

The Inhibition of Relapse of Orthodontic Tooth Movement by NaF Administration in Expressions of TGF- β 1, Runx2, Alkaline Phosphatase and Microscopic Appearance of Woven Bone

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Abstract : The prevalence of post-treatment relapse in orthodontics in the community is high enough; therefore, relapses in orthodontic treatment must be prevented well. The aim of this study is to experimentally test the inhibition of relapse of orthodontics tooth movement in NaF of expression TGF- β 1, Runx2, alkaline phosphatase (ALP) and microscopic of woven bone. The research method used was experimental laboratory research involving 30 rats, which were divided into three groups. Group A: rats were not given orthodontic tooth movement and without NaF. Group B: rats were given orthodontic tooth movement and without 11.5 ppm by topical application. Group C: rats were given orthodontic tooth movement and 11.75 ppm by topical application. Orthodontic tooth movement was conducted by applying ligature wires of 0.02 mm in diameter on the molar-1 (M-1) of left permanent maxilla and left insisivus of maxilla. Immunohistochemical examination was conducted to calculate the number of osteoblast to determine TGF β 1, Runx2, ALP and haematoxylin to determine woven bone on day 7 and day 14. Results: It was shown that administrations of Natrium Fluoride topical application proved effective to increase the expression of TGF- β 1, Runx2, ALP and to increase woven bone in the tension area greater than administration without natrium fluoride topical application ($p < 0.05$), except the expression of ALP on day 7 and day 14 which was significant. The results of the study show that NaF significantly increases the expressions of TGF- β 1, Runx2, ALP and woven bone. The expression of the variables enhanced on day 7 compared on that on day 14, except ALP. Thus, it can be said that the acceleration of woven bone occurs on day 7.

Keywords : TGF- β 1, Runx2, ALP, woven bone, natrium fluoride

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