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# Phenolic characterization and biological potential of P*terospartum tridentatum* phenolic-rich extracts

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## Abstract

For a long time, fruits, vegetables and natural plants have been a target of many studies and their consumption has been increasingly encouraged owing to their nutritional value and abundance of nutritional and bioactive compounds, known for their protective effects. Among plants, and although *Pterospartum tridentatum*, an endemic plant from the northwest of the Iberian Peninsula and Morocco, is largely used in culinary, their phytochemical profile and therapeutic effects remain little known. Therefore, we decided to determine the phenolic composition of infusions and hydroethanolic extracts of P. tridentatum by high-performance liquid chromatography method coupled to a diode array detector analysis. Furthermore, we also evaluated their biological potential, namely antioxidative and antiproliferative effects, and capacity to inhibit α-glucosidase activity. In total, 13 phenolics were found; genistein was the major one, comprising 36.8 and 20.2% of total phenolics in infusion and hydroethanolic extracts, respectively. Regarding the biological potential, the hydroethanolic extract was the most active against 2,2-diphenyl-1-picrylhydrazyl• and in inhibiting α-glucosidase activity. On the other hand, the infusion proved to be a remarkable free radical scavenger against superoxide and nitric oxide free radical species, and in protecting human erythrocytes facing peroxyl radicals. Both extracts also showed cytotoxic selectivity for human epithelial colorectal adenocarcinoma (Caco-2) cells when compared to the NHDF normal cell line, inhibiting its growth in a dose-dependent manner. Furthermore, they also showed protective effects against oxidative stress induced by tert-butyl hydroperoxide on these cancer cells. Overall, the obtained data suggest that these extracts may be interesting to enrich nutraceutical, dietary and food supplements, and pharmaceutical drugs; however, more studies are needed to unravel ensure safe dosage of both extracts and to incite their use in new formulations, functional foods, pharmaceutic

#### Image



Figure 1. Phenolic profile and biological potential, including the antioxidative effects, of Pterospartum tridentatum hydroethanolic and infusion extracts.

## Biography

Ana Carolina Almeida Gonçalves was conferred a BSc degree in Biomedical Sciences in 2014 at University of Beira Interior (UBI), in Covilhã, and an MSc degree in Biomedical Sciences at the same University. Currently, she is attending a PhD degree in Biomedicine at UBI. Additionally, she is a teaching assistant in Health Sciences Research Centre (CICS) at UBI. She authored 15 publications in journals indexed at Journal Citation Reports from ISI Web of Knowledge, 3 book chapters of three books from international editors, and present already several oral communications and posters in national and international meetings. Her research interests concern biological screening of natural products, phenolic compounds, HPLC, in Vivo and in Vitro studies, pharmacodynamics, pharmacokinetics, interactions between drugs and natural/ food supplements, antioxidant and antimicrobial capacities and establishment of composition/ bioactivity relationships and ailments, like cancer, neurological and cardiovascular pathologies, and anti-inflammatory diseases, and other oxidative stress-related disorders.

## **Publications**

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