

MODULATION OF MITOTIC ACTIVITY AND MAST CELL POPULATION IN THE ORAL MUCOSA BY SUBSTANCE P

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Mast cells are involved in the regulation of blood flow and fibroblast proliferation in the gingiva. Because of the dependence of gingival keratinocytes on blood supply, a substantial question needs to be answered: do mast cells and their products affect the proliferation of gingival keratinocytes?

To assess the effect of substances inducing mast cell degranulation [substance P and granuliberin R] on the mitotic indices of the gingiva stratified epithelium, basal cells from rat were studied *in vivo*.

Seventy Lewis male rats were included in the study. The rats received injections of 0.1 ml 0.9% NaCl [10 rats], substance P [10^{-4} , 10^{-6} , 10^{-8} g/ml] [30 rats], or granuliberin R [10^{-4} , 10^{-6} , 10^{-8} g/ml] [30 rats] into their mandibular gingiva in the vicinity of the right mental foramen. The mitotic index was established after the colchicine arrest (2h prior to material collection i.p. injection) of keratinocytes. The number of cells in metaphase were counted on 1000 basal layer consecutive cells after hematoxylin and eosin section staining. Mast cells were revealed by pinocyanol erythrosinate acc. Bensley. Numerical density and morphometric features (area, perimeter, long and short axes) were analyzed for the evaluation of morphological changes in the mast cells near the epithelium and in the deep layer of the oral mucous connective tissue.

Substance P and granuliberin R injected into the gingiva affects the mast cells and the basal cell proliferation of gingival epithelium. The diminished mitotic activity of basal layer cells was accompanied by degranulation and/or migration of mast cells under the basal membrane of the epithelium. After high doses of granuloliberin R, mast cells were found in the deep connective tissue towards the epithelium. Local changes associated with mast cell degranulation occurred in the epithelium, on the side where the studied agents had been injected, and within a radius of 1 cm of the injection site, but these changes were less intense. A neuromediator from the trigeminal nerve (substance P) and substances from mast cells actively interfere in the proliferation of oral keratinocytes and the activity of connective tissue cells.