IA} = 0.044$) and IgM ($P_{IA} = 0.037$) concentrations on colostrum than the CON group (31.9 ± 4.8 and 19.0 ± 4.5 mg/ml, 0.7 ± 0.08 and 0.4 ± 0.08 mg/ml, respectively). No differences on milk IgG and IgM concentrations between groups were observed. In conclusion, the IA of LPS at parturition increases RT, SCC and IgG and IgM concentrations in colostrum without affecting either yield or chemical composition.

Goat kids are not affected by the intramammary administration of lipopolysaccharides at parturition

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This study evaluated the effect of an intramammary administration (IA) of lipopolysaccharides (LPS) from *Escherichia coli* (O55:B5) to dairy goats at parturition, on performance, biochemical parameters (calcium, LDH, glucose and total proteins) and immune status (IgG and IgM) of goat kids. Twenty dairy goats were used. The treatment (TRT) group (n=10) received an IA of saline solution (2 ml) containing 50 µg LPS per gland at parturition. Similarly, the control (CON) group (n=10) received an IA of saline solution (2 ml) without LPS. At birth, goat kids (n=45) were weighted (day 0), and immediately allocated into either the TRT group (n=19) or the CON group (n=26) based on the experimental group of the dam. They were bottle-fed dam colostrum equivalent to 10% of the birth body weight (BW) divided in two meals (3 and 12 h after birth), and then fed twice daily with milk replacer. Individual milk intake (MI) and BW were recorded on days 7, 15, 21 and 30 of life. Blood samples were taken on days 0, 1, 2, 4, 7, 15, 21 and 30 after birth. Data was analysed using the MIXED procedure of SAS (9.4). The model included IA, time (T) and the interaction (IA \times T). Both groups showed similar MI, except for day 7 as the TRT group showed higher MI than the CON group (911 ± 73.9 ml/day and 652 ± 64.6 ml/day, respectively; ($P_{IA \times T} = 0.001$)), although no differences were observed on BW during the experiment ($P_{IA} = 0.367$). The TRT group showed higher calcium ($P_{IA} = 0.001$) and total protein ($P_{IA} < 0.001$) concentrations than the CON group (12.8 [12.5-13.1] and 12.2 [12.0-12.5] mg/dl, respectively). The CON group showed higher LDH activity than the TRT group (626 ± 20.51 U/l and 561 ± 20.51 , respectively; $P_{AI} = 0.016$). Glucose and plasma IgG and IgM concentrations were not affected by IA ($P_{IA} = 0.217$, $P_{IA} = 0.151$ and $P_{IA} = 0.157$, respectively). In conclusion, the IA of LPS to dairy goats at parturition does not affect performance or immune status of goat kids but affects calcium, total protein and LDH activity on serum.