

THE ULTRAVIOLET PROTECTIVE AND ANTIBACTERIAL PROPERTIES OF A PIGMENT ISOLATED FROM A MARINE BACTERIAL STRAIN FROM THE WEST COAST OF SRI LANKA

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Marine microorganisms are a potential source of secondary metabolites that include biopigments produced in response to harsh environmental conditions as a defence mechanism. The current study aimed to extract, isolate and characterise marine biopigments in addition to assessing their potential Ultraviolet (UV) protective and antimicrobial properties. Pigment producing bacterial strains were isolated from marine samples obtained from various Western coastal regions of Sri Lanka by following standard microbial isolation protocols. The isolates were grown on Marine Nutrient Agar and the most prominent pigmented bacterial strain isolated from Negombo was chosen for extraction and characterization. The strain was characterised via standard morphological and biochemical testing for tentative identification. The pigment was extracted via ultrasonication and characterised by Thin Layer Chromatography using methanol as a solvent. The Ultraviolet protective and antimicrobial properties were determined through Sun Protection factor (SPF) assay and Kirby-Bauer Well-Diffusion method respectively. The findings indicate that the isolate protection was a yellow pigmented bacterial strain tentatively identified to be belonging to the *Micrococcus* genus. The extracted pigment was speculated to be a member of the carotenoid group of pigments. Using the Mansur method, the pigment was found to have a Sun Protection factor of 24.80 which falls within the range of commercially available sunscreens. Moreover, the pigment exhibited antibacterial activity against Gram positive bacteria: *Staphylococcus aureus*, Zone of Inhibition (ZOI) =15 mm, *Bacillus cereus*, ZOI =25 mm and Gram-negative bacteria *Escherichia coli*, ZOI=18 mm while antifungal activity was also evident against *Candida albicans* (ZOI=21 mm) These findings suggest that the pigment ventures promising applications in sunscreen formulations as well as a potential adjunct in antimicrobial therapy. Further characterization of pigment could determine its organic nature and better its understanding for application in both the cosmetic and medical industry.

Keywords: *marine bacteria, Micrococcus sp., antibacterial, antifungal, ultraviolet, marine pigments*