



The Effect of Curcumin on the Structure of Mouse Ovary After Treatment With Goserelin and Cyclophosphamide

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Abstract

BACKGROUND: Protection from reproductive damage is essential in chemotherapy medicines for cancer patients.

OBJECTIVES: This study aims to examine the effect of curcumin on the structure of the ovary of mice after treatment with goserelin and cyclophosphamide.

METHODS: One hundred and ten BALB/C mice with 3 regular consecutive periods of the estrous cycle were divided into 11 groups of 10 each. No medicine was used in the control group. The treatment groups were as follows: 1) cyclophosphamide, 2 to 5) cyclophosphamide with curcumin with a dose of 100, 200, 300, and 400 mg/kg, respectively, 6) goserelin, 7 to 10) goserelin together with curcumin with a dose 100, 200, 300, 400 mg/kg, respectively. The luteinizing hormone (LH) and follicle-stimulating hormone (FSH) of serums were evaluated using ELISA. Morphologic and morphometric of ovaries were assessed.

RESULTS: The total number of follicles, primary, secondary, periantral, and antral follicles, in the goserelin and cyclophosphamide group, was significantly reduced compared with the control group ($P<0.05$). Cyclophosphamide and goserelin with different doses of curcumin showed a significant increase in the total number of follicles, primary, periantral, and antral follicles compared to the group treated with cyclophosphamide and goserelin alone ($P<0.05$). Curcumin (200, 300, and 400 mg/kg) and cyclophosphamide, compared to the cyclophosphamide group, significantly increased the quality of zona pellucida ($P<0.05$). Cyclophosphamide and goserelin caused a significant decrease in FSH and LH ($P<0.05$). Cyclophosphamide with different doses of curcumin showed a significant increase in LH compared to the group treated with cyclophosphamide alone ($P<0.05$). Goserelin with a 400 mg/kg curcumin dose significantly increased LH compared to goserelin alone ($P<0.05$). The amount of FSH in the cyclophosphamide groups with curcumin increased considerably to cyclophosphamide alone ($P<0.05$). The groups of goserelin with curcumin showed a significant increase in FSH compared to those of goserelin alone ($P<0.05$).

CONCLUSIONS: Curcumin can protect the reproductive system of mice from the damage caused by the administration of cyclophosphamide and goserelin.

Keywords: Curcumin, Cyclophosphamide, Goserelin, Mouse, Ovarian

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Figure Legends and Table Captions

Figure 1. The Effect of Curcumin, Cyclophosphamide, and Goserelin on the Level of Luteinizing Hormone (LH) Secreted From the Mouse Pituitary.

Figure 2. The Effect of Curcumin, Cyclophosphamide, and Goserelin on the Level of Follicle Stimulating Hormone (FSH) Secreted From the Mouse Pituitary.

Figure 3. The Effect of Curcumin, Cyclophosphamide, and Goserelin on the Number of Different Types of Ovarian Follicles in Mouse.

Figure 4. Comparison of Curcumin, Cyclophosphamide, and Goserelin on the Number of Ovum and the Quality of the Zona Pellucida in Mouse.

*The groups included: control group 1) cyclophosphamide, 2) cyclophosphamide + curcumin with a dose of 100 mg/kg, 3) cyclophosphamide + curcumin with a dose of 200 mg/kg, 4) cyclophosphamide + curcumin with a dose of 300 mg/kg, 5) cyclophosphamide + curcumin with a dose of 400 mg/kg, 6) goserelin, 7) goserelin + curcumin with a dose of 100 mg/kg, 8) goserelin + curcumin with a dose of 200 mg/kg, 9) goserelin + curcumin with a dose of 300 mg/kg, 10) goserelin + curcumin with a dose of 400 mg/kg.

**Means with different letters have a significant difference ($P<0.05$).