

Paper seven

Possible protective role of L-thyroxin on the parotid gland Of adult male albino rat in Carbimazole induced hypothyroidism:Histological,histochemical and ultrastructural study.

Abstract:

Thyroid disorders are among the most common metabolic disorders worldwide. Thyroid dysfunction affects salivary glands function, causing hyposalivation. It also provokes physiological and histological changes in parotid, submandibular, and in particular the sublingual gland. The aim of this work was to clarify the histological and ultrastructural changes that occur in the parotid gland following carbimazole-induced hypothyroidism in adult male albino rats. The study also aims to investigate the possible protective role of L-thyroxin supplementation on the rat parotid glands after long and short duration of hypothyroidism.

Fifty-five adult male albino rats of Sprague Dawley strain; were divided into four groups and eleven subgroups, five rats each. G I received nothing. G II given normal saline orally daily. G III (medical Hypothyroidism, short duration – long duration – recovery group) given Carbimazole orally by gastric tube in a dose of 0.05 mg/kg daily for 3,6 successive weeks for group (a, b) and for 6 successive weeks then were left without any medication for another 3 weeks in recovery group c. G IV-b, c (L-Thyroxine supplemented group, short duration-long duration) given Carbimazole orally daily for 3,6 successive weeks then L-thyroxine was given orally in a dose of (10 µg/100 g/B.W) daily for another 3 successive weeks. Animals were sacrificed 24 hours after the last dose of Carbimazole in G III-a, b and 3 weeks after stoppage the drug in G III-c. Animals were sacrificed 24 hours after the last dose of L- Thyroxine in G IV-b, c. The parotid specimens were processed for histopathological examination by light and electron microscopy. The medically induced Hypothyroidism resulted in significant parotid gland damage which was more obvious with longer duration; as follow: a) most of the acini had irregular outlines and were widely separated with narrow lumen and cytoplasmic vacuoles. b) Some acinar cells contained ill defined, irregular, pyknotic or hyperchromatic nuclei. c)Vascular changes: dilated and engorged with blood.d) The interlobular and striated ducts appeared disrupted and dilated. e) extravasated blood with cellular infiltration were seen in the interstitial space. In Conclusion: Thyroid hormones (THs) had a significant effect in protection of parotid gland

against damage induced by carbimazole, as it preserved the normal histological architecture of the parotid gland. This beneficial effect of THs was mostly related to its antioxidant properties. The expression of BCL-2 has certain regularity in apoptosis after drug administration. Regulation of glandular atrophy and apoptosis are closely related. The molecular mechanism of the apoptosis of the gland is not clear, and further study is needed in the future.