

Effects of oils rich in linoleic and α -linolenic acids on fatty acid profile and gene expression in goat meat

ABSTRACT

Alteration of the lipid content and fatty acid (FA) composition of foods can result in a healthier product. The aim of this study was to determine the effect of flaxseed oil or sunflower oil in the goat diet on fatty acid composition of muscle and expression of lipogenic genes in the semitendinosus (ST) muscle. Twenty-one entire male Boer kid goats were fed diets containing different levels of linoleic acid (LA) and α -linolenic acid (LNA) for 100 days. Inclusion of flaxseed oil increased ($p < 0.05$) the α -linolenic acid (C18:3n-3) concentration in the ST muscle. The diet high in α -linolenic acid ($p < 0.05$) decreased the arachidonic acid (C20:4n-6) and conjugated linolenic acid (CLA) c-9 t-11 content in the ST muscle. There was a significant ($p < 0.05$) upregulation of PPAR α and PPAR γ gene expression and downregulation of stearoyl-CoA desaturase (SCD) gene in the ST muscle for the high α -linolenic acid group compared with the low α -linolenic acid group. The results of the present study show that flaxseed oil as a source of α -linolenic acid can be incorporated into the diets of goats to enrich goat meat with n-3 fatty acids, upregulate the PPAR α and PPAR γ , and downregulate the SCD gene expression.

Keyword: Flaxseed oil; Omega-3 fatty acid; Gene expression; Lipogenic genes; Goat meat