

Composition and Organoleptic Characteristics of Cow's White Cheese Naturally-enriched in Polyunsaturated Fatty Acids - Abstract

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Summary

Dairy food products based on cow milk, especially cheeses, are highly rated in the preference of a large part of the consumers although. However, recently there are increased concerns over the fact that milk has been labelled as food rich in saturated fat which can reach even 70% of total fatty acid content. In the current study, the effects of the dietary supplementation of cow diets with flaxseed and lupins on the milk and white cheese chemical and organoleptic characteristics were evaluated. The experiment involved 60 Friesian cows, allocated into two groups and fed either a basal control diet (CT) or a diet supplemented with flaxseed and lupins (FL) (replacing soybean meal) for a period of 60 days. Bulk milk from these animals was collected and analyzed for chemical composition and fatty acid profile. White cheeses were manufactured from the bulk milk of each group at pilot and industrial scales, and were analyzed for chemical composition, fatty acid profile, and organoleptic properties. Results suggested that FL milk had reduced levels of saturated fatty acids (46.32% vs 49.87%) and increased levels of monounsaturated (48.89% vs 47.09%) and polyunsaturated fatty acids (3.86% vs 2.60%) such as alpha-linolenic acid (1.02% vs 0.29%), compared to the control CT. Moreover, white cheese from FL cows had higher levels of polyunsaturated fatty acids (7.55% vs 3.63%), omega-3 fatty acids (1.20% vs 0.16%) and omega-6 fatty acids (6.36% vs 3.47%), and improved omega-6/omega-3 ratio (5.32 vs 21.69), compared to the CT. The white cheese of cows fed diets with flaxseed and lupins showed compositional and organoleptic properties quite similar to control cheese; aroma, texture and color were acceptable and well desirable in both cheeses. The substitution of soybean meal by flaxseed and lupins in diets of Holstein

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cows needs further investigation, especially regarding the potential health properties of cheese and the consumer's preferences for foods of animal origin with "novel" characteristics.

Keywords: dairy cows; soybean meal; flaxseed; lupins; white cheese; fatty acids.

JEL Codes: N50; Q10; Q13.

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