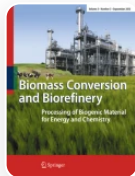


Optimization and characterization of pectin recovered from *Persea americana* peel using statistical and non-statistical techniques

Original Article Published: 25 July 2021



Volume 13, pages 6501–6514, (2023) Cite this article



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Abstract

The intention of this present study is to optimize the recovery of pectin from *Persea americana* peel (PAP) examining four independent process variables (pH, solvent to substrate ratio (SSR) (ml/g), agitation time (AGT) (h), and agitation speed (AGS) (rpm)) and compare the pectin recovery (PR) using statistical (Box-Behnken response surface design (BBRESD)) and non-statistical (artificial neural network (ANN) with genetic algorithm (GA)) methods. Optimal condition derived in ANN-GA (pH of 1.9, SSR of 16 ml/g, AGT of 2.1 h, AGS of 99 rpm, and PR of 90.59%) has forecast PR very precisely than BBRESD (pH of 2, SSR of 14 ml/g, AGT of 2 h, AGS of 100 rpm, and PR of 85.44%). Extrapolative capacities of two methods were examined by several statistical restraints. Structural analysis (FT-IR and XRD) of PR was exhibited that highly esterified and amorphous nature of pectin was recovered from PAP. Recovered pectin was melted