

# 28<sup>th</sup> Euro Dentistry Congress

September 16-17, 2019 | Amsterdam, Netherlands

## **Diode laser: effects of diode laser (980 nm) on orthodontic tooth movement and interleukin-6 (IL-6) levels in gingival crevicular fluid in female subjects**

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The time needed for a fixed orthodontic treatment to accomplish is approximately two to three years. Prolonged orthodontic treatment can impose complications such as caries and root resorptions to the patient. Shortening the duration of treatment can prevent or reduce the severity of these problems and it requires acceleration of tooth movement. Low-level laser irradiation such as diode laser has been shown to have biological effects in accelerating the rate of orthodontic tooth movement. In this randomized split-mouth double blind clinical trial, 11 female patients aged 14 to 25 years, who required canine distalization following four premolars extraction, were selected. The diode laser (GaAlAs laser, 980 nm, 100 mW, 5.6 J/cm<sup>2</sup>, three points from the buccal side and three from lingual side of the tooth, 56 s, running in continuous mode) was used for canine distalization in only one maxillary quadrant and the other side was served as the control group. The laser irradiation was applied on days 0, 7, 14, 21, and 28 of each month during the canine distalization phase. To evaluate the levels of IL-6, GCF samples were collected from the distal side of both maxillary canine teeth at different time points during 11 months. The results showed that, the diode laser with adjusted parameters used in this study slightly enhanced the rate of orthodontic tooth movement. Distalization of the teeth caused a significant increase in the concentration of IL-6, but the increase in the mean concentration of IL-6 was not statistically significant between the two sides.