

## Production, purification and characterization of prodigiosin from *Serratia rubidaea* and evaluation of its antibacterial and antiproliferative potential

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A Gram-negative, red-pigment producing bacterial strain was isolated from an agricultural farm in Mandya district, India. It was identified as *Serratia rubidaea* on the account of phenotypic and genotypic (16s rRNA sequencing) characterization. The production of pigment was screened on different synthetic and agrowaste based media. The maximum pigment production (~40g/L) was obtained in peanut oil cake based medium. This pigment was extracted and purified by phase separation and column chromatography. The purified pigment was analyzed by liquid chromatography - mass spectrophotometry and showed a single peak with the expected molecular weight of 324 Da corresponding to prodigiosin. The structure of prodigiosin was further confirmed by <sup>1</sup>H-NMR spectroscopy. The effect of prodigiosin on the viability of acrylamide induced mouse leukemic monocyte macrophage cells was studied. On treatment of these cells with prodigiosin, cell apoptosis and thereby a constant decrease in the further progression of cancer was achieved. Morphological analysis of prodigiosin-treated cells by confocal microscopy revealed that prodigiosin induces shrinkage and detachment of cells from the cell culture substrate. The purified metabolite also showed antimicrobial activity against several pathogenic bacterial species markedly against *Vibrio cholerae*, *Yersinia enterocolitica* and *Escherichia coli*. Prodigiosines have recently received attention for their antibacterial and anticancerous abilities, and these results confirm its use as a potential chemotherapeutic and antibacterial drug.

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