

CHANGES IN FATTY ACID PROFILE OF GOAT BUTTER FROM GOATS FED ALGAE

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Abstract

The feed is one of the most important factors affecting goat milk composition. The purpose of this study was to investigate the influence of freshwater algae *Chlorella vulgaris* addition and marine algae *Japanochytrium* sp. addition into goat diet on the fatty acid profile of goat butter.

Forty-five White Shorthaired dairy goats during their second lactation were divided into three groups of fifteen animals. The feed in the experimental group E1 was enriched by the addition of 10 g/day of granulated *Chlorella vulgaris* and by 5 g/day of granulated *Japanochytrium* sp. in the experimental group E2 respectively. The control group C was fed a standard diet without algae supplementation. Additionally, for nutritional reasons, the fatty acid profile of butter blends (goat : cow 50 : 50, and 25 : 75) were also studied. Fatty acids were re-esterified into the corresponding methyl esters and analyzed by gas chromatography with a flame ionization detector.

Our results suggest that the feed supplementation with *Japanochytrium* sp. led to an increased content of vaccenic acid (by 16%), conjugated linoleic acid (by 5%), cis-8,11,14-eicosatrienoic (by 140%) and docosahexaenoic acid (by 80%) in the goat butter compared with the control group. *Chlorella vulgaris* supplementation hasn't increased the content of these fatty acids in the butter. The addition of cow cream into butter made from goat cream of *Japanochytrium* group caused a decrease of saturated fatty acids (by 5% in 25 : 75 butter, and by 3% in 50 : 50 butter respectively) and polyunsaturated fatty acids (by 17% in 25 : 75 butter, and by 10% in 50 : 50 butter respectively). On the other hand, monounsaturated fatty acids increased significantly in both butters (by 23% in 25 : 75 butter, and by 13% in 50 : 50 butter respectively).

Algae supplementation to the goat diet may increase the content of nutritionally beneficial polyunsaturated fatty acids (PUFAs) in goat butter which is dependent on the type of algae and their composition.

Key words: Goat milk, Goat butter, Fatty acids, *Chlorella vulgaris*, *Japanochytrium* sp.