Applications of Chitosan in Dental Cements

Petada, Lara (School: Escola Secundaria da Maia)
Gomes, Rodrigo (School: Escola Secundaria da Maia)
Oliveira, Magda (School: Escola Secundaria da Maia)

The high microbial density of the oral cavity compromises the effectiveness of dental cements consequently increasing the number of secondary infections caused by remaining bacteria. Despite the variety of cements available none is capable to guarantee an effective and complete seal to prevent possible re-infections after restoring the area affected by caries prompting the development of a cement capable of covering these needs. The use of chitosan obtained from shrimp shells contributes to sustainability by increasing the commercial value of this product. Several studies have been carried out to understand how to extract chitosan and to investigate the effectiveness of replacing the glass ionomer in conventional cements with this compound in terms of inhibiting the activity of S.Mutans. In addition the best components to include in the cement and the properties it needs in order to be successful. To conceive this project, we first extracted the chitosan using citric acid. After the creation and prototype testing it proved to be capable of reducing the activity of S.mitis (family of S.mutans) and E.coli. Biocompatibility was not tested, but given the materials used it is expected to be biologically inert. During and after drying the paste showed to have adequate working time, handling and viscosity to ensure acceptable clinical performance. The ideal properties of a dental cement have been combined in a single product to revolutionize restorative dentistry.

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