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AUTOR:

Sílvia M. Rocha

CO-AUTOR(ES):

Alexandre Fonseca

Cátia Martins

Manuel António Coimbra

Maria Eugénia Queiroz

Samuel Patinha

Sónia Ribeiro

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P52 Genetic information influence on phenolic composition and bioactivities of *Ceratonia siliqua* L. seeds

Marcelino S,[1,2,3] Mandim F,[1,2] Oludemi T, [1,2,3] Dias MI,[1,2] Barracosa P,[4] Prieto MA,[3] Barros L[1,2]

[1]*Centro de Investigação de Montanha (CIMO), Instituto Politécnico de Bragança, Campus de Santa Apolónia, 5300-253 Bragança, Portugal*
[2] *Laboratório Associado para a Sustentabilidade e Tecnologia em Regiões de Montanha (SusTEC), Instituto Politécnico de Bragança, Campus de Santa Apolónia, 5300-253 Bragança, Portugal*
[3]*Univeridade de Vigo, Nutrition and Bromatology Group, Department of Analytical Chemistry and Food Science, Faculty of Science, E-32004 Ourense, Spain*
[4] *CERNAS, Centro de Investigação do Instituto Politécnico de Viseu (ESAV), Quinta da Lagoa, 3500-606 Viseu, Portugal*

Email: sandramarcelino@ipb.pt

Ceratonia siliqua L., commonly known as the carob tree is native to the Mediterranean countries and is widely known and consumed. Due to its chemical constituents, flavoring properties, and nutritional benefits, it has the potential to be of significant importance to the food industry[1]. The carob bean is made up of 90% pulp and 10% seeds. Those seeds are widely used in the food industry as a thickening agent (E-410). However, knowledge about phenolic composition and its relation to biological properties is scarce. This study used seeds of thirteen carob varieties harvested in Algarve, Portugal. The phenolic composition of the hydroethanolic extracts was analyzed by HPLC-DAD-ESI/MS. The antioxidant, anti-inflammatory, cytotoxic and antibacterial properties of the extracts were also analysed. The phenolic composition was analyzed by HPLC-DAD-ESI/MS. Cytotoxic activity was evaluated by the colourimetric method of sulforhodamine B. Anti-inflammatory activity was determined by inhibition of NO production in murine macrophages. The antibacterial activity was evaluated through the method of successive microdilutions and the antioxidant activity through the TBARS and CAA assays. Seventeen phenolics compounds were tentatively identified, being (Epi)catechin dimer type β dimer and apigenin-*O*-hexosyl-pentoside the most abundant ones (3.08 – 11.67 mg/mL). All the varieties studied exhibited the capacity to inhibit TBARS formation. The extract obtained from the *Gasparinha* variety was the only one that inhibited the reactive oxygen species formation in the CAA assay. For the cytotoxic activity only *Cavi*, *Cardeira* and *Pé Comprido* varieties demonstrated the ability to inhibit the proliferation of the tumor cell lines tested, without showing a hepatotoxic effect. All extracts presented a broad-spectrum microbial growth inhibition without an efficient bactericidal power. These findings highlight Carob seed as a rich source of structurally diverse biomolecules with potential application as additives in food formulation development. However, further studies are needed to understand the correlation between phenolic compounds and the bioactive properties associated with carob seed tissues.

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