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# Mechanisms for the Protective Effects of 17-beta-estradiol: Relevance to Depressive Symptoms in Parkinson's Disease.

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Objective: The objective of this study was to investigate protective potential of 17β estradiol (E2) treatment on the activity of monoamine oxidase, calcium homeostasis, membrane polarization, genomic DNA degradation, 4- hydroxynonenal and protein oxidation levels occurring in brains of female rats of 3 months (young), 12 months (adult) and 24 months (old) age groups, and to see whether these changes are restored to normal levels after exogenous administration of estradiol.

Methods: The aged rats (12 and 24 months old) (n= 8 for each group) were given subcutaneous injection of 17b-estradiol (0.1 µg/g body weight) daily for one month. After 30 days of hormone treatment, experimental animals of all the groups were sacrificed and brains were isolated for further study.

Results: The results obtained in the present work revealed that normal aging was associated with significant increases in the activity of monoamine oxidase, calcium homeostasis, genomic DNA degradation, 4-hydroxynonenal and protein oxidation levels in the brains of aging female rats, and a decrease in membrane polarization. Our data showed that exogenous administration of E2 brought these changes to near normalcy in aging female rats.

Conclusions: It can therefore be concluded that E2's beneficial effects seemed to arise from its, antioxidant and antilipidperoxidative effects, implying a therapeutic potential drug for age related changes. Based on our studies and others, we conclude that E2 have therapeutic potential for adjunctive therapy along with dopamine replacement in Parkinson's disease.
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