



Effect of hop cones and vitamin E on ketogenesis and some blood parameters in transition dairy cows

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After calving, cows usually have a negative energy balance, which accompanied by glucose deficiency and excessive releasing of fatty acids from adipose tissue. The purpose of the work was the correction rumen fermentation in the transition cows to prevent metabolic disorders. For the experiment, two groups of Ukrainian Dairy Black-and-White breed cows were formed, 10 animals per group. The experiment lasted 3 weeks prepartum and 3 weeks after calving.

Animals were fed with balanced diet, which consisted of haylage, silage, barley, wheat, corn, soybean meal, salt, mineral and vitamin premix. The first group was the control. To the diet of second group cows was added 300 mg of α -tocopherol acetate (0.6 g of *Rovimix E-50*) and 1 g/kg of dry hop cones per kg of dry matter.

The concentration of ketone bodies and peroxidation products increased after calving. In a month, their concentration decreased slightly, but was still higher than in dry cows.

Before calving, the tested feed additive reduced the concentration of peroxidation products in the cows' blood ($P<0.05$) without affecting other parameters. Changes that are more significant detected after calving. An increase in glucose concentration ($P<0.05$) and decrease in the concentration of NEFA ($P<0.05$), lipid hydroperoxides ($P<0.05$), TBARS ($P<0.05$), and beta-hydroxybutyrate ($P<0.05$) were observed in the blood of the cows of the experimental group.

A decrease in the concentration of ketone bodies in the blood of cows was found due to the feeding of the addition of hop cones and vitamin E. Particularly significant changes in ketone bodies level were found in the blood taken a week after calving. At the end of the first week of lactation there was observed a statistically significant decrease for β -hydroxybutyrate ($P<0.05$). In addition, taking into account a moderate decrease in the concentration of acetoacetate in the blood of this group cows, the difference in ketone bodies was even more significant ($P<0.01$).

The effect of hop cones and vitamin E on the ketogenesis in the cows before lactation and one month after calving was less pronounced, although the tendency to decrease the concentration of ketone bodies in the blood of animals of the experimental group persists. Thus, before calving, a moderate decrease for β -hydroxybutyrate with a constant amount of acetoacetate were detected. One month after calving, the concentration of both β -hydroxybutyrate and acetoacetate decreased slightly, as a result of which a decrease in the total concentration of ketone bodies became statistically significant ($P<0.05$).

The addition of hop cones and vitamin E inhibits peroxidation and reduces the concentration of ketone bodies in the cows' blood. The supplementation of transition cows' diet with tocopherol acetate and hop cones increased concentration of glucose and decreased concentration of non-esterified fatty acids in the blood plasma. Hop cones and tocopherol acetate can be used as ingredients in feed additives for prevention of ketosis and fatty liver in high performance cows.

Key words: cows, hop cones, vitamin E, blood, ketone bodies, peroxidation