Universität Basel

Research Project

Remineralisation of carious lesions by self-assembled peptide supra-molecular networks and Hydroxyapatite nanocrystals

Third-party funded project

Project title Remineralisation of carious lesions by self-assembled peptide supra-molecular networks and Hydroxyapatite nanocrystals
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Organisation / Research unit
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Department
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The human body possesses a huge potential for self-healing. In many processes tissue is regularly formed and removed. Our teeth as well are constantly demineralized and remineralized when we ingest. If this equilibrium comes out of balance, the tooth cannot be remineralized and dental caries is the consequence. This process depends on the oral hygiene, preferred type of food, and oral microflora of each individual. In a first step, bacterial acids cause a demineralisation at the weakest point of the tooth. Initial lesions or “white spots” develop. These rarely remineralize spontaneously and normally cannot be regenerated. If caries proceeds, the pseudointact surface breaks down forming a carious cavity. Standard treatment since more than 100 years is to mechanically open the carious area and to fill it with a biocompatible material.
Credentis ag has now launched an innovative treatment method that regenerates the affected enamel. Scientists of the University of Leeds have developed a self-assembling peptide that, applied to the carious lesion, diffuses into the initial lesion and forms a supramolecular network inside the carious lesion. As soon as this 3D network exists, the crystallisation of nanocrystals is initated and the regeneration of the white spots is induced. Nowadays, initial lesions can be treated successfully applying this method. For larger cavities the product does not function yet.

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