The influence of by-pass fats used in ewes' diet on the productive performances and on the fatty acids profile from milk

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Diet has sovereign effects on milk yield and on fatty acids profile from milk fat, influencing the concentration of n-3 polyunsaturated fatty acids (n-3 FA) and conjugated linoleic acid (CLA), which turned out to be beneficial for human health. However, the effects of by-pass fats on production and on fatty acids profile of ewe milk have received little attention. The aim of study was to evaluate the effects of dietary supplementation of lactating ewes with sunflower oil treated with calcium salts (saponified fats or calcium soap - CS) at a rate of 6% (% of concentrate), thus the biohydrogenation processes of fatty acids were reduced in the rumen. It has been studied: a) milk production and chemical composition of milk; b) milk fat content of fatty acids with special reference to n-3 FA and CLA. 24 Ţurcană ewes (2-4 lactation) were fed using two diets (12 ewes/ diet): the control diet (no CS supplementation) and the experimental diet, which was supplemented with CS, for 14 weeks. Milk production, its chemical composition and feed intake were recorded weekly. Milk fat content of fatty acids was determined by gas chromatography using a Shimadzu GC-17A gas chromatograph, equipped with a Chrompack capillary column. Ewes' diet supplementation with CS resulted in a decrease in daily DM intake by 16.9%, but increased milk production on test day with 8.02% and milk fat content by 2.62%, while the protein level (N x 6.38) and lactose did not registered statistically insured change ($p > 0.05$).
Ewes receiving saponified fats (SC) showed a tendency to produce milk with a lower content of saturated FA, especially capric acid (C10:0), lauric acid (C12:0), myristic acid (C14:0) and higher in polyunsaturated FA (with 12.5%), mainly in CLA cis-9, trans-11 and α - linolenic acid (ALA) (C18: 3), as the main representative of n-3 FA family. Atherogenic index was lower ($p < 0.05$) in milk fat from ewes for which it was used CS (2.20 vs. 2.57) in the food; fats with lower atherogenic index are less harmful to human health. The results seem to indicate that increasing CLA cis-9, trans-11, in fat milk following the introduction of CS in food, is due to increased feed intake of VA (C18:1 trans-11) in rumen and, also, to the intensified activity of Δ9 – Desaturase enzyme.