Effect of estrogen on telomerase activity in ovariectomised rats- animal model for menopause

Objective The aim of this study was to investigate the the anti-aging effects of exogenous estrogen on telomerase activity in ovariectomized female Sprague-Dawley rats.

Methods Thirty-three 12-week-old female rats were divided into three groups: the ovariectomized treated group (Treated, n=11), the ovariectomized control group (OVX, n=11) and the sham-operated group (Sham, n=11). The rats in the Treated group were given 0.21 mg/kg estradiol valerate intragastric administration while other two groups were given the amount of physiological saline daily. All of the animals were euthanized 12 weeks after treatment, and abdominal aortic blood samples were taken to assess the level of estradiol(E2), follicle stimulating hormone(FSH). Telomerase activity and telomerase reverse transcriptase(TERT) mRNA expression in the heart, liver, brain tissues of all rats were measured reverse transcriptional polymerase chain reaction (RT-PCR) and competitive enzyme-linked immunosorbent assay(ELISA).

Results After 12 weeks, compared to the the OVX and Sham group, telomerase activity and TERT mRNA levels were significant increased in the heart, liver and brain tissues of rats in the Treated group(P<0.05); The telomerase expression was significant higher in the heart than liver and brain tissues in the Treated group(P<0.05).

Conclusion Based on the findings in the ovariectomized female rats model, exogenous estrogen can significantly up-regulate telomerase activity and TERT mRNA expression to exert the effects of anti-aging.