World Academy of Science, Engineering and Technology
International Journal of Pharmacological and Pharmaceutical Sciences
Vol:10, No:09, 2016

Protective Effects of Genistein against Cyclophosphamide-Induced Hepatotoxicity in Rats: Involvement of Anti-Inflammatory and Anti-Oxidant Activities

Authors : Dina F. Mansour, Dalia O. Saleh, Rasha E. Mostafa

Abstract : Cyclophosphamide (CP), the most commonly used chemotherapeutic agent, was reported to cause many side effects including urotoxicity, cardiotoxicity, gonadotoxicity, and hepatotoxicity; this limits its clinical practice. In the present study, the protective effect of genistein (GEN), the major phytoestrogen in soy products that possesses various pharmacological activities, has been investigated against CP-induced acute liver damage in rats. Forty adult Sprague-Dawley rats were allocated into five groups. The first group received the vehicles and act as normal control. In the other groups, rats were injected with a single dose of CP (200 mg/kg, i.p). The last three groups were pretreated with subcutaneous GEN at doses of 0.5, 1 and 2 mg/kg/day, respectively, for 15 consecutive days prior CP injection. Forty-eight hours following CP injection, rats of all groups were investigated for the serum levels of alanine transaminase and aspartate transaminase, as well as the liver contents of reduced glutathione, malondialdehyde, nitrite, interleukin-1β, and myeloperoxidase. Histopathological examination of liver tissues was also conducted. CP resulted in acute liver damage in rats as evidenced by alteration of liver function biomarkers, oxidative stress, and inflammatory markers; that was confirmed by the histopathological outcomes. Pretreatment of rats with GEN significantly protected against CP-induced deterioration of liver function and showed marked anti-oxidant and anti-inflammatory properties that were demonstrated by the biochemical and histopathological findings. In conclusion, the present findings demonstrated the protective effects of GEN against CP-induced liver damage and suggested role of its antioxidant and anti-inflammatory activities.

Keywords : cyclophosphamide, genistein, inflammation, interleukin-1β, liver, myeloperoxidase, oxidative stress
Conference Title : ICPP 2016 : International Conference on Pharmacy and Pharmacology
Conference Location : London, United Kingdom
Conference Dates : September 29-30, 2016