

Demineralized Enamel Surface Microstructure after Brushing Using Toothpaste Containing Medical Hydroxyapatite under FE-SEM Observation

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The deposition from of hydroxyapatite on the enamel surface cannot be observed under high magnification with conventional SEM because of charging of the tooth. However, using FE-SEM, which made it possible to maintain a low acceleration voltage, minute structure of the enamel surface have been observed under high magnification. These observations were made without damaging the specimen or charging the tooth. This study was carried out to investigate the influence of medical hydroxyapatite, which acted on the decalcified enamel surface of teeth microstructurally. The enamel surface of sound, caries-free human molars was decalcified with 0.1M HCl solution for five minutes in vitro. The enamel surface was treated by toothpaste containing medical hydroxyapatite, a control toothpaste, and a popular toothpaste. The surface form and crystal form was observed using FE-SEM, and the results were compared. The enamel surface treated with toothpaste containing medical hydroxyapatite was smooth under low magnification, and the gap of the enamel prism was covered by minute crystal particles (30-60nm) in a high magnification FE-SEM image. The enamel surface treated with the control toothpaste and the popular brand of toothpaste was not smooth under low magnification, and an enamel prism form was confirmed in a high magnification FE-SEM image. These results suggested that the possibility of the crystal particle being medical hydroxyapatite was high, and toothpaste containing medical hydroxyapatite contributed to recrystallization of the decalcified enamel surface.