

**TITLE:** CHEMICAL CHARACTERIZATION AND ANTIBIOTIC EFFECT OF THE METHANOLIC EXTRACT FROM LEAVES OF *Helichrysum devium* JOHNS. (ASTERACEAE BERCHT. & J. PRESL)

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**ABSTRACT:**

*Helichrysum devium* Johns. (Asteraceae Bercht. & J. Presl) is an endemic species of the Madeira Archipelago (Portugal) traditionally used in the treatment of respiratory diseases, such as bronchitis and pharyngitis, and for cough relief. The pharmacological properties of this plant species appears to be associated with the presence of phloroglucinols, hydroxycinnamic acids, flavonoids and terpenoids. In this context, the present study aimed to characterize chemically and to evaluate the antibiotic potential of the methanolic extract from leaves of *H. devium* (ME-Hd). The chemical characterization was carried out by High Performance Liquid Chromatography with Diode Array Detection (HPLC-DAD) and Electrospray Ionization coupled to Mass Spectrometry (ESI-MS<sup>n</sup>), in the negative mode. The antibiotic potential was determined by the Minimum Inhibitory Concentration (MIC) using the broth microdilution method according to Clinical and Laboratory Standards Institute guidelines, and the Minimum Bactericidal Concentration (MBC) followed by the classification of the antibiotic effect using Andrews' method. The ATCC<sup>®</sup> reference strains of *Staphylococcus aureus* subsp. *aureus* (ATCC<sup>®</sup> 6538<sup>™</sup>, ATCC<sup>®</sup> 25923<sup>™</sup> and ATCC<sup>®</sup> 29213<sup>™</sup>) were tested. Among the phytochemical constituents found in the extract investigated, the phenolic compounds deserve mention, emphasizing the derivatives of quinic, caffeic and protocatechuic acids, and O-glycosylated flavonoids. There are several biological properties associated with this class of compounds, including antibacterial activity. From the microbiological point of view, ME-Hd was active against *S. aureus* (ATCC<sup>®</sup> 6538<sup>™</sup>), *S. aureus* (ATCC<sup>®</sup> 25923<sup>™</sup>) and *S. aureus* (ATCC<sup>®</sup> 29213<sup>™</sup>), with MIC values of 2500, 5000 and 5000 µg/mL, respectively. This activity may be related to the presence of phenolic compounds or other phytochemicals constituents, mainly phloroglucinols. The present results suggest that *H. devium* is a source of bioactive compounds with antibiotic effect against *Staphylococcus aureus*, corroborating this traditionally use in the treatment of mainly respiratory diseases.

**Keywords:** *Helichrysum devium*; Phenolic compounds; *Staphylococcus aureus*; Antibiotic effect.

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