

Molecular mechanisms related to the hepatoprotective effects of antioxidant-rich extra virgin olive oil supplementation in rats subjected to short-term iron administration

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© 2018 Elsevier Inc. Enhanced iron levels in liver are associated with oxidative stress development and damage with increased fat accumulation. The aim of this work was to assess the hypothesis that antioxidant-rich extra virgin olive oil (AR-EVOO) counteracts iron-rich diet (IRD)-induced oxidative stress hindering hepatic steatosis. Male Wistar rats were fed and IRD (200 mg iron/kg diet) versus a control diet (CD; 50 mg iron/kg diet) with alternate AR-EVOO supplementation (100 mg/day) for 21 days. IRD induced liver steatosis and oxidative stress (higher levels of protein oxidation and lipid peroxidation with glutathione depletion), mitochondrial dysfunction (decreased citrate synthase and complex I and II activities) and loss of polyunsaturated fatty acids (PUFAs), with a drastic enhancement in the sterol regulatory element-binding protein-1c (SREBP-1c)/peroxisome proliferator-activated receptor- α (PPAR- α) ratio upregulating the expression of lipogenic enzymes (acetyl-CoA carboxylase,