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Phytoestrogen daidzein caused benefits in ovarian function of menopausal rats

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The aim of this study was to define the potential of phytoestrogen daidzein (DAI) for improvement of the ovary function in an animal model of menopause, and to compare these effects with the effects of estradiol-dipropionate (EDP), commonly used in prevention and treatment of menopausal symptoms.

Middle-aged (12-months-old) female rats subcutaneously received 35 mg/kg of DAI or 0.625 mg/kg of EDP, daily for 4 weeks. Each of the treated groups had a corresponding control group due to the different dissolvent. Intact control group was also established.

In the ovaries, DAI caused an increase in the number of healthy follicles at initial stage of folliculogenesis (primordial and primary), without affecting the number of atretic primordial and reducing the number of atretic primary follicles. Total number of healthy preantral and antral follicles was not affected by DAI, while the number of atretic antral follicles was decreased and the number of mature corpora lutea was increased. EDP treatment in the ovaries had mostly negative effect. Namely, EDP caused an increase of atretic, primordial, primary, preantral and antral follicles, but also increased the number of corpora lutea. DAI provoked decrease in superoxide-dismutase and catalase activity, while EDP treatment increased superoxide-dismutase activity, accompanied by decrease in catalase activity. Serum estradiol concentration was increased, while serum testosterone concentration was decreased, after both the treatments, compared to corresponding control groups.

In conclusion, comparing to EDP, phytoestrogen DAI exhibited beneficial effects on the ovary in middle-aged females and could be a successful alternative to estrogen replacement hormone therapy.