



PHOTOCHEMICAL CHARACTERIZATION OF INCLUSION COMPLEXES WITH HYDROALCOHOLIC EXTRACT OF AÇAÍ SEEDS

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ABSTRACT

Introduction: Açaí, the fruit of *Euterpe oleracea*, is highly recognized for its nutritional and pharmacological properties, particularly due to the anthocyanins found in its pulp. However, the seeds, which make up the bulk of the fruit, are often discarded, contributing to significant environmental issues such as waste accumulation and contamination of water bodies. Recent research has explored the utilization of seeds to promote industrialization, highlighting a promising composition in terms of polyphenol content, although there is a lack of information regarding their potential. Their integration into inclusion complexes emerges as an alternative aimed at increasing the stability of these compounds, as well as improving their solubility and bioavailability. **Objective:** Based on the above, the present study aims to promote the phytochemical characterization of inclusion complexes (IC) with hydroalcoholic extract from açaí seeds (EHSA). **Methodology:** Açaí seeds collected in the state of Maranhão were initially dried and ground using a knife mill to obtain a powder. Subsequently, the hydroalcoholic extract was obtained through maceration with 60% ethanol and concentrated via rotary evaporation. The extract was incorporated into β -cyclodextrin (β -CD) inclusion complexes through malaxation in the proportions of 1:1, 1:2, and 2:1. The formulations underwent assays for total flavonoid content, antioxidant activity evaluation using the 2,2-diphenyl-1-picrylhydrazyl (DPPH) method, total phenol content, and quantification of monomeric catechins by UV-Vis, specifically catechin, epicatechin, and epigallocatechin. **Results and Discussion:** From the evaluation of the results, it was evident that among the formulations of IC with β -CD, the CI 1:2 showed the highest flavonoid content, which was 0.21%. Regarding antioxidant activity, it was possible to identify that CI 1:2 exhibited a more significant potential for DPPH radical scavenging compared to the other study groups, with an associated inhibitory concentration (IC 50%) of 10.97 μ g/mL. For phenol content, values were found to be well below those in the literature, with CI 1:2 accounting for the highest percentage at 7.73%. In comparison to the data identified for the hydroalcoholic extract, CI 1:2 showed similar values for the composition of epigallocatechin, indicating greater preservation even after its association with an encapsulating agent (β -CD). It is worth noting that, in plant species, phytochemical levels are directly related to the time of year when the samples are obtained, as well as soil and climate conditions, justifying the reduction identified in the analyses. **Conclusion:** The antioxidant capacity of the seed is one of its most promising aspects. When incorporated into IC with β -CD, the extract from açaí seeds preserved the properties of its bioactive compounds. Thus, utilizing the açaí seed extract in controlled release systems can open new perspectives for the development of nutraceutical and pharmaceutical products, promoting additional benefits to human health.