

Effects of cadmium on viability and function of porcine pre-pubertal Sertoli cells

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Cadmium, an ubiquitous environmental pollutant mainly used for industrial purposes, is highly associated with reproductive toxicity. Sertoli cells (SC), by providing an appropriate microenvironment for the development of germ cells, play a pivotal role on spermatogenesis regulation (Geoffroy-Siraudin et al. 2012). Aim of our investigation was to assess the effects of cadmium on high mammalian SC viability and function. Porcine pre-pubertal SC were isolated, according to previously established methods (Fallarino et al. 2009) and treated with 3 different concentrations (5-10-15 μM) of cadmium chloride. The evaluation of SC function in terms of inhibin B and anti-Müllerian hormone (AMH) secretion showed a significant decrease in all SC treated conditions respect as compared to SC control. On the contrary, evaluation of the FSH-R integrity on SC surface, in terms of 17- β -estradiol production under FSH stimulation, showed no difference between SC control and 5 μM cadmium treated SC monolayers in comparison to 10 and 15 μM cadmium treated SC monolayers, where FSH-R was impaired. In addition, the apoptotic test showed a significant increase of early (ANNEXIN V-/Propidium Iodide+) (AV-/PI+) and late apoptotic cells (AV+/PI+) in all cadmium treated SC conditions in comparison with SC control. In conclusion, our data demonstrate that cadmium, even at low dose, exerts toxic effects on Sertoli cells function possibly adversely affecting the spermatogenesis.

References

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- Geoffroy-Siraudin et al. (2012) Ex-vivo assessment of chronic toxicity of low levels of cadmium on testicular meiotic cells. *Toxicol Appl Pharmacol* [Epub ahead of print].

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