

Pb effects on an experimental model of porcine prepubertal Sertoli cells

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The environmental pollution is one of the main factors implicated in the world's fertility decline. Lead (Pb) is one of the major heavy metal contaminants that impairs several organs but preferentially accumulates in male reproductive organs and alters *in vivo* and *in vitro* sperm quality [1]. Nowadays, the underlying mechanisms remain unclear. Sertoli cells (SC) provides structural and metabolic support to the spermatogenic cells within the seminiferous tubules, therefore, metabolic and structural changes in SC affect the developing germ cells and consequently alter spermatogenesis. This study aimed to assess whether exposure to subtoxic doses of Pb would adversely affect superior mammalian SC function. Highly purified and functional porcine pre-pubertal SC were isolated [2] and treated with three different Pb acetate concentrations. Parameters of SC functionality, such as inhibin B and anti-Müllerian hormone (AMH) mRNAs and proteins were decreased by Pb exposure respect to the control, such as the FSH-r integrity in terms of 17- β -estradiol production, under FSH stimulation. In addition, we observed an increase of AKT and mTOR mRNAs, p38 phosphorylation ratio and Akt phosphorylation ratio in all experimental conditions, respect to the control. In conclusion, the Pb-related toxicity on SC, even at low concentrations, is expected to alter spermatogenesis.

References

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- [2] Luca et al. (2015) Long-term stability, functional competence, and safety of microencapsulated specific pathogen-free neonatal porcine Sertoli cells: a potential product for cell transplant therapy. *2015 Xenotransplantation* 22:273-283.

Keywords

Lead, Sertoli cells, function