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Vaccination against dental caries

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Introduction: Dental caries is the most common chronic disease affecting children even 5 times more common than asthma. In modern times, it has reached epidemic proportions. Dental caries is an infectious microbiologic disease of the teeth that results in localized dissolution and destruction of the calcified tissue. Dental caries is a mulitifactorial disease, which is caused by host, agent, and environmental factors. The time factor is important for the development and progression of dental caries. A wide group of microorganisms are identified from carious lesions of which *S. mutans, Lactobacillus acidophilus* and *Actinomyces viscosus* are the main pathogenic species involved in the initiation and development of dental caries. Hence, the prevention and control of dental caries is the main aim of public health, eventually the ultimate objective of public health is the elimination of the disease itself. Recently, dental caries vaccines have been developed for the prevention of dental caries. These dental caries vaccines are still in the early stages.

Method & Material: A literature search through PubMed, Cochrane, Science Direct, Scopus and Ovid from 1975 to 2011 was performed to identify reports with data on different kinds of dental vaccination. *in vivo* and *in vitro* investigations were included. Not common kinds of vaccination were excluded. Also literatures with broad information about this method were included.

Results: Out of 114 articles that were critically assessed 58 of them supported DNA vaccines 40 were about dental caries vaccines focusing on GTF and 10 on caries vaccines against adhesions and only 6 articles on GBP and Dextranase. As an overall review the most acceptable vaccination was focused on GTF antigen of streptococcus mutans. But novel studies on DNA vaccination have been more confident and has developed faster in recent years.

Conclusion: Clearly, there is strong evidence that *S. mutans* and *Streptococcus sobrinus* are closely associated with dental caries. Fluoride treatment used abroad has successfully limited caries progression, but was not sufficient to control this infectious disease even when used together with professional tooth cleaning and dietary counseling in populations highly exposed to these cariogenic microbiotas. Active and passive immunization strategies, which target key elements in the molecular pathogenesis of mutans Streptococci, hold promise. Along with established methods of caries prevention, caries vaccines have the potential of making a highly valuable contribution to disease control. In the meantime, basic research on the mode of action of caries vaccine and the search for new, more effective, and possibly polyvalent vaccines must continue if we are to fully explore their potential for helping us in the struggle against dental caries.

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