

PHYTOCHEMICAL PROFILE AND BIOACTIVE POTENTIAL OF *ROSMARINUS OFFICINALIS* EXTRACT

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Since ancient times, plants have been valued as food and medicine due to their richness in bioactive compounds. Among them, Lamiaceae species stand out for their culinary and therapeutic uses, mainly attributed to phenolic compounds with antioxidant and anti-inflammatory properties. In view of the increasing global demand for natural bioactive ingredients, this study aimed to characterize the phytochemical composition and biological potential of *Rosmarinus officinalis* extract. Aerial parts of the plant were collected in Juiz de Fora (Minas Gerais) and extracted by static maceration with hydroalcoholic solvent (1:1). Phytochemical profiling by UFLC-QTOF-MS (Lemos *et al.*, 2020) and HPLC-DAD revealed a diverse composition, including phenolic acids, flavonoids, and diterpenes. Key compounds identified were rosmarinic acid, chlorogenic acid, hispidulin-7-glucoside, luteolin, pectolinaringenin, genkwanin, carnosol, and rosmadial. Chromatographic analysis also confirmed additional flavonoids, such as rutin, epicatechin, quercetin, isoquercitrin, and myricetin, contributing to the extract's chemical complexity. The coexistence of hydrophilic and lipophilic metabolites suggests potential synergistic interactions, in which phenolic compounds and diterpenes may act complementarily in modulating oxidative and inflammatory pathways (Francolino *et al.*, 2023). Rosmarinic acid, the predominant phenolic, is widely recognized for its strong antioxidant capacity through radical scavenging and metal chelation. Meanwhile, carnosol, an abietane diterpene, has been described as an anti-inflammatory agent and a regulator of cell signaling processes (Pais *et al.*, 2024). The presence of these multifunctional metabolites highlights the ability of the extract to act on multiple biological targets, reinforcing its potential as a source of functional ingredients. The phytochemical profile observed confirms *R. officinalis* as a promising candidate for nutraceutical and functional food applications, particularly in the management of metabolic disorders linked to chronic oxidative stress. These results support the relevance of exploiting this species not only in food formulations but also as a basis for developing dietary supplements and future active pharmaceutical ingredients. Further studies addressing safety, bioaccessibility, and in vitro bioactivities are essential to validate its translational potential and ensure its applicability in the health and wellness market.

Keywords: *Rosmarinus officinalis*; phenolic compounds; phytochemical profile; antioxidant activity; nutraceuticals

