

ABSTRACT

THE INHIBITION MECHANISM OF RELAPSE OF ORTHODONTIC TOOTH MOVEMENT IN NATRIUM FLUORIDE (NaF) ADMINISTRATION

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Background: Alveolar bone remodeling is very helpful in orthodontic treatment, particularly to prevent relapse after orthodontic treatment. Currently, the prevalence of post-treatment relapse in orthodontics in the community is high enough; therefore, the prevention of relapses makes orthodontic treatment be achieved well. **Objectives:** to experimentally test the mechanism of orthodontic tooth movement due to natrium fluoride (NaF) administration. **Material and methods:** the research method used was experimental laboratory research involving 30 rats, which were divided into 3 groups. Group A: the rats were not given OTM and without 11.75 ppm by topical application. Group B: the rats were given OTM and without 11.5 ppm by topical application. Group C: the rats were given OTM and 11.75 ppm by topical application. OTM was conducted by applying ligature wires of 0.02 mm in diameter on the molar-1(M-1) of left emanent maxilla and left insisivus of maxilla. Immunohistochemical examination was conducted to calculate the number of osteoblast to determine TGF β 1, Runx2, Sox2, ALP and Collagen type 1 and haematoxyllin to determine Woven Bone on day 7 and day 14. **Results:** It was shown that administration of Natrium Fluoride topical application proved effective to increase the espression of TGF β 1, Runx2, Sox2, ALP and Collagen type1 and to increase Woven Bone in tension area greter compaired with administration without Natrium Fluoride topical application ($p < 0,05$), except for the expression of ALP on day 7 and day 14 which was significant. **Conclusions:** NaF administration significantly increased TGF β 1, Runx2, Sox2, ALP and Collagen type1 and Woven Bone. The expression of the variables enhanced on day 7 compared to that on day 14, except for ALP. Thus, it can be said that the acceleration of woven bone occurs on day 7.

Key words: TGF β 1, Runx2, Sox2, ALP, Kolagen type1, Woven Bone, Natrium Fluoride.