

DBT's RCB, Faridabad discovered Adhesive PitA protein cause dental caries

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Structure of PitA protein of *S. oralis* under X-ray diffractometer

Gram-positive pathogen *Streptococcus oralis* is considered as one of the early colonizer of dental plaque or oral biofilm that can damage our tooth enamel and gums, and cause dental caries. The opportunistic pathogen is often involved in the development of infective endocarditis in inner lining of heart chambers and heart valves.

Dr. R. Kumari Yadav and Dr. V. Krishnan from Laboratory of Structural Microbiology, Regional Centre for Biotechnology, Faridabad found that PitA protein is present at the tips of appendages of the opportunistic bacterial. The PitA protein acts as an anchor which helps *S. oralis* to bind to host cells and to other bacteria as well during plaque formation. Study also found that the early colonization of oral cavity by pathogen *S. oralis* and *Actinomyces oris* initiates the formation of oral biofilm or dental plaque in humans.

In this study, scientists have successfully produced a large size recombinant form of PitA protein (~100 kDa) from *S. oralis*. Furthermore, the recombinant protein has been crystallized to obtain its three-dimensional structure. Such structural details help us in understanding the nature of interaction between pathogenic bacteria and host cells during dental plaque formation.

Scientists acclaimed that such structural knowledge can provide a foundation for designing and development of drugs and strategies to prevent dental caries formation and other such infections.