

From ethnobotany to experimental research: the therapeutic properties of Sicilian hellebore

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In Sicily, the genus *Helleborus* (*Ranunculaceae*) is only represented by *H. bocconei* subsp. *siculus* (= *H. bocconei* subsp. *intermedius*). In some mountain areas of the Island, the rhizomes of this plant, harvested in a particular month of the year (May) and dried, are used in traditional veterinary practice for treating pneumonia in domestic animals, cattle and horses in particular. The same usage – with rhizomes of other *Helleborus* species or subspecies – is reported from various other areas of Mediterranean Europe. Phytochemical tests have permitted the isolation and characterization of new biologically active molecules. The extracts of rhizomes and aerial parts of the plant were shown anti-bacterial properties. Some compounds, isolated from the methanolic extract of the rhizomes, were shown to be cytotoxic. In addition, morpho-anatomical studies have revealed the presence of different endophytic and commensal fungi in all organs of the plant, which could be isolated and cultured. One of the isolates has been identified as the endophytic fungus *Botrytis bissoidea*, which is also widely present in the soil. Further fungal isolates include *Chaetomium strumarium*, strain *RR1*, an endophytic ascomycete the identity of which was confirmed by molecular analyses. When cultured, it developed plentifully; the filtered broth from these cultures was used in antibiotic property assays. The tests were positive; the detailed results are forthcoming. They support our initial hypothesis, that the therapeutic effect the hellebore's rhizomes extract is due to metabolites produced by an endophytic fungus. It remains to be seen whether the plant itself, devoid of the microfungus, produces the same therapeutically effective metabolites that are present in the extracts of plants from the wild or from outdoor cultivation. The study of the Sicilian hellebore, beyond its biological interest, has potential for its relevance for therapeutic applications both in veterinary and human medicine.