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(57) Abstract :
 ABSTRACT SUSTAINABLE BIODEGRADABLE BIOPOLYMER SYNTHESIS FROM HALOALKALIPHILIC MICROBIAL PHB, SOY PROTEIN, GLYCEROL, AND AGAR-AGAR AS BINDER The present invention relates to a method for synthesizing a sustainable biodegradable biopolymer is disclosed, utilizing polyhydroxybutyrate (PHB) from Halomonas salifodinae (accession no. PP994679), combined with 0.5 g soy protein isolate, 1.2% glycerol, and 1.6 g agar-agar in 100 ml distilled water (pH 10±0.5). The process involves PHB extraction, solution preparation, mixing, heating, casting, and drying to produce a film with enhanced tensile strength, acid resistance, and biodegradability (75% in garbage soil after 50 days). Characterizations include Mid-FTIR (1460–1377 cm⁻¹, 1076.50 cm⁻¹), TGA (melting point 134.9°C), and DSC (melting enthalpy 61.8 mJ/mg), confirming suitability for packaging, biomedical, and agricultural applications.

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