

Diet high in α -linolenic acid up-regulate PPAR- α gene expression in the liver of goats

ABSTRACT

Background: There is little information on the effects of diets containing high α -linolenic acid (C18:3n-3) on liver lipid composition and lipogenic gene expressions. In this study fourteen goats (*Capra aegagrus hircus*) were fed either a flaxseed oil (FSO) supplemented diet containing high α -linolenic acid or a control diet without added flaxseed oil (CON) for 100-d to evaluate the effects on liver lipid composition and the gene expression of peroxisome proliferator-activated receptors (PPAR-) and stearoyl-CoA-desaturase (SCD) in the liver. **Results:** An increase in the levels of C18:3n-3 and C20:5n-3, C22:5n-3, C22:6n-3 was observed in the liver of FSO-treated goats. There was a significant ($P < 0.05$) up-regulation of PPAR- gene expression and downregulation of SCD gene in the liver of goats fed the high α -linolenic acid diet. **Conclusions:** In conclusion, genes associated with the control of fatty acid (FA) conversion (SCD and PPAR) were affected by the α -linolenic acid supplementation in the goat diet. It is suggested that PPAR- is the key messenger responsible for the translation of nutritional stimuli into changes in hepatic gene expression.

Keyword: Gene expression; Goat; Liver; Omega-3 fatty acid; PPAR