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PRODUCTIVE AND METABOLIC EFFECT OF SALTS OF FATTY ACIDS IN A DIET OF CATTLE

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The article presents results of comparative researches on impact of supplements of canola rape oils and calcium salts of fatty acids, produced on the base of them, in a diet of cattle on milk productivity and fatty-acid content of milk fat of cows, as well as intensity of calf growth and fatty-acid content of tissue lipids. It is determined that feeding of cattle with supplements of calcium salts of fatty acids results in a positive impact on milk productivity of cows, stimulates growth and development of calves and increases content of unsaturated fatty acids in the content of milk fat of cows and tissues of lipids of calves.

Cattle, canola raps oil, calcium salts of fatty acids, milk yield, growth animal, fatty acid composition of milk cows and bulls tissues

It is known that application of fat supplements in a diet of cattle increases their caloric content and makes positive impact on milk productivity, feed payment as well as growth and development of animals. However, an increased level of vegetable fats in a diet of ruminants makes sparing action on activity of microbial flora of fore stomach, making negative influence on fermentation processes in a rumen and absorption of nutrients in general. That is why, lately protection of fat supplements in a diet is used before feeding in order to decrease negative effect of fat supplements on metabolic activity of microbial flora of fore stomach as well as to lower the level of hydrogenation of polyene fatty acids in fore stomach of the given kind. Application of protected fatty acids on a base of oil in a diet of cattle makes a positive impact on their productivity and increases level of polyene fatty acids in a content of lipids of milk, organs and tissues, improving their quality.

Aim of the work is to make investigation of influence of native and protected fats of vegetable origin, applied in cows and calves diet, on productivity, intensity of animals growth, fatty-acid content of milk lipids, muscle and fat tissues.

The research was carried out in two separate experiments.

In the first experiment the investigation was made on three groups of cows (10 heads in each) of Ukrainian black-speckled breed, chosen according to the principle of analogues of age, period of lactation, time after calving, level of milk productivity and live weight in winter-spring housing season. Cows of 3-4 year of second lactation were used in the research. In preparation period, all animals were in the same conditions of a basic diet, consisting of hey, forage beet, silage of maize and grain mixture of: wheat middling – 50%, barley shorts – 30%, oats shorts – 20%. During the period of research, lasting for 30 days, animals of the controlled group received the same feed as in the preparation period. Cows of the 2nd and 3rd groups were fed according to the same diet in which 5% of grain base were substituted with native rape oil (2nd group) and calcium salts of fatty acids, made on the base of rape oil (3rd group) in relation to their nutrition.

In the second experiment, the research was made in autumn-winter housing season on intact bulls of black-speckled breed of 16-18 month, distributed into four groups of 10 heads in each according to a principle of analogues. Structure of a diet of bulls in the controlled group was similar to the first experiment. In a diet of bulls of the second group 5% of grain base were substituted with rape oil according to the mass, and animals of the third group were fed with the same amount of calcium salts of fatty acids, made of rape oil.

Application of rape oil supplements in a diet of lactation cows makes insufficient impact on milk productivity, whereas feeding of animals with calcium salts of fatty acids, made on its base, increases both a daily average milk yield and fat content of milk in comparison to animals of the controlled group. Application of vegetable-oil supplements in a diet of lactation cows does not sufficiently change content of lactose in milk and does not influence ash level in its content.

Investigation of fatty-acid content of milk fat shows that application of rape oil supplements in a diet of lactation cows makes insufficient influence on fatty-acid content of milk lipids, whereas feeding of animals with calcium salts of fatty acids, made on its base, increases share of oleic, linoleic and linolenoic acids.

Feeding of animals with calcium salts supplements, made of rape oil, considerably decreases level of palmitinic fatty acid in the content of milk fat.

Data got in the second experiment demonstrate that during the period of research introduction of rape oil and calcium salts of fatty acids, made on its base, in a diet of calves increases daily average growth of animals by 4,9% and 8,8% respectively.

Application of calcium salts of fatty acids, made of rape oil, in a diet of calves increases content of unsaturated fatty acids in lipids of the longest muscle of back, basting fat and suet, proving a decrease of the level of their hydrogenation in fore stomach of the animals under investigation in case of application of chemically protected vegetable oils.

Conclusions. Application of supplements of calcium salts of fatty acids, made on the base of canola rape oil, in a diet of cattle during autumn-winter housing season makes positive impact on milk productivity of cows and intensity of growth of calves. It also increases a share of unsaturated fatty acids in the content of milk fat of cows and lipids of tissues of calves.

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