

N-3 Long-Chain Polyunsaturated Fatty Acid Supplementation Significantly Reduces Liver Oxidative Stress in High Fat Induced Steatosis

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Omega-3 (n-3) long-chain polyunsaturated fatty acids (n-3 LCPUFA) are associated with several physiological functions, suggesting that their administration may prevent non transmissible chronic diseases. Therefore, we investigate whether dietary n-3 LCPUFA supplementation triggers an antioxidant response preventing liver steatosis in mice fed a high fat diet (HFD) in relation to n-3 LCPUFA levels. Male C57BL/6J mice received (a) control diet (10% fat, 20% protein, 70% carbohydrate), (b) control diet plus n-3 LCPUFA (108 mg/kg/day eicosapentaenoic acid plus 92 mg/kg/day docosahexaenoic acid), (c) HFD (60% fat, 20% protein, 20% carbohydrate), or (d) HFD plus n-3 LCPUFA for 12 weeks. Parameters of liver steatosis, glutathione status, protein carbonylation, and fatty acid analysis were determined, concomitantly with insulin resistance and serum tumor necrosis factor- α (TNF- α), interleukin (IL)-1 β , and IL-6 levels. HFD significantly increased total fat and triacylglyceride contents with mac