COMBINATION OF CONJUGATED LINOLEIC ACID WITH PHYTOSTEROLS IMPROVES ANTIOXIDANT STATUS IN SPRAGUE-DAWLEY RATS

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Conjugated linoleic acid (CLA) and phytosterols have been studied for their beneficial effects on health. However, the possibility of adverse effects of CLA supplementation, such as increased oxidative stress, must also be considered. Recently, an antioxidant activity has been attributed to phytosterols. The aim of this study was to investigate the effects of CLA and phytosterols supplementation on oxidative profile and in lipid peroxidation in rats. Forty male Sprague-Dawley rats received diets supplemented with 2% of soybean oil (group S), safflower oil (group LA), mixture of c9,t11 and t10,c12 CLA isomers (group CLA), phytosterols (group P) and mixture of CLA and phytosterols (group CLA+P) for 9 weeks. Blood samples and liver were collected. Plasma 8-isoprostane, glutathione (GSH), superoxide dismutase (SOD), catalase, glutathione peroxidase (GPx), glutathione reductase (GRd) activities and hepatic lipid peroxidation products were determined using commercial kits. The supplementation with CLA significantly increased (3.7-fold) plasma catalase activity and plasma 8-isoprostane values (60%) compared to S group (p<.0001). The association between CLA and phytosterols was able to restore the catalase and 8-isoprostane levels to basal values, since these indicators in the CLA+P group were statistically similar to S group. CLA+P supplementation also decreased lipid peroxidation primary (2.3-fold) and secondary products in liver (98%) (p<.0001). There was no significant difference among the experimental groups for plasma GSH levels, SOD, GRd and GPx activities. In summary the dietary combination between CLA and phytosterols improved antioxidant status, reduced lipid peroxidation and protected against possible effects of CLA supplementation on oxidative stress in vivo.

Keywords: Conjugated linoleic acid, phytosterols, oxidative stress, lipid peroxidation.

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