



Abstract

Role of Gal-3 on Cisplatin-Induced Acute Liver Injury Model [†]

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Abstract: Oxidative stress is a common mechanism in the cytotoxicity of cisplatin, a widely used antineoplastic agent related to hepatotoxicity. In this context, we highlight galectin-3 (Gal-3), a β -galactoside-binding protein that regulates the inflammatory response and oxidative stress, and modified citrus pectin (MCP), an inhibitor of Gal-3. Thus, this study evaluates the effect of Gal-3 inhibition with MCP on cisplatin-induced acute liver injury in Wistar rats. Animals were divided into four groups (n = 5/group): SHAM–intraperitoneal (i.p.) injection of saline for 3 days; CIS–i.p. injection of cisplatin (10 mg/kg/day) for 3 days; MCP–orogastric gavage with MCP (100 mg/kg/day) for 7 days, followed by saline via i.p.; and MCP+CIS–gavage with MCP for 7 days, followed by cisplatin via i.p. for 3 days. Cisplatin administration caused a significant weight loss in the animals from CIS and MCP+CIS, an effect corroborated by a marked reduction in the glycogen storage in hepatocytes compared to their control groups. Cisplatin also provoked a marked increase in the influx of leukocytes, liver degeneration, ROS production, and STAT3 activation in the hepatocytes, plasma levels of cytokines (IL-6, IL-10), and hepatic toxicity biomarkers (ARG1, GST α , SDH). Cisplatin per se reduced Gal-3 levels, especially in the mitochondria of hepatocytes. On the other hand, the MCP+CIS group also showed increased levels of IL-1 β , TNF- α , and GOT1, as well as raised hepatic levels of MDA production and mitochondrial respiratory complex I. In conclusion, the inhibition of Gal-3 with MCP did not protect the liver against the deleterious effects of cisplatin, indicating that Gal-3 is important for tissue, cellular, and molecular maintenance of the liver.

Keywords: cytokines; hepatotoxicity; inflammation; mitochondria; modified citrus pectin; ROS



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Abbreviations

ARG1	hepatic arginase 1
GOT1	aspartate transaminase 1
GST α	α -glutathione S-transferase
IL	interleukin
MCP	modified citrus pectin
MDA	malondialdehyde
ROS	reactive oxygen species
SDH	sorbitol dehydrogenase
TNF- α	tumor necrosis factor- α
STAT3	signal transducer and activator of transcription 3

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