

## METAL RELEASE OF STANDARD AND FAKE ORTHODONTIC BRACES: AN IN VITRO STUDY

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### ABSTRACT

Fake braces are currently an epidemic in this country with many wearers reported of complications due to poor quality fake products and treatment by unqualified personnel. The purpose of this study was to investigate the release of metal ions from standard and fake orthodontic braces immersed in artificial saliva of different pH. Three standard and three fake orthodontic brackets were immersed in containers containing 5 mL of artificial saliva of pH 4.9 and pH 7.8. Inductively-Coupled Plasma Mass Spectrometry (ICPMS) was used to analyse the amount of metal ion released into the artificial saliva on day 1, day 14 and day 28. Statistical analysis was performed to determine the significant difference of metal ions release between two types of braces in different pH solutions. The results showed the release of 5 types of ions: aluminium, nickel, chromium, manganese and copper. Fake braces released the highest concentration of chromium, manganese and nickel ions in both artificial salivae as compared to standard braces. Brackets immersed in pH 4.9 released a higher number of ions compared to pH 7.8. This study showed that fake braces released a higher concentration of metal ions as compared to standard braces. The release of metal ions from orthodontic brackets is influenced by both time and pH.

**Keywords:** Fake braces; Real braces; ICP-MS; Bracket corrosion; Orthodontic bracket

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