

CORONA RADIATA IN 4 - QUADRANT BACKSCATTERED ELECTRON DETECTOR EXAMINATION

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The mammal oocyte microenvironment is very important for preserving of the gamete proper function. The aim of our study was elemental analysis of the corona radiata cells – the oocyte closest structures - in the conditions of stimulated and inhibited ovulation. The conducted examinations revealed the presence of determinable concentrations of sodium, potassium, sulphur, iron, magnesium and silicon in the zona pellucida of the rat ovarian follicles [1, 2]. The study was conducted on the ovarian follicles of female white rats. The experimental animals were divided into three groups. Ovulation was stimulated in two groups (I – chorionic gonadotrophin - hCG, II – hCG and menopausal gonadotrophin HMG), in group III, however, medroxyprogesterone HMG was administered to inhibit ovulation. The drugs were administered in three increasing doses. After decapitation of the female rats the ovaries were obtained and prepared for examination. The chemical composition of the sections surface was analyzed in 1000 (100 in each group) randomly selected sites of the corona radiata using scanning electron microscope X-ray detector with changeable vacuum, made by the company LEO 1430 VP. There was used QBSD (BSD, BSE) - 4 quadrant backscattered electron detector examination, where electron beam penetration was 1 µm. The statistical analyses were performed by means of analysis of variance - ANOVA I. The differences were statistically significant when $p < 0,05$. The calculations were conducted in STATISTICA 8.0.. **RESULTS:** QBSD analysis revealed the highest determinable concentrations of magnesium Mg, iron Fe and silicon Si in the corona radiata. The Mg mean concentration was the highest in the group of animals in which ovulation was inhibited. The analysis of Mg concentration values showed significant differences between most of the examined groups. The highest mean concentration values of Fe were also detected in the corona radiata cells of the ovarian follicles of the female rats with inhibited ovulation. No significant differences were found when comparing iron concentration values in the corona radiata cells in most of the experimental groups. Significant differences were discovered, however, in silicon concentration values in the granule cells of the corona radiata between the examined groups. All the Si mean concentration values in the corona radiata cells were considerably lower than the Si mean concentration value in the control group. **CONCLUSIONS:** The differences which were found in concentration values of the examined elements in the corona radiata cells obtained from female rats in the conditions of both stimulated and inhibited ovulation may imply the transfer of Mg, Fe and Si within the analyzed cells.

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