Summary and Conclusions

Background: Fluorides ,when taken in amounts exceeding the standard therapeutic dosage ,are regarded as toxic substance producing histopathological changes in many organs .

The aim of this work: was to investigate the effects of antioxidative vitamins A,C,E on the structure of rat pancreas exposed to high doses of sodium fluoride.

Materials and Methods: Thirty adult male albino rats were divided into three equal groups: The control group, fluoride group and fluoride plus vitamins (A, C and E) group .In the control group ,the rats were given 2ml of distilled water /kg (B.W) orally once daily for 35 days. In fluoride group, the rats were given fluoride orally at dose of 10 mg Naf /kg (BW) once daily for 35 days. In fluoride plus vitamins group, the rats were given fluoride as the second group ,in addition to vitamins A, C and E at dose of 250mg/kg .B.W for each of vitamin C&E and 1000 IU/kg for vitamin A. All animals were sacrificed after 35 days .The pancreatic specimens were prepared for light and electron microscopies.

Results: the sodium fluoride produced congestion of blood vessels and blood capillaries distributed between the pancreatic acini and the blood sinusoids of the islets of Langerhans .There were extravasations of blood cells in the interstitial spaces. The pancreatic acini showed varying degrees of changes: some acini contained many vacuoles with intact nuclei and basement membranes. Other acini showed loss of their architectures and necrosis of most of their cells which were replaced by

vacuoles. The connective tissue fibers were increased around the blood vessels and degenerated and vacuolated pancreatic acini. By electron microscopic examination, the rat pancreas showed dilatations of the cisterns of the endoplasmic reticulum, degenerations of some mitochondria, reduction in the numbers of zymogen granules and appearance of large vesicles and phagosomes. The only change in the cells of islet of Langerhans was decreasing in the numbers of granules especially the Beta cells which secretes the insulin .By administration of vitamins A,C,E during the fluoride treatment ,the pathological changes induced by fluoride were reduced . Few acinar cells contained vacuoles. The cells of islet of Langerhans were apparently intact, the connective tissue fibers became minimal in amount. The electron microscopic examination showed some dilated cisterns of endoplasmic reticulum and few degenerated mitochondria.

Conclusion: The main toxic effects of fluoride on the pancreas were pancreatica heamorrhagica, disruption of the export of zymogen granules and increase in the fibrosis. These effects can be minimized by simultaneous administration of combination of vitamins A, C and E.