CU2.

SYMPATHOMIMETIC DRUG ACTION ON RAT EXOCRINE GLANDS

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Previous studies have shown that Sympathomimetic stimulation of rat parotid gland increases its size and mass[1, 2]. Certain clinical conditions like xerophthalmia, xorostomia and keratoconjunctivitis are associated with destruction and malfunction of exocrine glands. Ex: Sjogrens syndrome, cancer chemotherapy...etc. Therefore sympathomimetics could be considered to have potential benefits in the treatment of such diseases in the future. We undertook an experimental study to find out whether sympathomimetics have effects on all exocrine glands except exocrine component of pancreas.

The sympathomimetic used was Isoprenaline, which has predominant beta-receptor stimulant action. Ten rats were included in the study they were divided into three groups; test, test control and control. Daily dose of isoprenaline was introduced intraperitoneally to the test group and normal saline to the test controls. Controls were kept undisturbed. 50% of rats from each group were sacrificed after three days of treatment and the rest after seven days. The physical, morphological and histological changes of rat exocrine glands were studied. Macroscopically all the exocrine glands of test rats were paler than those of controls. This was more marked seven days after the treatment. After three days of treatment, lacrimal gland showed a marked increase in weight (285.3%) length (172%) and breath (166.3%) compared to the controls whereas other exocrine glands showed only a marginal increase in all parameters. After 7 days of treatment, all glands exhibited a marked increase in gland weight compared to the control, with the lacrimal gland showing 615.6% increment, parotid gland 433.3% and submaxillary gland 440.2%. They showed a moderate increase in length ranging from 179.7% to 296.9% and in breadth ranging from 120.4% to 271.1% compared to the control. Histology of the salivary glands revealed a marked cellular congestion in acini and increase in stain intensity which could be related to the increase in the protein synthesis.

Our experiment showed a significant growth of all exocrine glands on exposure to Isoprenaline with a remarkable growth of lacrimal gland. One reason for this response could be lacrimal gland growth being more sensitive to sympathomimetic stimulation than others. Whether the increase in growth also means there is an increase in function needs to be investigated.

References:

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