AMELIORATIVE EFFECT OF GRAPE SEED EXTRACT AGAINST ROTENONE-INDUCED NEUROTOXICITY IN ADULT MALE ALBINO RATS

Mona Abdel-Rahman\textsuperscript{1}, Hanaa H Ahmed\textsuperscript{2*}, Ahmed E Abdel Moniem\textsuperscript{1}

Department of Zoology & Entomology, Faculty of Science, Helwan University\textsuperscript{1}
Department of Hormone, Medical Research Division, National Research Centre, Dokki-Cairo, Egypt\textsuperscript{2}
*Corresponding author e-mail: hanaaomr@yahoo.com

ABSTRACT

Objective: The present study aimed to investigating the ameliorative effect of oral administration of grape seed extract to rats versus neurotoxic effects administered with rotenone.

Material and Methods: Rats were orally administered grape seed extract (GSE) at a dose of 75 mg/kg body weight (wt) once a day for 20 days before oral administration of rotenone (2.5 mg/kg body wt). Dopamine (DA) and norepinephrine (NE) contents in striatum, cerebellum and cerebral cortex were determined at 40, 55 and 70 days of administration. Also, the striatum Na\textsuperscript{+}/K\textsuperscript{+}-ATPase activities, serum and striatum nitric oxide (NO), lipid peroxidation, reduced glutathione (GSH), total antioxidant capacity (TAC), and serum testosterone level were determined. In addition, a histopathological study of striatum was carried out.

Results: Our results reveal that rotenone administration for 50 days led to a significant increase in striatum and serum lipid peroxidation and NO levels while, a significant decrease in DA in striatum, NE and DA in cortex occurred. Also, striatum Na\textsuperscript{+}/K\textsuperscript{+}-ATPase activities, serum and striatum GSH, TAC levels and serum testosterone levels were significantly decreased. The treatment with GSE showed a protective effect against rotenone-induced neurotoxicity. It improved most biochemical markers tested as well as histopathological features.

Conclusions: It may be possible to use GSE for the prevention of neurotoxicity caused by exposure to pesticide or environmental neurotoxins.

Keywords: grape seed extract; rotenone; dopamine; norepinephrine; brain; rats