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Evolution of milk and blood immune parameters in goats and sheep during late pregnancy, partum and preweaning lactation period

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It has been described that first hours of life is a critical period for goat kids and lambs in order to acquire passive immunity, nevertheless it also important to evaluate the evolution of blood immune parameters in pregnant and lactating goats and sheep, because prepartum, partum and preweaning lactation period can be considered as an important stressor that can not only negatively affect the dam, but also the litter. The aim of this study was to evaluate the evolution of blood parameters during late pregnancy, partum and preweaning lactation period (IgG and IgM concentration, Chitotriosidase activity and complement system activity) and the evolution of milk parameters during partum and preweaning lactation period (IgG and IgM concentration and Chitotriosidase activity) in goats and sheep. For this study, 12 goats and 12 sheep were used. Blood samples of each animal were taken at 7 and 15 days before partum, at partum and 5, 10, 20, 30 and 40 days after partum. Milk samples of each animal were taken at partum and 1, 2, 3, 4, 5, 10, 20, 30 and 40 days after partum. To determine IgG and IgM concentration a commercial ELISA kit was used. Chitotriosidase activity (ChT) was measured using a fluorescence assay and the complement system activity (total and alternative) was measured according to the hemolysis rate. Blood and milk IgG concentration showed no differences between goats and sheep during the studied period. However, both species presented a trend to decrease blood IgG concentration close to partum, increasing 5 days after it, probably because the highest milk IgG concentration was measured at partum in both species. IgM concentration was higher in sheep than in goats during the studied period in blood samples and from partum to day 3 after partum in milk samples. Chitotriosidase activity was higher in goats than in sheep, obtaining the highest activity at 40 days after partum in blood samples and at partum in case of milk samples. Blood complement system activity (total and alternative) was similar between species, increasing the alternative complement way 40 days after partum in goats. In conclusion, both species presented an important decrease of blood IgG concentration at partum, being more susceptible to infectious agents in this period. However, goats had a higher ChT than sheep not only in blood but also in milk, that confers a clear advantage against parasitic and fungi infections.