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Silver nanoparticle-mediated cellular responses in isolated Sertoli cells *in vitro*

Diana Anderson
University of Bradford, UK

Exposure to silver nanoparticles (AgNPs) has been reported to be related to male reproductive toxicity in mammalian studies. The present study explored the mechanism of cytotoxic and genotoxic effects of AgNPs on a primary culture of mouse Sertoli cells *in vitro*. DNA damage was evaluated in the Comet assay; apoptotic cells were detected using terminal deoxynucleotidyl transferase (TdT) dUTP Nick-End Labelling (TUNEL) assay and apoptosis markers such as p53 and bcl-2 and antioxidant enzymes such as catalase (CAT), glutathione peroxidase 1 (GPX-1) and superoxide dismutase 1 (SOD-1) were quantified using qPCR. The superoxide anion was detected using the nitroblue tetrazolium NBT reduction assay. Our study indicates that AgNP exposure causes increased oxidative stress levels, the activation of p53, repression of bcl-2 and reduction of endogenous antioxidant enzymes which are involved in the mechanistic pathways of AgNPs-induced DNA damage in the Sertoli *cells in vitro.* This may lead to reduced numbers of Sertoli cells through promoting early spermatogonial stem cell differentiation.

Biography

Diana Anderson has completed her PhD from the University of Manchester, UK in the Faculty of Medicine. She is the Established Chair in Biomedical Sciences at the University of Bradford. She has published more than 450 papers and 9 books, successfuly supervised 32 PhD studnets, has an Hirsch factor of 55. She is Editor-in-Chief of a Book series for the Royal Society of Chemistry and is a Consultant to many internaitional organisations, such as the World Health Organisation/ International Programme of Chemical Safety. She is/has been Member of the Editorial Board of 10 international journals.

D.Anderson1@bradford.ac.uk

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