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Plantes médicinales, ethnobotanique, Taounate, Apiaceae, Asteraceae, composés bioactifs, antioxydants, huiles essentielles, activité antimicrobienne, agroalimentaire, savoirs traditionnels.

Valorization of certain species from the Apiaceae and Asteraceae families in the Taounate region (Morocco): ethnobotanical study, phytochemical characterization, and evaluation of biological activities

Abstract :

The Taounate region, located in the Moroccan Pre-Rif, stands out for its plant biodiversity and traditional knowledge related to the use of aromatic and medicinal plants, valued for their therapeutic and culinary properties. This knowledge, threatened by potential loss, requires comprehensive documentation and scientific study. This thesis combines ethnobotanical and scientific approaches to valorize these local resources by exploring their biochemical and biological properties. An ethnobotanical survey conducted in six communes of Taounate identified 111 aromatic and medicinal plants belonging to 52 botanical families. Primarily used to treat digestive and respiratory ailments, these plants also hold significant culinary applications. Among them, two families were selected for in-depth studies: Apiaceae, known for their nutritional properties, and Asteraceae, valued for their therapeutic potential. Apiaceae (*C. sativum*, *P. crispum*, *C. cyminum*) exhibit remarkable nutritional compositions, with high levels of proteins, carbohydrates, lipids, and unsaturated fatty acids (petroselinic acid, linoleic acid). They are also rich in phytosterols (Δ -5-stigmasterol, β sitosterol), γ -tocopherol, calcium, and potassium, highlighting their potential for agro-food applications. Asteraceae (*M. chamomilla*, *C. nobile*) were analyzed for their bioactive compounds and biological activities. Extracts obtained through sonication, rich in polyphenols and flavonoids, demonstrated significant antioxidant properties (DPPH and ABTS). HPLC-DAD identified major flavonoids such as quercetin and apigenin, while GC/MS revealed bioactive volatile compounds, including germacrene and β -oplophenone. Essential oils exhibited notable antimicrobial activity against several bacterial and fungal strains, including *E. coli*, *S. aureus*, *Aspergillus niger*, and *A. flavus*, along with insecticidal effects, achieving 100% mortality at 16 μ L/L within 48 hours and repellent efficiencies of 60% (*C. nobile*) and 55% (*M. chamomilla*). Molecular docking confirmed strong interactions between active compounds and biological targets, reinforcing their therapeutic and agro-industrial potential. In conclusion, this thesis highlights the potential of Taounate's medicinal plants for applications in health, agro-food, and agriculture. By combining ethnobotanical knowledge and biological analyses, it contributes to preserving traditional knowledge while opening avenues for sustainable and innovative exploitation.

Key Words:

Medicinal plants, ethnobotany, Taounate, Apiaceae, Asteraceae, bioactive compounds, antioxidants, essential oils, antimicrobial activity, agri-food, traditional knowledge.