Anti-caries vaccine - approach and challenges

(poster presenter)

Strahil Todorov

Darinka Gjorgieva Ackova, Katarina Smilkov

Faculty of medical sciences, Goce Delčev University of Štip, Republic of Macedonia

Abstract

Dental caries is the most common bacterial infectious disease in human and has become the basic cause of oral discommode and tooth damage, seriously touching the quality of life of the patients. It is induced by specific class of acid-producing bacterias (e.g., *Streptococcus mutans*).

S. mutans has been strongly concerned as the prominent pathogen of dental caries in human. Anti-caries DNA vaccination is a new immunization procedure against dental infectious disease, and has many preferences over traditional vaccines, such as easy proceeding and contribution, and induction of long-lasting cellular and humoral immune responses. Anti-caries DNA vaccine may act as a multi-epitope vaccine and elevate strong immune response targeting *S. mutans* associated antigens. Anti-caries DNA vaccine can induce S-IgA antibodies against *S. mutans*, decrease adherence and biofilms disposition, reducing the frequency of dental caries as a result. As a disadvantage, this vaccine has low immunogenicity because of its low capability for uptake.

As innovative approach, dental vaccines for prophylactic immunization can be the first non-living vaccines to be applied by mucosal route during the first three years of life. Further understanding and investigations of the signals that control the colonization and growth of *S. mutans* in dental biofilms may help to reduce spread and detrimental effects of cariogenic bacteria.

Keywords

Dental caries, anti-caries DNA vaccine, immunization, *S. mutans*