PROCEEDINGS
– OF RESEARCH AND PRACTICE IN ALLIED AND ENVIRONMENTAL HEALTH –

Green pharmacy: exploitation of yellow kiwi flavonoids through optimization strategies

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Framework: The world population has tripled since the mid-20th century, raising concerns about food waste production, economic costs, and the environmental impact of agrifood systems [1]. The circular economy promotes sustainability by minimizing waste and optimizing resources to reduce negative environmental effects [2]. Kiwi industry waste (including leaves, roots, stems, skins, and seeds) contains bioactive compounds with antioxidant properties [3]. Extraction techniques isolate these compounds, but factors like raw material nature, solvent polarity, pH, time, and temperature affect the yield depending on the selected technique [4]. Optimization aims to enhance system performance for maximum efficiency [5]. **Objectives and methodology:** This study's goal was to use heat-assisted extraction (HAE) technology to maximize the flavonoid extraction from the peel of *Actinidia chinensis*, also known as yellow kiwi. Response surface modeling, which considered three factors—ethanol concentration (0–100%), extraction duration (5 – 60 minutes), and temperature (30 to 90 ºC) was used to accomplish this optimization. **Results:** It was discovered that the main flavonoid in the peel of *A. chinensis* was epigallocatechin (16.01 mg/g E), a substance with anti-inflammatory and anticancer effects [6,7]. The ideal extraction parameters were 50 ºC, 5 min, and 100% ethanol as the solvent. Nevertheless, a prolonged extraction period of 35–60 min also made it possible to accurately quantify other flavonoids, such as dihydroisorhamnetin (6.80 mg/g E) and rhiofolin (10.39 mg/g E). **Conclusions:** Finally, flavonoids in yellow kiwifruit residues show commercial and nutraceutical potential. Optimal extraction conditions allow their easy production and incorporation into supplements, functional foods, and value-added products. Further studies on scalability and biological activity could enhance commercial viability.

Keywords: *Actinidia chinensis*, kiwi, heat-assisted extraction, response surface methodology, bioactive compounds, flavonoids.

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