

## ***Inula helenium*: A literature review on ethnomedical uses, bioactive compounds and pharmacological activities**

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### ***Abstract***

*Dynamic growth of antimicrobial and anthelmintic resistance throughout the years has caused increased interest in natural alternatives to synthetic drugs. Elecampane (*Inula helenium* L.), a widely distributed herbaceous plant, is one of the most researched and well-known member of the genus *Inula*, family *Compositae*. *I. helenium* has been included in the Chinese Pharmacopeia, Russian Pharmacopeia and Pharmacopeias of some European countries. This review is an up-to-date summary of the existing knowledge on *Inula helenium*'s ethnomedicinal uses, secondary metabolites and pharmacological activities. Initially used in the treatment of respiratory and digestive diseases in both humans and animals, the roots of elecampane have been also proven to possess a cytotoxic and antiproliferative effect on cancer cell lines, as well as anti-inflammatory, antioxidant, antibacterial, antifungal and anthelmintic activities. The main bioactive compounds isolated from elecampane roots known to be responsible for their pharmacological activities are inulin, sesquiterpene lactones such as alantolactone and isoalantolactone, thymol derivatives, phenolic acids and flavonoids. This review suggests that *I. helenium*'s secondary metabolites have a strong therapeutic potential. However, further *in vitro* and *in vivo* studies of isolated *I. helenium* bioactive compounds are required in order to understand their mechanism of action, pharmacokinetics and potential adverse effects.*

**Keywords:** *Inula helenium*, Chemical composition, Pharmacological activity