PL 15 - Reduction of Dental Plaque Formation by Chitosan from Fungi and Crabs

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Dental plaque is believed to be a major etiologic factor in the development of dental caries. Specific types of microorganisms are associated with plaque as it develops and matures. Studies involving the reduction in the accumulation of dental plaque have therefore been carried out by many investigations. Chitosan, from fungal and crabs, were studied due to inhibitory properties on the bacterial growth and dental colonization processes, involving cariogenic bacteria. The antimicrobial action of chitosan against Streptococcus mutans, Streptococcus mitis, Streptococcus sanguis and Streptococcus oralis, was carried through in the direction to establish the minimal bacteriostatic and bactericide concentration. Chitosan, from fungi and crabs, showed similar antimicrobial activity for Streptococcus samples. Studies to evaluate the chitosan adhesives mechanisms to dental enamel and to bacteria had been carried through the following methods: Scanning Electron Microscopy, determination of bacteria cell wall hydrophobicity, and glucan production by Streptococcus in presence of sucrose. The results indicated a reduction on dental enamel colonization by bacteria when chitosan from fungi and crabs were used. However, fungal chitosan was more efficient than crabs chitosan. Chitosan from both sources decreased bacterial glucan production and the bacteria cell wall hydrophobicity. The high potential of chitosan from fungi as anticarie biomaterial, suggests its use in dental products.