

Quality assessment of raw milk from cows fed diets with kaolinite clay

Summary

The experiment was conducted using 12 Polish Holstein-Friesian cows from a family farm, in their second lactation. During the experiment, from May to June, cows were fed traditionally prepared roughage and concentrate feed with the addition of a mineral mixture purchased from a domestic company, containing 200 g of kaolinite clay per kg. The research material comprised 36 samples of raw milk collected from the 12 cows on day 0 (control) and again after 2 weeks and 4 weeks of supplementation with the mineral feed containing kaolinite clay. The milk samples were obtained from evening milking carried out at a pipeline milk station. After individual milking the milk was poured into 700 ml containers, sealed, coded, and then immediately refrigerated at $4\pm 1^{\circ}\text{C}$. After each period of the experiment, milk samples were transported to the laboratory in a portable isothermal container for quantitative and qualitative analyses. These included chemical composition, acidity, density, colour parameters in the L^* , a^* , b^* system, and whiteness and yellowness indices (WI and YI). The results showed a significant increase in fat and dry matter content and a decrease in the proportion of non-fat dry matter in the milk after 2 and 4 weeks of feed supplementation with kaolinite clay. The milk samples had significantly lower casein and total protein content after 4 weeks of supplementation with kaolinite clay. Despite the significantly lower milk density obtained after 4 weeks of use of kaolinite clay in the feed, it still met applicable standards for milk for purchase. After 2 and 4 weeks of feeding with the supplemented diet, the milk samples had significantly higher values for lightness and the whiteness index, which was confirmed by higher values of the L^* parameter. The greatest increases in the values for yellow colour (b^*) and the yellowness index (YI) were noted after 4 weeks of supplementation.

KEY WORDS: cows, kaolinite clay, milk, chemical composition, physicochemical properties