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EFFICIENCY OF SUPERCRITICAL CO, IN EXTRACTION OF PHA **FROM SECOND-GENERATION WASTE BIOMASS**

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INTRODUCTION

Polyhydroxyalkanoates (PHA) are biodegradable biopolymers, a valuable alternative to fossil-based polyesters. Industrially, they are produced from pure microbial cultures using enzymatically derived sugars. A more sustainable option is the use of waste biomass and mixed microbial cultures. Common fermentation processes for obtaining PHA are submerged fermentation (SMF) and solid-state fermentation (SSF). Key steps are extraction and purification, which include solubilizing intracellular PHA, separating biomass, and isolating it from the solvent. The most common methods are solvent extraction, flotation, digestion, two-phase aqueous extraction, and supercritical fluid extraction. In this study, PHA extraction from waste biomass (potato starch and chickpeas waste), was carried out using innovative technique – supercritical CO_2 extraction.



Supercritical CO₂ extraction show to be very selective method for PHA. Achieved yield of total extract from this extraction parameters was 2.49 % m/m. The total extract is subjected to purification by physico-chemical procedures in order to extract pure PHA.



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