

Improvement of Cow's Milk Fat Nutritional Value: Potential of Palm Oil as Source of Natural Antioxidants

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Nutritional value of milk and dairy products depends on the composition and stability of its constituents. **The aim** of the present study was to evaluate the effects of palm oil feed supplement CAF 100 (Carotino SDN. BHD, J.C. Chang Group, Malaysia) as natural antioxidant source in cow feed on milk fat fatty acid composition and oxidative stability. Milk was obtained from 1 trial group (TG; n=5) and from 1 control cow group (CG; n=5) in a conventional dairy farm in Latvia. Feed supplementation was implemented at the end of the indoor period. The basic feed (haylage, mixed feed concentrate and hay) was equal in both groups. TG received supplemental feed (400 g per cow per day), providing 50 mg of total carotenes and 120 mg of vitamin E per cow per day additionally. Milk for fat extraction was obtained before feed supplementation and on days 13th, 25th and 39th during supplementation period. The composition of milk fatty acids (FA) was analyzed by gas-liquid chromatography method. The stability of anhydrous milk fat exposed to sunlight (3h) and held in temperature of 60 °C 14 days for faster fat oxidation was analyzed and compared by peroxide value (PV) method.

Regarding FA composition changes during supplementation period a greater positive effect as 1) stronger increase in C18:1, C18:2, MUFA and PUFA contents, and 2) stronger decrease in C12:0, C14:0, C16:0 contents, and Atherogenic and Thrombogenic Health Lipid indices (IA and IT) in TG milk compared to CG were observed. Milk fat stability of TG samples was significantly higher ($p < 0.05$) compared to CG, what can be explained by the influence of higher carotenoid, as well as tocopherol content in TG feed, and their synergism in fat protection.

Key words: antioxidants, dairy products, forages, fatty acids, peroxide value

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