

Extraction of Valuable Compounds from the Kernel of Mango: A Biorefinery Approach [†]

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Abstract: The combined effect of various parameters (pH, solid-liquid ratio, time, temperature, and speed (rpm)) were examined on starch content, total phenolic compounds, and antioxidant activity of Kesar variety seed kernel. Box-Behnken design as a tool was used to develop, validate and optimize statistical models to establish the impact of the various parameters in alone or in combination. Isolation of starch from Kesar mango kernel by employing the ethanol precipitation method is reported first. The decrease in pH increases starch extraction while other responses such as TPC and antioxidant activity did not show significant variation in yield. The yield of the total phenolic compound increases with an increase of solid, liquid ratio. The extracted starch was characterized using X-ray diffraction, energy-dispersive X-ray scanning electron microscopy, Fourier transform infrared (FTIR) spectroscopy, and thermogravimetric analysis.

Waste material can be successfully utilized and beneficial for environmental sustainability and economic profit.

Keywords: Kesar mango seed; starch; Box-Behnken design; X-ray diffraction.

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Conflicts of Interest

The authors declare no conflict of interest.