

Histomorphometric analysis of the effects of Quercetin on testicular apoptosis and oxidative damage.

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Lead is one of the common heavy metal pollutants, which causes apoptosis and oxidative damage on various organs in humans. The current morphometric study was conducted to evaluate the effect of quercetin in improving that damage. Forty adult male albino rats were divided into four groups (10 rats/each): control group; quercetin group; lead group; Pb + quercetin group; All treatments were performed daily for 30 days. Serum testosterone, FSH, LH levels, oxidative stress parameters and testicular analysis were conducted. The results revealed that lead exposure caused significant elevations in cytokines and inflammatory mediators, concentration of lead in testis, oxidative stress with significant reduction in sexual hormones and antioxidants. Lead intoxicated rats showed marked increase in the percentage of dead sperms and abnormal sperm rate, while significant decrease in sperm concentration and sperm motility. Co-administration with quercetin caused a significant increase in testosterone levels, testicular SOD and CAT activities, and a decrease in MDA levels, with improvement in morphometric alterations. Quercetin averts cell death and antioxidant injury through numerous mechanisms, as scavenging oxygen radicals, defending against lipid peroxidation and chelating Pb ions [1, 2]. Quercetin is accounted as a surpass free-radical scavenging antioxidant due to a capacity to provide electrons or hydrogens, and scavenges hydroxyl groups, hydrogen peroxide, and superoxide anions [3]. In conclusion, co-treatment with quercetin prevent degenerative changes induced by lead, reduced oxidative stress, cytokines and inflammatory mediators, and restored the biochemical changes.

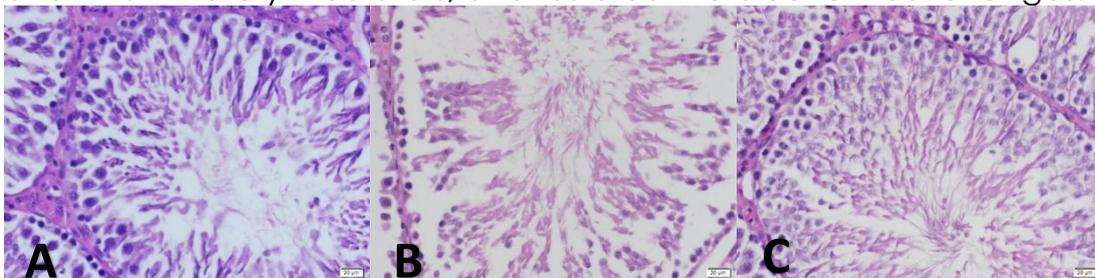


Fig 2. (A) control: normal histoarchitecture, (B) Pb-group: variable degrees of degenerative changes in the seminiferous tubules. Tubules contain highly vacuolated cytoplasm (V) with deeply stained pyknotic nuclei. Exfoliated germ cells (E) appear in the lumina of the seminiferous tubules. Some tubules (T) have completely degenerated, (C) Quercetin+ Pb group: restoration of the histoarchitecture (H&E scale bar, 20µm).

REFERENCES

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