Antioxidant Protection against Pathological Mycotoxins Alterations on Proximal Tubules in Rat Kidney

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Abstract:
Background: Ochratoxin A (OTA) was one of the mycotoxins and received attention worldwide because of the hazard it posed to human and animal health, where the kidney was the primary target organ for OTA toxicity. In the other hand, dates served as a good source of natural antioxidants and could potentially be considered as a functional food.

Methods: The study was performed in the department of biology in King Abdulaziz University. Animals were gavage administrated and divided into four groups: first group received (sodium bicarbonate), second group received (289 µg OTA /kg B.W. /day), third group received (1mg Ajwa/kg B.W. / day) and fourth group received (289 µg OTA /kg B.W./day+ 1mg Ajwa /kg B.W. / day). Serum (creatinine - urea) levels were measured in each group at the time of tissue collection, some biopsies were fixed in 10% buffered formalin solution for light microscopy processing stained with Haematoxylin and Eosin (H& E.), Periodic Acid-Schiff (PAS) and Masson’s Trichrome (M.T.). Other biopsies were immediately collected into electron microscopy processing.

Results: After 28 days, a significant decrease in body weight, kidney weight and relative weight was detected in OTA treated group. Also, Serum (creatinine - urea) level were elevated. The normal cyto-architecture of proximal tubules were lost exhibiting damaged bruch border,
degenerated, binucleated and karyomegalic cells. The most destructed ultra-structure was the mitochondria which severely swollen with disintegrated membranes. In Ajwa Date extract-group the proximal tubules were normal, whereas in Ajwa date extract + OTA-group the severity of the lesions was significantly reduced.

**Conclusion:** The present results indicated that, Ajwa date have protective effects and ameliorated the lesions of Ochratoxin nephrotoxicity which might lead to kidney failure.

**Key words:** Ochratoxin A., Ajwa date, proximal tubules, light –structure, ultra –structure, biochemical analysis, morphometry.