

The influence of nifedipine induction to gingival epithelial cell proliferation (in vivo study in rat)

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Abstrak

It is well known that nifedipine administration in hypertensive patients results in gingival hyperplasia. The aim of this study was to study the pattern of nifedipine-induced gingival hyperplasia, based on morphometric and histological changes as well as on PCNA (Proliferating Cell Nuclear Antigen) expression in the gingival epithelium. In total, 36 male Sprague Dawley rats at the age of 6 - 8 weeks were divided into nine experimental groups and three control groups. Each animal received daily DMSO (dimethyl sulfoxide) via oral intubation at a dosage of 0 (for control groups), 15, 30 or 60 mg/kg (experimental group) of body weight for 7, 21 or 42 days. After the animals were sacrificed, impression of the lower gingival tissue was taken to measure mesio-distal distance, labio-lingual distance and papilla height. The number of blood vessels and the thickness of gingival epithelium were assessed from hematoxylin and eosin stained sections. Proliferative activity of the epithelial cells was determined by immunohistochemical analysis using PCNA monoclonal antibody. Significant increase in the mesio-distal and labio-lingual distance of the lower gingival tissue was detected morphometrically ($p < 0.05$). There were more blood vessels in the experimental groups than in the control groups, however there was no specific pattern based on the dosage or duration of nifedipine administration. On the other hand, significant differences were found in the gingival epithelial thickness and proliferative activity between the experimental and the control groups. PCNA-positive cells were observed in basal and suprabasal layers, but nearly none in lamina propria.