OFV-14

Prodigiosin from *Serratia nematodiphila*: Optimization of Production and *In Vitro* Evaluation of Its Antimicrobial, Anticancer, Antioxidant, and Anti-inflammatory Potential

Dhanya KC[1*], Shahina M H[2], Nandana Nath PG[2], Thasneem AS[1]

[1]Department of Microbiology, St. Mary's College (Autonomous), Kerala, India.
[2]Department of Microbiology, Sree Narayana Guru Institute of Science & Technology, Kerala, India.

The present work explores the production and therapeutic applications of prodigiosin, a vibrant red tripyrrole pigment, from a novel strain of Serratia isolated from dry coconut and identified to be *Serratia nematodiphila* through 16S rRNA sequencing. The study optimized prodigiosin production using statistical experimental designs, such as Response Surface Methodology. The purified prodigiosin was extensively evaluated for its antimicrobial, antibiofilm, and anticancer activity. Antimicrobial efficacy was assessed against a range of bacterial and fungal species. Antibiofilm activity was quantified via the crystal violet microdilution assay against *Pseudomonas aeruginosa* and *Staphylococcus epidermidis*. Anticancer activity was investigated *in vitro* against murine cancer cell lines, Dalton's Lymphoma Ascites (DLA) cells and Ehrlich Ascites Carcinoma (EAC) cells using trypan blue dye exclusion method. The findings demonstrated significant antimicrobial, antibiofilm, and anticancer activity which highlights prodigiosin's promise as a valuable natural compound with potent therapeutic properties, paving the way for its broader application in medicine and biotechnology.

Keywords: Antimicrobial, Antibiofilm, Anticancer, Prodigiosin, *Serratia nematodiphila*

[*]**Correspondence:** Dhanya K C
dhanya.kc@smctsr.ac.in