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Diethylstilbestrol induced-oxidative DNA damage *in vitro* in the reproductive system

There has been heightened concern from the regulatory and research communities regarding the adverse impact of environmental contaminants on fertility and reproduction associated with exposure to the nonsteroidal estrogen, diethylstilbestrol (DES). It has been reported that testicular damage induced by environmental estrogens is closely associated with increased reactive oxygen species (ROS). Androgens/oestrogens are very important for the suitable maintenance of male germ cells, so indirectly affecting female reproduction. DES-induced DNA double-strand breaks (DSBs) represent a great threat to the genomic integrity of spermatogonial stem cells (SSCs), which are essential to maintain spermatogenesis and prevent reproduction failure.

Spermatogonial stem cells (SSCs) play a very important role in the maintenance and progression of spermatogenesis. This provides an understanding of the reproductive biology of future gametes and a strategy for diagnosis and treatment of infertility and reproductive toxicity. Oestrogen-like compounds can affect directly/indirectly both female and male reproductive health.

We investigated the effects *in vitro*, of diethylstilbestrol (DES) on

mouse spermatogonial stem cells separated using STAPUT unit-gravity velocity sedimentation, DNA damage was evaluated using the Comet assay and apoptotic cells in the TUNEL assay. Intracellular superoxide anion production (O₂⁻) in SSCs was detected using the p-Nitro Blue Tetrazolium (NBT) assay. The viability of cells after DES treatment was examined in the cell counting kit-8 cytotoxicity assay. Results showed that DES-induced DNA damage causes an increase in O₂⁻ anions which are reduced by the flavonoid, quercetin. Investigating the molecular mechanisms and biology of SSCs provides a better understanding of spermatogonial stem cell regulation in the testis

Speaker Biography

Diana Anderson (H index 59) holds the Established Chair in Biomedical Sciences at the University of Bradford. She obtained her first degree in the University of Wales and second degrees in the Faculty of Medicine, University of Manchester. She has 460+ peer-reviewed papers, 9 books, has successfully supervised 32 PhDs, is an Editorial Board Member of 10 international journals. She is Editor-in-Chief of a book series on Toxicology for the Royal Society of Chemistry. She gives key-note addresses at various international meetings. She is a consultant for many international organisations, including WHO, EU, NATO, TWAS, UNIDO, OECD.

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