

13th MULTINATIONAL CONGRESS ON MICROSCOPY

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BOOK OF ABSTRACTS



Ruder Bošković Institute



Croatian Microscopy Society

13th Multinational Congress on Microscopy

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Editors

**Andreja Gajović, Igor Weber, Goran Kovačević, Vida Čadež
Suzana Šegota, Petra Peharec Štefanić and Ana Vidoš**

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Ruđer Bošković Institute and Croatian Microscopy Society



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Selenium induces accumulation of lipid droplets in antral follicles of porcine ovaries

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The selenium (Se) is an essential microelement included in diet for reproductive swine female. It is known that Se has an important role in antioxidative defense and maintenance of ovarian tissue in pathological conditions (1) though the information how it could be involved in healthy reproduction of female is limited. The present work is aimed to study the effect of injective application of organic compound selenopyran on ultrastructure of antral follicles of the porcine's ovary. The experiment was conducted with 18 gilts of Danube white breed, ages between 120 - 228 days, divided into two groups each consisting of 9 animals. The animals received equal basal diets without selenium additives (Se content was 15 mg per kg of forage). The experimental gilts (Se-treated) were injected intramuscularly with oil solution of selenopyran (9-phenyl-symmetrical octahydroselenoxanthene) once per month (0.1 mg Se/kg live weight). After euthanasia of animals, tissue from one ovary of each animal was fixed in 4% glutaraldehyde, post-fixed in 1% osmium tetroxide, routinely dehydrated and embedded in Durcupan. Semi-thin sections were stained with Toluidine blue and used to select areas of interest. Ultra-thin sections of selected areas were mounted on copper grids and examined on a Philips CM12 transmission electron microscope. This preliminary study indicates the presence of numerous lipid droplets (LD) (2), as roundish dark structures with electron-lucent



streaks, uniformly distributed and densely packed in the antral follicles oocyte's cytoplasm in the ovaries of Se-treated group (*Figure1*). These structures, containing the dark precipitate which was not detected in cytoplasm or other organelles, were placed in the close vicinity of mitochondria and numerous vacuoles. In contrast, these structures in control group appeared quite different, electron-lucent, various in size and randomly distributed in cytoplasm. These results indicate that Se-treatment induce the heterogeneity in size, distribution and lipid composition of LD in the antral follicle oocytes. In the light of the impact of Se-treatment on the serum lipid content (3), our ongoing research should further clarify the impact of potential lipid profile alteration in ovaries on process of oogenesis and folliculogenesis.

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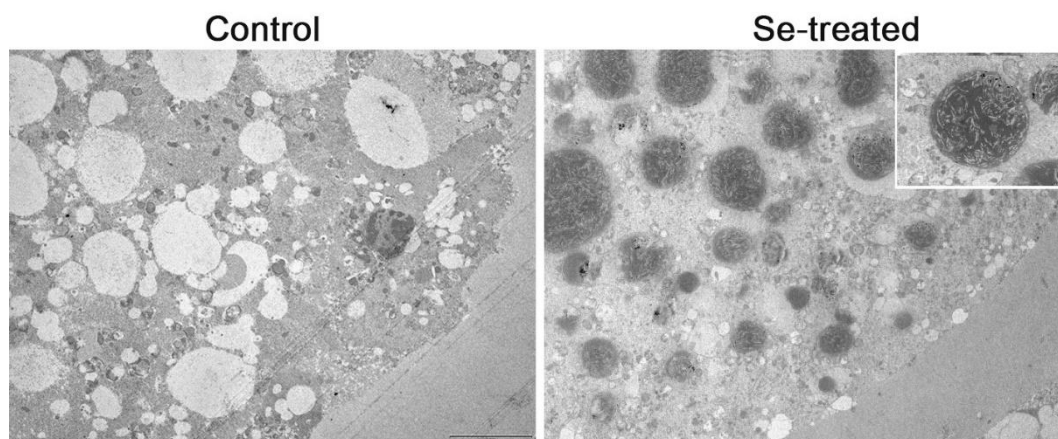


Figure 1. Ultrastructure of control and Se-treated porcine antral follicle oocyte's. Notice the great amount of lipid droplets in the cytoplasm of the Se-treated group. Magnification x3000, inset x13000x.