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Chalcones as putative hepatoprotective agents: Preclinical evidence and molecular mechanisms

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Abbreviations: ALP, alkaline phosphatase; ALT, alanine aminotransferase; AMPK, AMP activated protein kinase; apoB, apolipoprotein B; AST, aspartate aminotransferase; COX-2, cyclooxygenase-2; CPT, carnitine palmitoyltransferase; DGAT-1, diacylglycerol acyltransferase-1; ECM, extracellular matrix; FA, fatty acid; GLUT2, glucose transporter 2; GSK3β, glycogen synthase kinase 3β; HCC, hepatocellular carcinoma; HMG-CoA, hydroxy-3-methylglutaryl coenzyme A; HSCs, hepatic stellate cells; HSYA, Hydroxysafflor yellow A; IL-6, interleukin-6; IRS1, insulin receptor substrate 1; JNK, c-Jun N-terminal kinase; LPS, lipopolysaccharide; MCP-1, monocyte chemoattractant protein-1; MIP-2, macrophage inflammatory protein-2; MMPs, matrix metalloproteinases; MTP, microsomal triglyceride transfer protein; PDGF, platelet-derived growth factor; p38 MAPK, p38 mitogen-activated protein kinase; NAFLD, nonalcoholic fatty liver disease; NASH, nonalcoholic steatohepatitis; NF-κB, nuclear factor-κB; NO, nitric oxide; PPAR, peroxisome proliferator-activated receptor; α-SMA, α-smooth muscle actin; SREBP-1, sterol regulatory element-binding protein-1; STAT3, signal transducer and activator of transcription 3; TGF-β1, transforming growth factor-β1; TIMPs, tissue inhibitors of metalloproteinases; TNF-α, tumor necrosis factor-α; UCP2, uncoupling protein 2.