

Chemical Composition and Antioxidant Activity of Essential Oils, Supercritical CO₂ Extracts and their Solide Residue of Teucrium Polium L. Growing in Algeria

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To contribute to the valorisation of local medicinal plants, we studied the very common plant in traditional medicine, known as Teucrium Polium (Lamiaceae). Extraction of essential oil by hydrodistillation and lipophilic fractions using the supercritical fluid extraction (SFE) from T. polium L., collected in Algeria were performed. The extracts were analyzed by GC-MS. SFE method, showing higher extraction yields (0.86%) than hydrodistillation (0.66%). Quantitative and qualitative analysis showed that essential oils (114 compounds) and SFE-CO₂ (51 compounds) revealed a polymorphism and hence the oils are characterized by a high content of sesquiterpene (germacrene D, 13.8%), also the SFE-CO₂ extract are characterized by sesquiterpene (germacrene D, 7.8%). Marked qualitative and quantitative differences could be used as chemotaxonomic markers. Quantitative analysis showed that plant material before SFE-CO₂ was the most active and possessed TEAC_{DPPH•} (64.32 mg TE/g DWP) and TEAC_{FRAP} (67.75 mg TE/g DWP), as well as it was the strongest followed by plant material after SFE-CO₂ (59.08 mg TE/g DWP) and (56.81 mg TE/g DWP). At the end a very low activity for essential oils (19.14mg TE/g DWP) and (20.21mg TE/g Ex), followed by SFE-CO₂ extracts (0.24mg ET/gEx and 1.55mg ET/g Ex) for TEAC_{DPPH•} and TEAC_{FRAP} respectively.

Keywords: Antioxidant activity, Quencher Approach, GC-MS, Essential oil, SFE-CO₂, Teucrium polium.