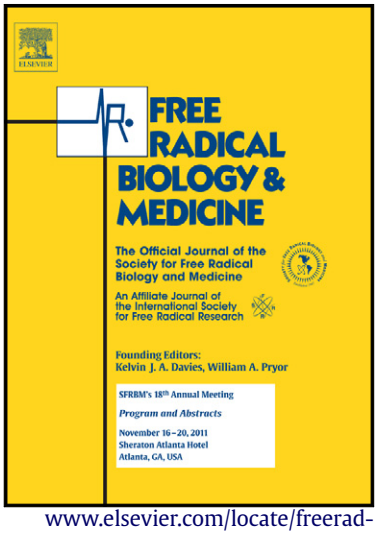

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Seok-Joo Kim, Sun-Mee Lee

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Research Paper

NLRP3 inflammasome activation in D-galactosamine and lipopolysaccharide-induced acute liver failure: Role of heme oxygenase-1

Seok-Joo Kim and Sun-Mee Lee

School of Pharmacy, Sungkyunkwan University, Suwon, 440-746, Republic of Korea

Address correspondence to Sun-Mee Lee, School of Pharmacy, Sungkyunkwan University, Suwon 440-746, Korea. Tel: 82-31-290-7712; Fax: 82-31-292-8800; E-mail: sunmee@skku.edu

Abstract

D-Galactosamine (GalN) and lipopolysaccharide (LPS) are commonly used to study mechanisms of hepatic malfunction that result in hepatic inflammation and subsequent fulminant hepatic failure. Inflammasomes are intracellular multiprotein complexes that in response to cellular danger signals trigger the biological maturation of pro-inflammatory cytokines. Heme oxygenase-1 (HO-1) is a cytoprotective enzyme that induces anti-inflammatory and antioxidant activity against oxidative cellular stress. This study examined activation of the NACHT, LRR, and PYD domain-containing protein 3 (NLRP3) inflammasome in GalN/LPS-induced hepatic injury and the role of HO-1 in the signaling pathways of inflammasome. Mice (C57BL/6) were pretreated twice with hemin (HO-1 inducer, 30 mg/kg) and zinc protoporphyrin (ZnPP; HO-1 inhibitor, 10 mg/kg) at 12 and 2 h prior to GalN (800 mg/kg)/LPS (40 μg/kg) administration. HO-1 induction with hemin