APOPTOSIS AND NECROSIS OF MILK POLYMORPHONUCLEAR LEUKOCYTES IN GOATS WITH HIGH AND LOW SOMATIC CELL COUNT

Maiara Blagitz, Fernando Souza, Claudia Stricagnolo, Viviani Gomes, Karina Madureira, Alice Della Libera

Clínica Médica, Faculdade de Medicina Veterinária/Universidade de São Paulo, São Paulo, Brazil

The purpose of the present trial was to compare the percentages of necrotic and apoptotic cells from polymorphonuclear leukocytes (PMNL) in milk of dairy goats with low MSCC and HSCC. Thus, the milk samples was divided in samples with MSCC lower than 500 x 10^3 cells/mL, between 500 x 10^3 cells/mL and 2,000 x 10^3 cells/mL, and upper than 2,001 x 10^3 cells/mL to distinguish milk samples with low and high MSCC. So, milk samples from 37 milk samples from 20 lactating goats were collected. MSCC were performed in an automatic somatic cell counter. Apoptosis and necrosis were quantified using dual-color flow cytometric procedure with fluorescein labeled anexin-V and propidium iodide (PI). Thus, it can be identified four populations described as anexin-V negative and PI negative (viable cells), anexin-V positive and PI negative (apoptotic cells), anexin-V negative and PI positive (necrotic cells) and anexin-V positive and PI positive (late apoptosis or necrotic cells). The PMNL were identified based on their size and granularity. Data were collected from at least 10,000 cells per sample and was analyzed using FlowJo Tree Star Software®. The mean MSCC of the 37 samples was 1,234 x 10^3 cells/mL. In these samples, 13 samples showed MSCC lower than 5,00 x 10^3 cells/mL, 18 samples between 5,00 x 10^3 cells/mL and 2,000 x 10^3 cells/mL and 06 samples upper than 2,001 x 10^3 cells/mL. The percentage cells undergoing apoptosis was 55.47 (± 26.56), 42.12 (± 19.51) and 24.75 (± 14.20) (P = 0.02), necrosis was 2.20 (± 1.56), 1.90 (± 2.49) and 2.71 (± 2.46) (P = 0.74), apoptosis or necrosis 5.31 (± 3.15), 6.22 (± 4.66) and 5.02 (±3.49) (P = 0.74) and viable cells were 34.87 (± 24.63), 49.76 (± 21.35) and 67.52 (± 16.12) (P = 0.015) in samples with MSCC lower than 500 x 10^3 cells/mL, between 500 x 10^3 cells/mL and 2,000 x 10^3 cells/mL, and upper than 2,001 x 10^3 cells/mL, respectively. The results presented here showed strengthens the idea that animals with low somatic cell count are more prone to development clinical and subclinical MASTITIS by major pathogens, since the percentage of viable milk PMNL from goats with high MSCC is higher and undergoing less apoptosis than animals with low MSCC.