

***In vivo* determination of genotoxicity induced by metals from orthodontic appliances using micronucleus and comet assays**

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ABSTRACT. Orthodontic appliances are usually made of stainless steel, which contains metals such as nickel, chromium and iron that have been associated with DNA damage. The aim of the present study was to determine the genetic toxicity associated with orthodontic fixed appliances in twenty healthy patients (16 ± 2.5 years) undergoing orthodontic treatment (fixed appliances - basic composition: stainless steel alloy), using the micronucleus (MN) and comet (CA) assays in buccal cells. Primary DNA damage level, as assessed by the CA, was low either before the beginning (1.5 ± 1.05 damage index - DI) or 10 days after the placement of the orthodontic appliance (2.5 ± 3.08 DI) and did not change significantly between these time points ($P = 0.0913$). Conversely, there was a significant increase in MN frequency 30 days after the beginning of the treatment ($P = 0.0236$). In this study, the MN assay was shown to be more sensitive than the CA. Other investigations are necessary in order to assess the genotoxic potential of orthodontic fixed appliances associated with long-term studies concerning these effects in orthodontic patients.

Key words: Genotoxicity; Mutagenic tests; Metals; Dental materials; Orthodontics