

EVALUATION OF ENAMEL SURFACE ROUGHNESS AND MORPHOLOGICAL CHANGES AFTER EXPOSURE TO COCA-COLA, ORANGE AND ARTIFICIAL GASTRIC JUICE: AN *IN VITRO* STUDY

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Dental erosion is a pathologic, non-bacterial hard dental tissue loss induced by extrinsic or intrinsic acids. This *in vitro* study aimed to evaluate and compare the morphology and surface roughness of dental enamel after erosive challenge in some extrinsic and intrinsic acidic substances, Coca-Cola, orange and gastric juice.

Enamel samples (n = 48), obtained by preparation of surgical extracted human third molars, were subjected to the erosive challenge of the artificial gastric juice and commercially-available Coca-Cola and orange juice by immersion in 50 ml of erosive solutions for 15 min, three times daily, for 10 days. Between immersions, the samples were kept in filtered saliva. Twenty-four samples were prepared for the surface morphology analysis using scanning-electron microscope, and 24 for the analysis of Ra-surface roughness parameter (using a diamond-stylus-profilometer), including the 12 control samples (which did not undergo the erosion procedure). Results of the surface roughness were analyzed by one-way ANOVA Student-Newman-Keuls post hoc test.

Ultrastructural analysis of enamel surface after immersion in Coca-Cola and gastric juice showed type 1 etching pattern with the typical honeycomb appearance. After the erosive challenge with orange juice, a nonspecific morphological model was established. Profilometric parameter Ra was significantly increased for samples immersed in gastric juice compared to samples immersed in Coca-Cola and orange juice, as well as, in samples with Coca-Cola-erosion compared with orange juice-erosion. Gastric juice had higher erosive potential in relation to Coca-Cola and orange juice, with the most intense morphological changes and the highest roughness on the enamel surface.

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