

Subcritical Water Extraction of *Actinidia arguta* leaves: radical scavenging capacity and cell effects

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Abstract

Kiwiberry is a nutritive fruit produced by *Actinidia arguta* vine (Pinto, Delerue-Matos & Rodrigues, 2020). During its production and harvesting, different by-products, such as leaves, are generated (Pinto et al., 2020). These by-products are enriched in bioactive compounds, enabling its recovery and reuse (Pinto et al., 2020). The objective of this study was to evaluate the antioxidant, radical scavenging, and cell viability effects of *A. arguta* leaves extracts at different temperatures (110-160°C), applying subcritical water extraction (SWE), a sustainable extractive methodology. The total phenolic content (TPC), total flavonoid content (TFC) and antiradical activity (DPPH and ABTS assays) were evaluated as well as the scavenging activity against superoxide (O₂^{•-}), hypochlorous acid (HOCl) and peroxy radical (ROO[•]). Also, cell viability assays on HT29-MTX and Caco-2 cell lines were performed. The extract obtained at 123°C achieved the best results in all assays (TPC = 109.72 mg GAE/g dw; TFC = 53.11 mg CE/g dw; DPPH = 497.13 µg/mL; O₂^{•-} = 335.23 µg/mL; HOCl = 17.06 µg/mL; S_{sample}/S_{Trolox} = 0.15), except in ABTS assay. TPC, TFC and HOCl values were better than those obtained by different authors employing other extractive methods (Ravipati et al., 2012; Marangi et al., 2018; Almeida et al., 2018). The cell viability assays allow to observe that the viability was not affected by the extracts at the highest tested concentration (1000 µg/mL) for HT29-MTX cells. Relatively to Caco-2 cells, the extract at 160°C displayed viabilities of 80.93%, at concentrations of 10 µg/mL. Therefore, temperature probably influences the content of the extracted bioactive compounds, leading to the obtained results. These results highlight the potentialities of *A. arguta* leaves for pharmaceutical, food or cosmetic applications.

Author Keywords: Kiwiberry; by-products; bioactive compounds; subcritical water extraction; valorization.

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