

(54) Title of the invention : EXTRACTION OF PIGMENT FROM MARINE MYCOBIAL ENDOPHYTES FOR THERAPEUTIC AND PERSONAL CARE APPLICATIONS AND METHODS THEREOF

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(57) Abstract :
 The present invention relates to a yellow-brown extracellular pigment derived from the marine fungal endophyte *Alternaria alternata*, isolated from the red macroalga *Gracilaria parvispora*. The invention provides a method for extracting the pigment by culturing the fungus in Potato Dextrose Broth for 21 days and using a solvent system of Ethyl acetate: Methanol (5.3: 4.7) for efficient extraction. The pigment exhibits high solubility in water and organic solvents, with robust stability across a wide range of pH and temperature conditions. The pigment demonstrates bioactive properties, including antimicrobial activity against human and fungal pathogens (*Bacillus cereus* and *Rhizoctonia solani*), antioxidant activity and anticancer activity against AGS gastric cancer cell lines. The invention also describes the pigment's incorporation into glycerine soap formulations, where it serves as a natural, nontoxic coloring agent and retains its bioactive properties. Soaps containing the pigment exhibit improved foam stability, moisture retention, and skin-safe pH balance, particularly at 5% pigment concentration. The extracted pigment is eco-friendly, nontoxic pigment provides a sustainable alternative to synthetic dyes and offers therapeutic benefits, making it suitable for cosmetic, personal care, and therapeutic applications.

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