



XV

MADEIRA

ENCONTRO DE QUÍMICA DOS ALIMENTOS

5-8 DE SETEMBRO DE 2021



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PC-B04: Phenolic and bioactive profile of *Impatiens* genus flowers in the search for a promising natural colourant with applicability in the food industry

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Flowers of the genus *Impatiens* are widely used for ornamental purposes in landscaping and decorative projects. Despite being edible matrices, their use in food applications is not yet a common practice¹. The attractive colours of their petals are characteristic of these flowers, which have attracted significant interest from the food industry due to their colouring properties². The association of adverse effects with inappropriate and excessive consumption of some artificial additives tends to affect the choices of consumers, which frequently demand for healthier and more natural products³. Thus, the scientific community has been striving to search for vegetable colourant matrices, promoting more attractive colours, auspicious in terms of yield, stability, cost, and safety^{4,5}.

In this sense, this work aimed to assess the phenolic profile and bioactive properties of the hydroethanolic extract (80:20, v/v) obtained from the petals of two different species of the genus *Impatiens* (**Figure 1**). Firstly, the flowers were botanically identified as belonging to the species *Impatiens balsamina* L. and *Impatiens walleriana* Hook.f. Then, the individual phenolic profile was determined by high-performance liquid chromatography coupled with a diode array detector and mass spectrometry (HPLC-DAD-ESI/MS). The antioxidant potential was analysed through the oxidative haemolysis inhibition assay (OxHLIA); the antiproliferative capacity was tested in four human tumour cell lines (Hela, cervical carcinoma; HepG2, hepatocarcinoma; MCF-7, breast adenocarcinoma; and NCI-H460, non-small cell lung carcinoma) by the sulforhodamine B method; hepatotoxic potential was determined using a freshly harvested porcine liver cell culture, designated as PLP2; the anti-inflammatory activity using RAW 264.7 macrophage cells; and the antimicrobial activity was determined using the microdilution method in Gram-positive and Gram-negative bacteria, and in fungi.

All studied samples showed significant amounts of phenolic compounds, mainly phenolic acids and flavonoids. The species *I. balsamina* presented a greater variety of compounds, presenting nine non-anthocyanin compounds and twelve anthocyanin derivatives, in comparison with *I. walleriana*, which presented a lower variety of compounds, with four non-anthocyanin compounds and four anthocyanins. Both extracts demonstrated antiproliferative capacity for tumour cell-lines, without toxicity for non-tumour cell lines, and anti-inflammatory capacity. The extracts also revealed remarkable antimicrobial and antioxidant potential.

These results are in line with what was expected, with emphasis on *I. balsamina* as the extract with the most promising bioactive potential, a factor that may be directly related to the diversity of its compounds. In this way, *I. balsamina* and *I. walleriana* meet the expectations of the food market, due to their colouring capacity added to their functional properties, highlighting their notorious antioxidant and antimicrobial activities. It is worth mentioning that the addition of these extracts in food formulations constitute a natural, healthy, and beneficial alternative for consumers.

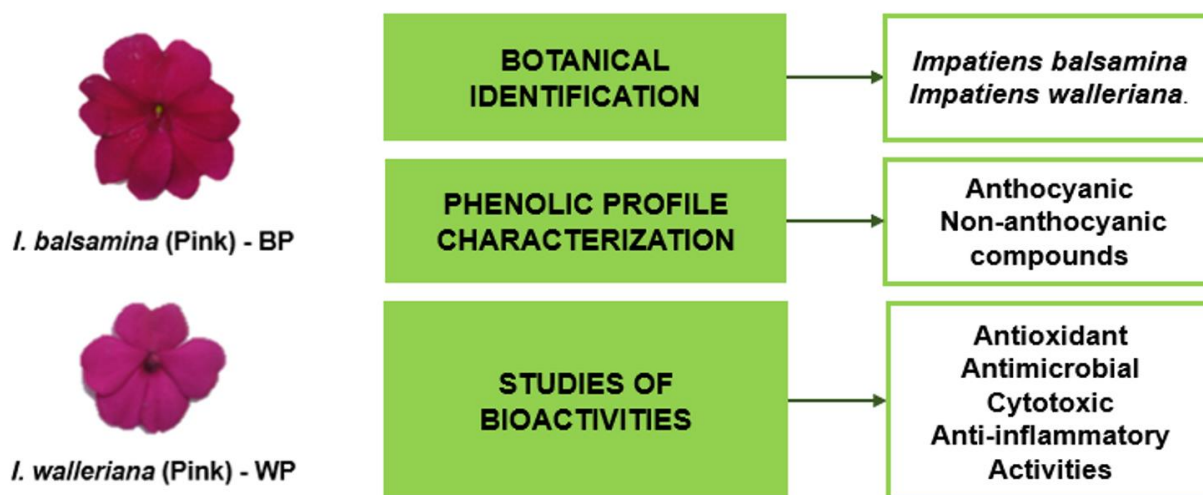


Figure 1: Schematic representation of the research objective.

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