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Effect of metosartan on chromatin compaction

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ABSTRACT:
Metosartan causes decompaction of chromatin by reducing disulfide bonds in protamines of mature sperms leading to the cause of infertility. Protamines generally associates with chromatin as toroid subunits, so, further compaction in chromatin is provided by disulfide bonds with in the protamines of mature sperms. Metosartan is proved to reduce the disulfide bonds from results of Eswari beeram. Metosartan also reduces disulfide bond between RI and RNaseA and the RNase in testes is a monomer as that of RNase A proved by reducing SDS Page.

Key words: RNase A, Metosartan, SDS- Page, Toroids, Protamines

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I. INTRODUCTION

Clastogens like food additives, antibiotics, UV radiation, alkylating agents cause impotence by damaging the chromosome through induction of breaks, deletions and genetic aberrations in humans. In addition to the above agents metosartan and disulfide reducing agents can also cause impotence. Metosartan induces ss breaks and ds breaks in chromosomes. It mainly causes endometrial carcinoma of germ cells due to decompaction of chromosomes which increases access to transcriptional-translational switch of cell cycle proteinsand gene expression.

However the metosartan induces apoptosis,the control over cell division in germ cells (spermatocytes) is found to be deviated eventhough there is continous monitoring through checkpoints of cell division as proved by long term results of eswari beeram (2019).

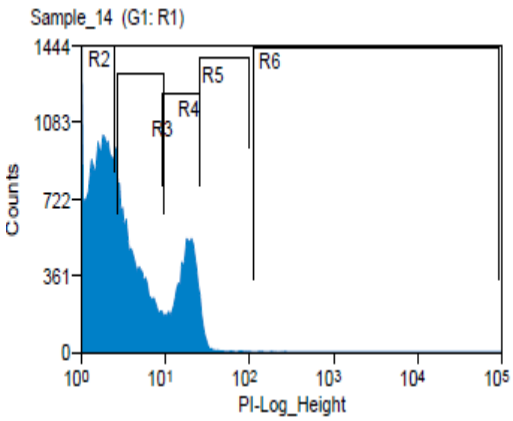

Figure :1 Flow cytometry of Sperm tissue treated with metosartan

Drugs like opiate, crystal and heroin also cause chromosomal damage. In which heroin is the top most damaging drug compared to other two.Now most of the anticancer drugs cause chromosome instability and metosartan has both tumorigenic activity in case of germ cells where as causes genome instability in somatic testicular cells. Oligomer formation in RNase A is required for catalytic and cytotoxic activity of the enzyme and requires disulfide bond formation.

Intercalating agents like acridine orange can also induce breaks in DNA so SEM is one of the technique that can be used for assessing chromosome stability and integrity. In Q banding the chromosome arms united to form long thread like structures due to decompaction of chromatin.

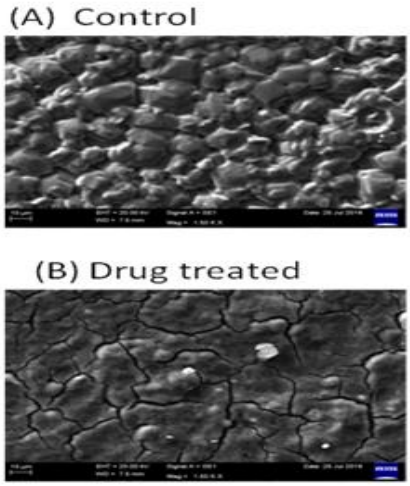

Figure :2 Examination of testes samples by Scanning microscope after staining with aniline blue (a) control testes tissue, (B) Testes treated

with metosartan. Metosartan induces decompaction of chromatin.

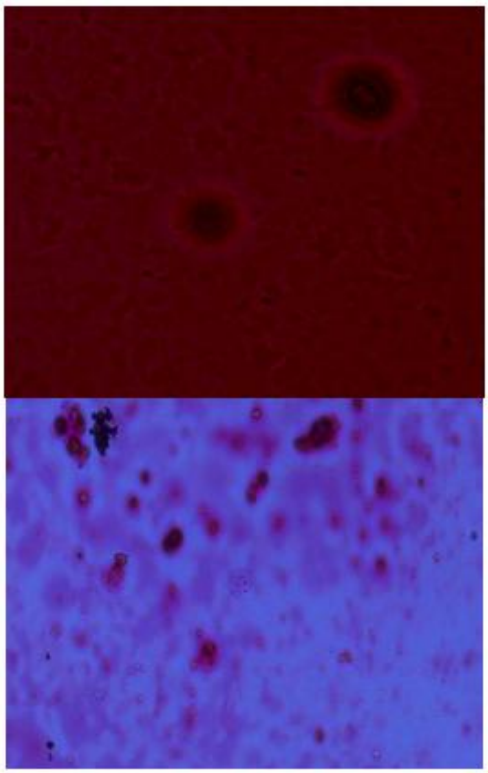

Figure :3 cryopreservation of isolated mitochondria and cryopreserved blood sample (a) cryopreseved mitochondria (b) blood sample

Cryopreservation does not affect mitochondria but it induces micronuclei formation in blood. The membrane of mitochondria is intact but the matrix and cristae is some what shrunken and total shape of mitochondria is distorted. The double membrane is clearly visible .

II. DISCUSSION:

Metosartan is now classified as one of the genotoxic agent that induces micronuclei formation and it is known to induce genetic aberrations in germ cells and testicular cells. However the extent of genotoxicity is under research which can be expected to be soon. Metosartan induces minimal ds breaks in hypertensive animals but accidental intake leads to serious health complications. In addition to alkylating agents, disulfide reducing agents like metosartan should be treated as a carcinogenic agent and needs to be investigated more.

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