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Antioxidant and protective effect of estradiol in liver function of aged rats

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Introduction : The objective of this study was to observe the changes in activity of antioxidant enzymes, hepatic glucose homeostasis, lipogenic enzymes and lipid metabolism , serum lipid profile and liver function occurring in livers of female rats of 3, 12 and 24 months age groups, and to see whether these changes are restored to 3 months control levels rats after exogenous administration of steroid hormone estrogens (17-β-estradiol, E2).

Methods : The aged rats (12 and 24 months old) (n= 8 for each group) were given subcutaneous injection of 17beta estradiol (0.1 ug/g body weight) daily for one month. After 30 days of hormone treatment, experimental animals of all the groups were sacrificed and livers were isolated for further study. A detailed study was carried on non-enzymatic glutathione (GSH) and enzymatic antioxidants [superoxide dismutase (SOD), glutathione peroxidase (GPX) and catalase (CAT), hepatic glucose homeostasis, lipogenic enzymes ,lipid metabolism , serum aspartate aminotransferase (GOT), alanine aminotransferase (GPT) and alkaline phosphatase (ALP).

Results : The results obtained in the present work revealed that normal aging was associated with significant decrease in the activities of antioxidant enzymes, serum expression and an increase in hepatic glucose homeostasis, lipogenic enzymes and lipid profile and GOT, GPT, ALP in livers of aging female rats. Our data showed that exogenous administration of E2 brought these changes to near normalcy in aging female rats.

Conclusions : The present study showed that E2 treatment reversed the changes to normal levels. E2 treatment may be beneficial in preventing some of the age related changes in the liver by increasing antioxidant

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