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Isoflavones improves liver damage, lipid peroxidation and antioxidant status in hyperglycemic rats

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Oxidative stress is a biological entity quoted as accountable for several pathological conditions including diabetes mellitus. Chronic hyperglycemia in diabetes is associated with oxidative stress mediated tissue damage. The present study was designed to explore the role of isoflavones in ameliorating hyperglycemia-mediated oxidative damage to liver in alloxan induced diabetic rats. Alloxan was administered as a single dose (120 mg/kgBW) to induce diabetes while isoflavones (2 mg/kg BW) was orally administered daily to alloxan-diabetic rats for four weeks. In addition to the levels of blood glucose, plasma insulin, the extent of oxidative stress was assessed by hepatic lipid peroxidation. The level of reduced glutathione and the activities of enzymatic antioxidants were determined in the liver tissues. The activities of serum aminotransferases and alkaline phosphatase were assayed. A portion of liver was processed for histological examination. Oral administration of isoflavones to diabetic rats decreased the levels of blood glucose and increased the plasma insulin level. A reduction in thiobarbituric reactive substances was observed. The diminished activities of antioxidant enzymes and reduced glutathione in diabetic rats were improved upon isoflavones administration. Thus, the results of the present study indicate that isoflavones treatment protects the hepatocytes by improving the antioxidant competence in hepatic tissues of diabetic rats which is further evidenced from histological examination.

Biography

Fatma M El-Demerdash obtained Ph.D at the age of 30 years from Alexandria University postdoctoral studies from INRA, Montpellier, France. She is professor of Biochemistry at Institute of Graduate Studies and Research, Alexandria University. was the Executive Director, University of Alexandria Research Center during 2009-2011. She was Member of Egyptian Universities Promotion Committees (Biochemistry committee), 2008-2013. She published more than 35 papers in reputed international journals and serving as an editorial board member of repute at Journal of Environmental Science and Health Part B and Pharmacologia, Lead Guest Editor for a special issue on Oxidative Stress Biomarkers and Antioxidants, Journal of Toxicology and Lead Guest Editor for a special issue of Toxicological Aspect of Pesticides, Journal of Environmental Science and Health and reviewer for many International Journals, member of the organizing committee of ICPS 2015 Dubai. In addition to, the main work of teaching for post graduate students and supervision of MSc and Ph.D students.

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