Capsaicin induced histological and ultrastructural changes in the submandibular salivary gland of albino rats

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Abstract

Capsaicin is a pungent principle of hot red pepper. It is used in spices, food additives and drugs. In the present work, twenty rats were divided into two groups: control and capsaicin groups, each consisting of ten rats. The capsaicin group daily received a capsaicin dose equivalent to 0.1 mg/kg body weight dissolved in 0.5 ml distilled water by oro-oesophageal tube while the control group daily received 0.5 ml distilled water. After twenty one days, the submandibular salivary glands of both sides were excised, processed and examined histologically and ultrastructurally. Histological results revealed presence of pure mucous acini in the submandibular salivary gland. Some granular convoluted tubules showed degeneration while the excretory ducts showed loss of pseudostratification with the appearance of some flattened lining cells. Concerning the ultrastructural findings, some acinar cells showed dilated rough endoplasmic reticulum, other presented ultrastructural features similar to mucous acini. Granular convoluted tubules cells showed some irregular, shrunken nuclei with condensed chromatin. Their secretory granules were less electrondense than the control and presented ill-defined and fused outlines. Some of the excretory duct lining cells showed apically displaced irregular nuclei. One to two rows of flattened epithelial cells were observed apical to the lining cells. Vacuolizations, mitochondrial swelling and loss of cristae were detected in cells of some acini, granular convoluted tubules and excretory ducts. Most intercalated and striated duct cells showed ultrastructural features similar to that of control group. However, the basal part of some striated duct cells presented variable grades of mitochondrial affection.
From the present work, it could be concluded that chronic capsaicin intake was associated with noticeable histological and ultrastructural changes in acini, granular convoluted tubules and excretory ducts of the SMSG in albino rats.

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