(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :06/10/2025
(21) Application No.202511095651 A
(43) Publication Date : 05/12/2025

(54) Title of the invention : A PLANT-BASED BIOPLASTIC PRODUCTION PROCESS USING ENZYME CATALYSIS

(51) International classification	:C12P0007625000, C12N0011140000, C02F0101320000, C12N0011040000, C12P0007649000
(31) Priority Document No	:NA
(32) Priority Date	:NA
(33) Name of priority country	:NA
(86) International Application No Filing Date	: :01/01/1900
(87) International Publication No	: NA
(61) Patent of Addition to Application Number Filing Date	:NA :NA
(62) Divisional to Application Number Filing Date	:NA :NA

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(57) Abstract :
The invention relates to a plant-based bioplastic production process using enzyme catalysis. The process includes raw material pretreatment (1), enzymatic reactor (2) with enzymes (3), controlled pH (4) and temperature (5), polymerization (6), immobilization module (7), purification (8), and extrusion (9). The method produces biodegradable bioplastics with mechanical properties comparable to petroleum plastics, ensuring sustainability, efficiency, and cost reduction. Enzyme immobilization enables multiple reuse cycles, making the process scalable and commercially viable. The invention addresses environmental challenges by offering eco-friendly alternatives to petroleum-derived plastics.

No. of Pages : 15 No. of Claims : 6