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Astaxanthin inhibits inflammation and fibrosis in the liver and adipose tissue of mouse models of diet-induced obesity and nonalcoholic steatohepatitis

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Abbreviations: ACOX-1, acyl-coenzyme A oxidase 1; ALT, alanine aminotransferase; apoE, apolipoprotein E; Arg-1, arginase-1; ASTX, astaxanthin; Casp, Caspase; CVD, cardiovascular disease; CPT-1 α , carnitine palmitoyltransferase 1 α ; CD68, cluster of differentiation 68; CD206, cluster of differentiation 206; COL1A1, collagen type I, α 1; COL6A, collagen type VI, α ; DIO, diet-induced obesity; ECM, extracellular matrix, FAS, fatty acid synthase; H&E, hematoxylin and eosin; HIF1- α , hypoxia-inducible factor 1- α ; HMGR, 3-hydroxy-3-methyl-glutaryl-CoA reductase; IL, interleukin; HSCs, hepatic stellate cells; LDLR, LDL receptor; LOXL2, lysyl oxidase-like 2; LPS, lipopolysaccharide; LUM, lumican; MMP-2, matrix metalloproteinase-2; MCP-1, monocyte chemoattractant protein 1; NAFLD, non-alcoholic fatty liver disease; NASH, non-alcoholic steatohepatitis; PPAR, peroxisome proliferator-activated receptor; PGC-1, PPAR γ

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