BIO-SUSTENTABILIDADE E BIO-SEGURANÇA ALIMENTAR, INOVAÇÃO E QUALIDADE ALIMENTAR

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"Pingo de Mel" fig as a rich source of phytochemicals with antioxidant and antimicrobial properties

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Green fig ("Pingo de Mel") is the most appreciated and produced fig variety in Portugal. These fruits are substantial sources of trace minerals (above all calcium, but also iron and potassium) and vitamins (mostly thiamin and riboflavin), also presenting a high number of essential amino acids and great contents of fibers and antioxidant phytochemicals (especially phenolic acids, flavonoids and carotenoids).[1,2] For this reason, the present work aimed to contribute to its valorisation through the study of its chemical composition and bioactive properties. A full characterisation of two parts of this fruit (peel and pulp) was carried out regarding their nutritional value (AOAC procedures), free sugars (HPLC-RI), organic acids (UFLC-PDA), tocopherols (HPLC-fluorescence), fatty acids (GC-FID), and phenolic (HPLC-DAD/ESI-MS) composition; as well as their bioactive properties (antioxidant and antibacterial). The peel revealed a higher energetic contribution than the pulp, with both samples presenting similar concentrations of protein. Four free sugars, five organic acids, the four isoforms of tocopherols, and twenty-three fatty acids were detected in the samples. Fifteen different phenolic compounds were found in the peel, while twelve were found in the pulp. Quercetin-3-*O*-rutinoside (rutin) was the main constituent of the peel, representing 33.8% of its phenolic content, followed by 5-*O*-cafeoilquinic acid and vanillic acid di-deoxyhexoside malonyl. Derivatives of caffeic acid, such as hexosides, were the main components of the pulp, followed by derivatives of vanillic acid and 5-*O*-cafeoilquinic acid. Both extracts showed promising antioxidant capacity; however, the peel showed significantly lower IC_{50} values than the pulp. The extracts showed almost identical antibacterial capacity and were more effective against *Staphylococcus aureus*, *Escherichia coli*, and *Morganella morganii*. These results showed the nutritional and bioactive potential of "Pingo de Mel" peel and pulp, with the peel revealing higher energetic value, phenolic compounds concentrations, and bioactive properties.

Figure 1: "Pingo de Mel" fig samples.

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