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CHEMICAL CHARACTERIZATION AND BIOACTIVE PROPERTIES OF *IMPATIENS BALSAMINA* L. FLOWERS

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There is a growing interest from the scientific community in studying edible flowers in what concerns their possible application at an industrial level, which may be justified by the presence of several compounds with bioactive properties [1]. The genus *Impatiens* comprises approximately 500 species of perennial herbs, which stand out for their attractive coloring capacity [2]. Given the growing consumers' awareness regarding the safety and beneficial properties of natural additives, the food industry has been motivated to explore natural colorant ingredients, producing healthier foodstuff [3].

In this sense, the present study intends to chemically and nutritionally characterize *Impatiens balsamina* L. flowers, as well as their bioactive properties in order to evaluate their potential application in the food industry. The nutritional profile (ash, protein, fat, and carbohydrate content and energy value) was evaluated using official analysis methods (AOAC). The phenolic compounds were analyzed by HPLC-DAD-ESI/MS in the ethanolic extracts. Furthermore, the ethanolic extracts were also evaluated for their antioxidant potential by the inhibition of oxidative hemolysis (OxHLIA) assay; their cytotoxic capacity in four human tumor cell lines by the sulforhodamine B method; and finally, their anti-inflammatory potential in macrophage rat cells. The flowers presented a high-water content ($94.97 \pm 0.08\%$), as expected, and proteins (0.32 ± 0.01 g/100g fw) stood out as the major macronutrients. Fructose and glucose were the only sugars identified, with a total of 1.34 ± 0.01 g/100g fw, being fructose the most abundant one. Regarding the phenolic composition, 9 non-anthocyanin and 7 anthocyanin compounds were tentatively identified. Kaempferol-*O*-acetylhexoside-hexoside and malvidin-*O*-acetylhexoside-*O*-deoxyhexoside-hexoside were the main non-anthocyanin and anthocyanin compounds found, respectively. Moreover, the ethanolic extract revealed anti-inflammatory activity and cytotoxic capacity for all the tested cell lines.

In conclusion, this study showed satisfactory results regarding the presence of bioactive compounds in the ethanolic extracts of *Impatiens* flowers. Therefore, a more in-depth study of the optimal conditions for the extraction of high added-value coloring compounds would be of great interest to evaluate the real potential of this plant to be used by the food industry.

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