Indian Institute of Technology Delhi  
School of Interdisciplinary Research (SiRe)

PhD Project

Project Details

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<th>Role</th>
<th>Faculty</th>
<th>Academic Unit in IITD</th>
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Project Title

INVESTIGATION OF ANTIBIOFILM AND ANTIMICROBIAL PROPERTIES OF SERRATIOPEPTIDASE DERIVED PEPTIDOMIMETICS AGAINST

Project Summary

Serratiopeptidase, a 50kDa protein, present in Serratia marcescens, a Gram-negative nosocomial pathogen. The recombinant serratiopeptidase gene has been cloned and the protein got overexpressed in E.coli system. It has been demonstrated that the recombinant serratiopeptidase exhibits antibiofilm activity. The truncated form of the protein, the c-terminal as well as the N-terminal part also exhibits antibiofilm activity. The project will involve exploration of the antibiofilm activity of peptides generated from serratiopeptidase molecule. Hence, in the present project the researcher would check the antibiofilm activity for the serratiopeptidase derived peptides, and to demonstrate their mode of action towards antibiofilm activity. The broader goal is to develop peptidomimetics for antibiofilm function as well as anti-microbial activity against antibiotic resistant and multi drug resistant bacteria.

PhD Supervisors

Project requirements (Student qualifications, experience required, etc)

- MSc first class in Microbiology, Biochemistry, Life Sciences
- Experience in cloning and recombinant protein preparation, Purification and characterization of recombinant proteins, familiar with molecular biology & Biochemistry techniques.

Source of funding (IRD/FITT Project details, if any)

IRD project (MI02323) 05-02-2021 to 04-02-2024
Professor Tapan K. Chaudhuri, KSBS, IIT Delhi will be responsible for supervising the student towards preparation of recombinant serratiopeptidase protein, peptides, peptidomimetics. He will also guide the student on the mechanistic studies of the action of peptides and peptidomimetics in the antibiofilm activities.

Professor Arti Kapil at the Department of Microbiology, AIIMS, New Delhi, will supervise the student towards development of various biofilm models from different types of bacterial systems and characterization of biofilms etc. She will also supervise the student to check antibiofilm and antimicrobial activities of various peptides and peptidomimetics.