Ultrastructural changes of ovarian follicle and corpus luteum after experimental zearalenone mycotoxicosis in bitch

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Abstract

The aim of the study was to determine the influence of experimental zearalenone (ZEA) mycotoxicosis on the ultrastructure of ovaries in bitches receiving zearalenone for 100 days per os in the anestrus phase. Experiment has been conducted on 9 sexually mature clinically healthy bitches. The sexually mature animals aged 1-3 years were in anestrus. The dogs have been divided into three groups: E1 and EII, receiving ZEA per os in two dosages (25 µg/kg and 50 µg/kg b.w.) and control animals which received placebo per os. On the last day of experiment, ovariohysterectomy was performed in all the bitches and the uterine samples were submitted to ultrastructural analyses. The study has revealed that long lasting administration of higher dose of zearalenone causes ultrastructural changes in the granular layer of ovarian follicles, which showed due to their biological activity decrease. The changes in the granular layer, atrophy of intercellular connections and the appearance of intercellular spaces can stand for reduced activity of this layer. Changes in morphology of mitochondria, rough endoplasmic reticulum and Golgi apparatus suggest ZEA influence on cell metabolism and secretory processes. It seems therefore that in bitches and other monogastric animals, intoxications induced by this mycotoxin causes ultrastructural changes in granular cells of ovarian follicles.

Key words: zearalenone, bitches, ovary, ultrastructure

Introduction

Among many diseases to which livestock and pet animals are prone, more attention is now paid to mycotoxicoses. The problems of the mycotoxicoses and zearalenone mycotoxicosis are known since long time. The clinical signs of zearalenone mycotoxicosis concern mainly reproductive system of monogastric farm and pet animals (Dickman and Green 1992, Gajęcka et al. 2007, Zinedine et al. 2007).

ZEA is non-steroidal mycotoxin of estrogenic performance that causes changes in metabolic profile (Gajęcka et al. 2004b) and in activity (Sweeney 2002, Minervini et al. 2005) of the cells susceptible to this