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Protective Impact of Some Natural Extracts Against Acute Hepatotoxicity in Wistar Rats: DNA Protecting, Antioxidant and Anti-Inflammatory Effects

Authors : Yara Mohamed Taha, Mohamed Ali El Desouky, Heba Kamal Abdel Hakim, Maha Hanafy Mahmoud

Abstract : Hepatotoxicity due to drugs and toxic chemicals constitutes a crucial health problem nowadays. Medicinal plants are widely used recently for protecting against many liver disorders and inflammatory conditions. This study aims to evaluate hepatoprotective impact of green tea extract (GTE), rosemary extract (RE) and rosmarinic acid (RA) against hepatotoxins; ferric nitrilotriacetate (Fe-NTA) and diethylnitrosamine (DEN) in rats. Five groups of male Wistar rats were included; one control negative, while the other groups were treated intraperitoneally with DEN as 160 mg.kg-1 b.w. on 15th day and Fe-NTA as 5 mg.kg-1 b.w. on 33rd day. One of them was control positive. The other three groups were pre-administered with daily protective oral doses of either 200 mg.kg-1 b.w. of RE or 1 g.kg- 1 b.w. of GTE or 50 mg.kg-1 b.w. of RA two weeks prior to DEN exposure and continued till the end of the experimental period. The obtained data revealed a highly significant increase of MDA, 8-OHdG, DNA damage percent, a significant depletion of GSH and elevated Gr-1 protein expression in hepatocytes with liver tissue histopathological changes of rats exposed to DEN+Fe-NTA. Pre-administration of protective doses of RE, GTE and RA to DEN+Fe-NTA treated rats could normalize the altered biochemical, histopathological and immunohistochemical parameters. In conclusion, RE, GTE and RA showed a hepatoprotective effect against liver toxicity induced by DEN+Fe-NTA, with the best antioxidant and anti-inflammatory impact were for RA and GTE. Therefore, the current study declared that rosemary, green tea and products enriched with rosmarinic acid should be involved daily in diet of people who are exposed to chemicals and environmental toxins to protect themselves from hepatotoxicity.

Keywords : hepatotoxicity, diethylnitrosamine and ferric nitrilotriacetate, rosemary extract (RE), green tea extract (GTE), rosmarinic acid (RA)
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