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The Department's green heart, from the Botanic Garden to ethnobotany

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Collecting absolute field data concerning the therapeutic use of plants represents the core of Ethnobotany. Due to its multidisciplinary nature, ethnobotanical research outlines a tangible way to preserve folk medicinal practices, proving the strong relationship between humans and the natural environment over time. On the other hand, ethnobotanical data can also be intended as a description of a traditional use hiding a still existing therapeutic human need. The overall profile of the plants' popular use, from the collection of the plant drug to its preparation, administration, and frequency of use, represents the starting point for ethnopharmacological studies aimed at researching plants as a potential source of new bioactive compounds. Based on a three-years ethnobotanical survey in Valmalenco (SO), the traditional bitter decoction of the inflorescences of *Achillea moschata* (Asteraceae) stood as a still alive remedy for dyspepsia. Complying with the local know-how, its anti-inflammatory action was investigated through a multi-step study approach. Starting from micromorphological observations, 10-celled biserial glandular trichomes were detected on the epidermal surfaces, resulting as the main sites of synthesis and release of terpenes, polyphenols, and flavonoids. Confirming this, targeted HPLC-MS/MS data analysis of the methanol and aqueous extracts allowed for the identification of 31 compounds, among which caffeoyl and dicaffeoylquinic acid derivatives, glycosides and aglycones of luteolin, apigenin, kaempferol, and isorhamnetin were the main components. Thus, the *in vitro* antioxidant and anti-inflammatory activity of the aqueous phytocomplex showed a significant increase of NRF2 pathway activation at 10 µg/mL and a significant decrease in the inflammatory response already at 1 µg/mL. Additionally, molecular docking results suggested that 4,5-O-dicaffeoylquinic and 3,5-O-dicaffeoylquinic acids, luteolin-7-O-(6''-malonylglucoside) and isorhamnetin-3-O-rutinoside were the main responsible of the decoction bitter taste, described by the locals as the beneficial trait of the preparation. In an Open Science context, the Ghisardi Botanic Garden (DISFARM, Toscolano Maderno, BS) and the L. Dioli Botanic Garden (Sant'Antonio di Caspoggio, Valmalenco, SO) keep alive the Department's green heart by preserving plant species and their folk medicinal practices and by offering new strategies of dissemination and communication of the research data to the public.