



Comparative Study of Inhibitory Effect of Organic and Inorganic Garlic Extracts on Dental Plaque Bacteria

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Abstract : In recent years, there is an increase in the incidence of dental caries and periodontal diseases. The oral cavity houses various habitat for microorganisms. Dental plaque is the community of microbes found on tooth surface as biofilm formations. These bacteria cause tooth decay and gum diseases. They live in our mouth, feed on sugar and starch that we consume and produce acids. Due to acid production, pH is lower to critical level which causes demineralization of hard tissues of teeth. Garlic (*Allium sativum*) is known to have antimicrobial property. The purpose of this study is to assess the inhibitory effect organic (grown with bio fertilizers) and inorganic (grown with chemical fertilizers) garlic extracts (aqueous and ethanolic) against dental plaque bacteria. Four

potential acidogens were identified from the isolated strains and treated with four different garlic extracts at different concentrations. Inhibitory effect of extracts was similar to each other at various concentrations, although inorganic and ethanolic extracts were more efficient. 10mg/ml was the MIC of extracts on the isolated strains. No isolates were resistant to garlic extract; hence garlic can be used as an alternate natural source for managing dental caries and periodontal diseases.

Keywords: Dental plaque, *Allium sativum*, Acidogens, Inhibitory effect.

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Introduction :

Dental plaque is a community of microorganisms found on tooth surface as a biofilm, embedded in a matrix of polymers of host and bacterial origin. Of clinical relevance is the fact that biofilms are less susceptible to antimicrobial agents while microbial community can display enhanced pathogenicity. The structure of plaque biofilm might restrict the penetration of antimicrobial agents, while bacteria growing on the surface grow slowly and show reduced sensitivity to inhibitors (Marsh, 2006). The bacteria in dental plaque are acidogenic and tolerate acid environment that enable them to exhibit high dental caries (Svensater *et al*, 1997). In India, a survey was carried out on school children which showed caries prevalence of approximately 58% (Shivakumar *et al*, 2009).