EFFECTS OF OOCYTE EXPOSURE TO NANOMOLAR LEVELS OF OCHRATOXIN-A ON EMBRYO DEVELOPMENT IN THE JUVENILE SHEEP

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Ochratoxin A (OTA) is a mycotoxin produced by some toxigenic fungal species of the genera *Aspergillus* and *Penicillium* with widespread occurrence in stored foods and feedstuffs [1] inducing reprotoxic, embryotoxic and teratogenic effects in laboratory and farm animals [2]. Ruminants are known to be relatively resistant to toxic effects of OTA, due to its degradation to the less toxic metabolite ochratoxin alpha by rumen microbiota. Nevertheless, nanomolar levels of OTA have been found in the blood of sheep fed with contaminated feed [3]. The aim of the present study was to evaluate the effects of oocyte exposure to OTA nanomolar levels on embryo development in the juvenile sheep. Cumulus-oocyte complexes (COCs), recovered from the ovaries of slaughtered juvenile sheep, were exposed to 1, 10, 100 and 1000 nM OTA during in vitro maturation (IVM) [4]. IVM medium with vehicle (1% methanol) was used as control. In three replicates, 50-100 COCs/condition were analyzed. After IVM, oocytes underwent in vitro fertilization and embryo culture up to day 7. Embryo development was monitored by phase contrast and epifluorescence microscopy after staining nuclear chromatin with Hoechst 33258 [4]. Data were analyzed by Chi-square test (statistical significance at $P<0.05$). At any tested concentration, OTA did not affect oocyte maturation rates (72.2%, 71.5%, 72.9%, 74.5% versus 71.5%) and total cleavage rates/matured oocytes (88.5%, 80.0%, 71.4%, 86.3.5% versus 87.3%) for 1, 10, 100 and 1000 nM OTA respectively vs control. OTA also did not affect blastocyst formation rates/cleaved (6.2%, 8.0%, 5.2% versus 3.6%; for 10, 100 and 1000 nM OTA respectively vs control). Interestingly, no blastocyst formation was found after oocyte exposure to 1 nM OTA. In conclusion, oocyte exposure to nanomolar OTA levels had no apparent effects on embryo development. Further studies are in progress to evaluate additional oocyte and embryo quality parameters..

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