

Caffeine increases PGE2 levels at compression and tension areas during orthodontic tooth movement

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Abstract : Objective: To analyze the effect of caffeine on PGE2 levels during orthodontic tooth movement. **Experimental:** Sixteen healthy male rats were divided into two groups, i.e. control group (C) consisted of eight rats applied with orthodontic force (OF), and treatment group (T) consisted of eight rats applied with OF and caffeine 1.35 mg/100 g BW twice a day for 14 days. The rats were anesthetized using ketamine, and subsequently OF was applied. A ligature wire with a diameter of 0.20 mm was mounted by attaching on the maxillary right first molar and both of the maxillary incisors. Next, the maxillary right first molar was moved to mesial using a tension gauge to generate 10 g/cm² by using nickel titanium orthodontic closed coil spring. The observations were carried out on the 8th and 15th days of study period, GCFs were taken by placing the paper points in the gingival sulcus of mesio-and disto-palatal permanent maxillary right first molar. PGE2 levels was determined by using ELISA. **Results:** caffeine on 8th and 15th days enhanced PGE2 levels on the compression and tension areas (p <0.05). PGE2 levels on the compression area were significantly greater compared to that in the tension area (p <0.05). **Conclusion:** Caffeine increased PGE2 levels during orthodontic tooth movement. Caffeine can trigger osteoclast formation and increase the efficiency of tooth movement, thus it may enhance the effectiveness of orthodontic treatment in the future. **Keywords :** Orthodontic tooth movement, caffeine, PGE2 , GCF.

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