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investigation of two species traditionally used in northern Italy**

This is the author's manuscript

Original Citation:

Availability:

This version is available <http://hdl.handle.net/2318/1941292> since 2023-10-31T17:26:08Z

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5.7= *Achillea millefolium* L. and *Achillea erba-rotta* subsp. *moschata* (Wulfen) I. Richardson: investigation of two species traditionally used in northern Italy

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The genus *Achillea* includes more than 100 species distributed throughout the world and characterised by ethnopharmacological importance. In this work, two species were selected for chemical characterization and testing of their potential action in the treatment of skin disorders. *Achillea millefolium* L. is native to Eurasia, North Africa and North America and has been introduced to various other habitats. It is the most popular medicinal plant of the genus *Achillea*, was used in ancient Greece, and owes its name to Achilles, the Greek mythical hero who used this plant to treat war wounds. The distribution range of the other species, *Achillea erba-rotta* subsp. *moschata* (Wulfen) I. Richardson is limited compared to *A. millefolium*. It is in fact an endemic perennial herbaceous species that grows selectively on the siliceous Alps above 1800 m. Both species are traditionally used both as food and for medicinal purposes. Among the therapeutic properties, they are known as antihypertensive, diuretic, digestive, sedative and for the treatment of skin diseases (1,2). *A. millefolium* has been extensively studied, while there is less work on *A. erba-rotta* subsp. *moschata* (2,3,4,5). This project aims to compare different samples of the two species from a chemical point of view with particular attention to their potential biological activity to inhibit enzymes involved in skin care (tyrosinase and elastase). The chemical profile of the hydroalcoholic extract of the plant aerial parts showed the presence of polyphenols, including phenolic acids (e.g., chlorogenic acid) and flavonoids (e.g., quercetin, apigenin derivatives), in agreement with literature data (2,3,5). Although they had similar chemical composition, a statistical analysis (principal component analysis) performed on the basis of the quantification of the main components allowed the two species to be distinguished. The extracts of the two species also showed interesting tyrosinase and elastase inhibitory activity, the percentage of enzyme inhibition being about 10-15% for both enzymes at a concentration of 16 µg/ml. These findings confirm the presence of bioactive compounds in the hydroalcoholic extracts obtained from these species and support the traditional use of these species in the treatment of skin diseases, making them interesting for the cosmetic and health fields.

1) W. Applequist, D.E. Moerman (2011) *Econ. Bot.*, 65, 209–225

2) S. Vitalini, S. Garzoli, F. Sisto, R. Pezzani, M.P. Argentieri, A. Scarafoni, S. Ciappellano, M. Zorzan, J. Capraro, D. Collazuol, M. Iriti (2022) *J. Ethnopharmacol.*, 298, 115670

3) M. Mohammadhosseini, S.D. Sarker, A. Akbarzadeh (2017) *J. Ethnopharmacol.*, 199, 257–315

4) S. Salamone, N. Aiello, P. Fusani, A. Rosa, M. Nieddu, G. Appendino, F. Pollastro (2023) *Plants*, 12, 402

5) M.P. Argentieri, M. Madeo, P. Avato, M. Iriti, S. Vitalini (2021) *Z. Naturforsch.*, 75, 57–64

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