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Comparative study on the valorization and phytotherapeutic potential of *Artemisia annua* L. in Cameroon and Romania

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Abstract: *Artemisia annua*, commonly known as sweet wormwood, is a medicinal plant of considerable pharmacological importance, mainly due to its content of artemisinin, the key compound in modern antimalarial therapy. The objective of this study is to provide a comparative analysis of the current uses and future perspectives of this plant in two contrasting regions: Cameroon and Romania. For a better field identification of species of phytotherapeutic interest, a concise dichotomous key was developed. The study also examines the geographical distribution, phytochemical composition, and therapeutic applications of the species. The research methodology involved an extensive review of scientific literature, focusing on the comparative assessment of uses in scholarly and traditional phytotherapy, cultivation technologies, and phytochemical characteristics. Findings indicate that in Cameroon, *A. annua* is primarily cultivated for artemisinin extraction, used in malaria prevention and treatment programs, while in Romania the plant is not yet fully exploited from a phytotherapeutic perspective. Phytochemical data reveal a complex composition of bioactive metabolites, such as artemisinin, flavonoids, terpenoids, and phenolic compounds, whose concentrations vary depending on environmental, genetic, and agronomic factors. This work contributes to a better understanding of *A. annua* as a strategic medicinal resource, highlighting the need for sustainable valorization of spontaneous populations. Its originality and relevance derive from the integration of ethnopharmacological knowledge with modern scientific and economic perspectives, supporting the sustainable use of *A. annua* in Cameroon and Romania.



• Introduction

- *Artemisia annua* according to Mabberley D.J. 1997
- Class: Magnoliopsida
- Subclass: Asteridae
- Order: Asterales
- Family: Asteraceae
- Genus: *Artemisia*
- Specific epithet: *annua*
- Discovery by Sweden botanist Carl Linnaeus in the 18th century (1753), *Artemisia annua* L. (sweet wormwood) is an annual species from the Asteraceae family, rich in bioactive compounds such as artemisinin and flavonoids.
- In **Cameroon**, the plant has been cultivated for more than 30 years and is mainly used for its antimalarial effects.
- In **Romania**, it grows spontaneously and is traditionally used for parasitic infections and hepato-biliary disorders.

• Material and method

- The study conducts a comparative analysis of the phytotherapeutic potential and use of *Artemisia annua* L. in Cameroon and Romania.
- The information was extracted from scientific literature and subsequently analyzed comparatively.
- Based on morphological data, a dichotomous key was developed to identify the main species of the genus *Artemisia*.

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• Results and discussions

Cameroon - introduced, cultivated, and promoted in "Artemisia Houses"; used against malaria, COVID-19, and digestive disorders; tropical climate → high artemisinin content, increased pharmacological potential.

Romania - grows spontaneously; used in traditional phytotherapy (digestive, hepatic, parasitic); antibacterial, antitumor, antihelminthic effects; other species of *Artemisia* more widespread.

Perspectives for future	CAMEROON	ROMANIA
Development of scientific research	Extensive research on phytochemical testing, clinical trials and biofertilization.	In oncology; inflammatory and neurodegenerative diseases. Integration into alternative therapies.
Expansion of cultivation and use	Expanding <i>Artemisia</i> crops and homes to make the plant more accessible to the rural population.	Possibility of introduction into culture, given the growing demand for natural products.
Plant protection	Investigation and use of volatile components of <i>A. annua</i> with antibacterial and antifungal properties as bioinsecticides.	
Artemisinin content	Improving agricultural conditions for optimal artemisinin content.	Assessment of artemisinin levels in different locations where it grows spontaneously.

• Conclusions

- *Artemisia annua* has high potential, but in different directions: introduced and cultivated for medical and antimalarial use in Cameroon, and in Romania, a spontaneous, even invasive species, widely used in traditional medicine and scientific research.
- The dichotomous key is an original tool that can be used to better identify species of the genus *Artemisia* in the two countries.
- It is recommended to expand clinical studies and improve extraction technologies.