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Investigation of the effect of antibiotics on the rate of remineralization of tooth enamel

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Abstract

The safety of antibiotics is still debatable. The properties of large molecules to give insoluble compounds with metal ions leads to a decrease of absorption of active components and most often loss of biological activity.

Depending on the presence of functional groups in the side chain, the formation of complexes of different strength is possible. The properties of a number of antibiotics to interact with calcium ions allow us to expect the interaction of these antibiotics with the surface of the tooth enamel along the calcium centers. The alkaline environment of the oral cavity and the excess of calcium ions in the saliva, in comparison with phosphate residues, make it possible to make available the calcium centers of the hydroxyapatite crystal.

The strength of this complex will be determined by the structure and functional substituents of the antibiotic molecule and will not depend much on its charge. In this article the effect of broad-spectrum antibiotics on the remineralizing ability of saliva in relation to tooth enamel based on the experiments performed on teeth is discussed. The analysis of the degree of remineralization function of saliva was carried out by means of spectrophotometric determination of the stability of calcium complexes with individual broad-spectrum antibiotics at different multiplicity of individual components. As a result of setting up an experiment to restore tooth enamel after treatment with these solutions of antibiotics, the characteristic assessment of which is the presence of sites of remineralization and their size on the surface of the tooth enamel for certain periods of time and in comparison with the standard, it was concluded that antibiotic solutions reduce the remineralization ability of saliva to restore the outer surface of the enamel of teeth.

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