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Physicochemical composition of cow's milk from different udder quarters

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Abstract

[Background] The research was conducted to examine the variation in cow's milk composition at the udder quarter level.

[Methods] Milk samples were collected in dairy farm in Pelagonia region on one occasion from 20 lactating cows at udder quarter level. The milk was analyzed for content of fat, protein, lactose, dry matter (SNF), density, casein, pH using LactoScope FTIR Advanced, and electrical conductivity (EC) with HANNA HI 98192 EC/TDS/NaCl/Resistivity conductometer. Fluoro-opto-electronic method, BENTLEY SOMACOUNT CC 150 was used for determination of somatic cell count (SCC). At the same time, milk samples were divided into four categories representing the udder quarters (PL- front left, PD - front right, ZL – back left and ZD – back right).

[Results] From the total number of analyzed samples (N=80), 9 refers to dry quarters (11.25%), and 9 refers to quarters with clinical mastitis (11.25%). These results indicate that the prevalence of clinical mastitis on the farm is quite high, which points to serious problems in the dairy herd. Also, somatic cell counts were higher than the legal regulations in our country (≤ 400,000 SCC/mL) at all four quarters. From the total number of examined cows (N=20), it can be noted that the most common changes are manifested in the front quarters where SCC were dramatically increased compared with back quarters. Additionally, significant changes ($p<0.05$) were noticed at SCC and electrical conductivity (EC) between front and back udder quarters. No significant changes ($p>0.05$) were noticed at the other physicochemical parameters.

[Conclusion] The effect somatic cell count on different quarter level needs to be further studied at cows with normal and increased number of somatic cell count.

Keywords: dairy cow, quarter milk, somatic cell count, SCC, milk quality