

Upregulation of peroxisome proliferator-activated receptors and liver fatty acid binding protein in hepatic cells of broiler chicken supplemented with conjugated linoleic acids

ABSTRACT

Since conjugated linoleic acid (CLA) has structural and physiological characteristics similar to peroxisome proliferators, it is hypothesized that CLA would upregulate peroxisome proliferator-activated receptor (PPAR) and liver fatty acid binding protein (LFABP) in the liver of broiler chicken. The aim of the present study was to determine fatty acid composition of liver in CLA-fed broiler chickens and the genes associated with hepatic lipid metabolism. A total of 180-day-old broiler chicks were randomly assigned to two diets containing 0 and 2.5% CLA and fed for 6 weeks. Fatty acid (FA) composition of liver and PPAR α and γ and L-FABP were analyzed. It has been demonstrated that CLA was found in the liver of CLA-feed chicken compared to control group. Hepatic PPAR α and γ mRNA levels were upregulated 1.2 and 3-fold in CLA-fed chickens compared to chickens fed diet without CLA respectively. A similar response of upregulation was observed for L-FABP mRNA expression. Our data highlights the role of PPARs as a core regulator in the regulation of lipid metabolism in chicken liver.

Keyword: Conjugated linoleic acid; Broiler chicken; Liver; PPAR; L-FABP