Elemental and microstructural analysis of fake, real, and standard orthodontic brackets

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ABSTRACT
The increasing demand for orthodontic treatment in the Malaysian community has led to the development of "fake" and "real" braces. Fake and real braces have been offered through social media by unqualified personnel using poor quality orthodontic brackets. Notably, cases of metal toxicity from these braces have been reported. Here, we explored the composition and microstructure of several types of fake, real, and standard (professional) braces. A total of nine upper right central incisor brackets were examined using high-resolution scanning electron microscopy equipped with an energy-dispersive X-ray spectrometer to analyze the composition and evaluate the surface morphology of each bracket. Surface textures of the fake and real braces were noticeably more granular and unpolished than those of standard orthodontic brackets. All fake and real bracket designs were distinctly inferior from standard upper right central incisor brackets. All brackets were manufactured from different types of alloys; however, none contained any harmful elements.

KEYWORDS:
Elemental; microstructural analysis; Fake; Real; Standard; Orthodontic brackets