عنوان مقاله:

Cocoa administration may accelerate orthodontic tooth movement by inducing osteoclastogenesis in rats

محل انتشار:

مجله علوم پایه پزشکی ایران, دوره 22, شماره 2 (سال: 1397)

تعداد صفحات اصل مقاله: 5

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خلاصه مقاله:

Objective(s): To investigate the effect of cocoa on orthodontic tooth movement (OTM) rate, osteoprotegerin (OPG), and receptor activator of nuclear factor κ β ligand (RANKL) levels after OTM.Materials and Methods: A total of 24 Sprague-Dawley rats were included in the study. They were equally divided into two groups: cocoa and control. The upper incisors of all rats were subjected to 35 cN orthodontic force and moved distally with a stainless steel 3-spin coil spring. During OTM, the cocoa group was given 4.8 g of unsweetened cocoa once a day. At 4 subsequent time points (0, 1, 7, and 14 days), the OTM rate was determined by measuring the distance between the mesial tips using a digital caliper, while OPG and RANKL levels were examined based on their gingival crevicular fluid through specific enzyme-linked immunosorbent assay (ELISA). Data gathered were analyzed through independent t-test ($P<0.05$).Results: The OTM rate of the cocoa group was significantly higher than that of the control group on days 1, 7, and 14 ($P<0.05$). ELISA analysis revealed that the OPG level was significantly lower on day 14. Furthermore, the RANKL level was significantly higher on days 0, 1, and 7 for the cocoa group compared with the control group ($P<0.05$).Conclusion: These results indicate that cocoa has the potential effect to modulate the OTM rate by inducing osteoclastogenesis, which suppresses the OPG level and stimulates the RANKL level, in rats.

کلمات کلیدی:

Caffeine, Cocoa, OPG, Orthodontic tooth- movement, RANKL