Possible Protective Role of L-Thyroxin on The Parotid Gland of Adult Male Albino Rat in Carbimazole Induced Hypothyrodism :Histological , Histomorphometric and Ultrastructural Study

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Summary

This study was carried out to throw more light on the histological, biochemical and immunohistochemical changes in the parotid gland of the adult male albino rat, following oral administration of carbimazole and possible protective role of L-thyroxin.

Fifty five adult male albino rats (Sprague Dawly) weighing200-250 g. each; were used in this study. They were divided into four groups and eleven subgroups ; five rats each ; **Group I (normal control); G Ia** the rats did not receive any medications for 3 successive weeks ,**G Ib** the rats did not receive any medications for 6 successive weeks ,**G Ic** the rats did not receive any medications for 9 successive weeks . **Group II (sham control);G IIa** ingested normal saline orally daily for 3 successive weeks ,**G IIb** ingested normal saline orally daily for 6 successive weeks, **G IIc** ingested normal saline orally daily for 9 successive weeks. **Group III (medical hypothyroidism group); G IIIa(medical Hypothyroidism, short duration**) ingested Carbimazole orally by gastric tube in a dose of 0.05 mg/kg daily for 3,**G IIIb(medical Hypothyroidism,long duration group**) ingested Carbimazole orally by gastric tube daily for 6 successive weeks, **G IIIc(medical Hypothyroidism, recovery group**) ingested Carbimazole orally for 6 successive weeks then were left 3 weeks without any medication. **Group IV (L-Thyroxine supplemented group)**; **G IVb(L-Thyroxine supplemented group, short duration**) ingested carbimazole orally daily for 3 successive weeks then L-thyroxine was given orally in a dose of (10µg/100g/B.W) daily for another 3 successive weeks, **G IV c** (**L-Thyroxine supplemented group, long duration**) ingested carbimazole orally daily for 6 successive weeks, thereafter L-thyroxine was given

orally daily for 3 successive weeks. Animals were sacrificed 24 hours after the expected period in the control, sham control groups and after the last dose of carbimazole in group III a, b and 3 weeks after stoppage carbimazole in group IIIc. Animals were sacrificed 24 hours after the last dose of L- thyroxine in groups IV b, c**.**

In this study, histopathological examination of the parotid gland specimens was performed. Administration of carbimazole resulted in significant parotid gland damage which was more obvious with longer duration; most of the serous acini had irregular outlines, were widely separated with narrow lumen and cytoplasmic vacuoles.Changes in the nuclei; some acinar cells contained ill defined, irregular, pyknotic, darkly stained or hyperchromatic nuclei .Vascular changes in the form of extravasated blood; blood vessels were seen dilated and engorged with blood. Changes in the duct system; the interlobular and striated ducts appeared disrupted and dilated with cellular infiltration were seen in the interstitial space.

Oral administration of L-thyroxine to experimental animals significantly improves histological changes, expression of BCL-2 and decrease collagen in Mallory stained sections as were confirmed statistically. Subsequent to carbimazole induced parotid gland injury, induction of L-thyroxin resulted in significant mitigating effects on damage of parotid gland. The results indicate that thyroid hormones administration causes parotid gland adaptation by augmenting endogenous antioxidants and protects rat parotid gland from oxidative stress associated with carbimazole induced hypothyroidism and parotid gland atrophy.