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Potention of Tannin Encapsulated Dextran-Modified-Liposome as Preventive Agent of Dental Caries : A Review

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ABSTRACT

Background: Caries is one of the most common diseases and affects people in the world. It is estimated that about 3.58 billion people in the world suffer from caries. The prevalence of the population with cavities / sick / damaged teeth in Indonesia in 2018 reached 45.3%. Caries is tooth enamel damage due to dysbiosis microbiome in the oral cavity. Caries is caused by the presence of Streptococcus mutans bacteria which form biofilm / plaque. The biofilm can reduce the remineralization ability of the teeth that tooth decay can occur. Until now, there is no preventive action that can prevent caries formation to the maximum. This article is designed to determine the potential of dextran-modified-liposome encapsulation against tannin as a preventive measure for dental caries.

Methods: This article was created by searching multiple databases with the keywords caries, liposome, tannin, and dextran.

Result: One of the preventive measures against dental caries is using tannin compounds. The main function of tannin is to significantly reduce the attachment of bacteria and form glucans to enamel, and bind to proteins in the mouth to inhibit bacterial metabolism. However, tannin have a disadvantage that bitter taste and easily bind to other macromolecules such as enzymes in the mouth. These deficiencies can be overcome by using liposome encapsulation. To increase the effectiveness of tannins in the process of targeting and preventing biofilms, liposome encapsulation was modified using dextrans. Dextrans can play a role in inhibiting sucrose dependent biofilms to prevent biofilms formation.

Conclusion: Dextran-modified-liposome encapsulation against tannin has the potential to be an effective preventive measure against the development of dental caries.

Keywords: Caries, liposome, tannin, dextran