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Passionfruit (*Passiflora edulis* Sims. f. *flavicarpa* O.Deg.) rind powder: Potential substrate for food and pharmaceutical applications

Sreeja Parvathy* and Bindu R. Nair

Department of Botany, University of Kerala, Thiruvananthapuram 695581, Kerala, India

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Agro-waste valorisation offers a sustainable pathway for resource recovery, with numerous applications across diverse industrial sectors. This study explores the biochemical and structural characteristics of *Passiflora edulis* f. *flavicarpa* (yellow passionfruit) rind to assess its potential as a value-added substrate. The rind was subjected to comprehensive characterisation, including mineral profiling by Inductively Coupled Plasma Mass Spectrometry (ICP-MS), structural evaluation by Scanning Electron Microscopy (SEM), Fourier Transform Infrared Spectroscopy (FTIR), and Thermogravimetric Analysis (TGA). Physicochemical, nutritional, and antinutritional analyses were also performed. The structural properties of the rind powder align with previous reports and display favourable characteristics. TGA indicates that the material maintains chemical stability up to 800°C. The rind was rich in starch, carbohydrates, and essential minerals such as potassium, while the levels of antinutritional factors were considered safe and acceptable. These findings underscore the potential of *Passiflora edulis* f. *flavicarpa* (yellow passionfruit) rind for utilisation in various industrial applications.

Keywords: Agro-waste, Characterisation, *Passiflora edulis* f. *flavicarpa*, Passionfruit, Rind, Valorisation

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