

Echinops kebericho Mesfin
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***Echinops kebericho* Mesfin**

Local and common names: ቀበርኝ Kebericho (Amh); Qabariichoo (Oro); the species is endemic to Ethiopia and has no widely recognized common name beyond these local names.

Voucher number and identification: GA068/AHRI/2025

Synonyms: *E. kebericho* is a stable taxon in terms of nomenclature and there are no widely recognized synonyms for this species.

Varieties recorded in Ethiopia: There are no interspecific taxa and officially registered varieties of *E. kebericho*.

Family: Asteraceae

Botanical and habitat distribution

E. kebericho is an erect perennial herb or shrub, growing up to 1.2 m high with leafy stems and usually arising from a massive tuberous root stock. The stem is leafy throughout and sparsely covered with characteristic white, cob-webby hairs. The leaves are alternate, often sessile, and deeply lobed or dissected with spiny margins. The plant culminates in a large, spherical, thistle-like flower head and contains numerous tiny, brilliant blue or white florets. Following flowering, the plant produces cylindrical-oblong fruits, and is typically covered with long, silky hairs. The fruits are 7.5-10.5 mm long and 1.5-2.5 mm wide. This plant is endemic to Ethiopia and generally dispersed in the Ethiopian highlands at an altitude of 2300-2600 m.

Ethnomedicinal uses

Infusion of the root is taken orally to treat fever, headache, diarrhea, stomachache, malaria, typhus fever, taeniasis, tonsillitis, vomiting, and acute sickness. The smoke is also used as a fumigant mainly after childbirth, as a repellent for mosquitoes and snakes. The plant is also used in the preparation of medicines against migraine, mental illness, lung TB, leprosy, kidney disease, bilharzia, syphilis, hemorrhoid, amoebic dysentery, and other ailments.

Conservation status

According to the IUCN Red List, *E. kebericho* is currently listed as a Near Threatened species. As the species is endemic to Ethiopia, it warrants high conservation priority.

Propagation method

E. kebericho is commonly propagated by its seeds. Moreover, micropropagation protocols have been developed to support mass propagation and conservation of this medicinal species.

Cultivation in botanic garden

The plant was planted in the botanic garden in October 2024, from a whole plant dug up, at the AHRI-ALERT Health Village (Accession number 0044).

Major phytoconstituents

Dehydrocostus lactone, isoshyobunone, β -guaiene, β -phellandrene, modephene, and caryophyllene oxide were identified from the essential oils of rhizome part.

Pharmacological and safety evidences

Preclinical evidences

Antimicrobial effect: The alcoholic extracts of *E. kebericho* root demonstrated antibacterial activity against *Staphylococcus aureus* while the essential oil and ethyl acetate fraction showed antibacterial activity against methicillin-resistant *S. aureus* (MRSA). The essential oil from the root also possesses antifungal activities.

Antiprotozoal effect: The hydroethanolic root extract of *E. kebericho* showed moderate parasitemia suppression in early malaria infection. Furthermore, the essential oils possess a highly active antileishmanial property.

Analgesic and anti-inflammatory effects: The hydroalcoholic root extract of *E. kebericho* demonstrates significant analgesic and anti-inflammatory properties in mice. It effectively mitigates both peripheral and central pain. Additionally, the extract reduces paw edema in inflammatory models induced by carrageenan and formalin.

Clinical evidences

There are no clinical trials reported.

Safety

Oral administration of the aqueous and 70% methanol root extracts didn't show any toxic effect over a period of 14 days after administration of 2000 mg/kg indicating the LD₅₀ of greater than 2000 mg/kg in mice.

Research gaps and recommendation

The non-volatile phytoconstituents of these plants have not been exhaustively done. Scientific gaps remain in clinical validation and long-term safety evaluation. Moreover, conservation efforts are critical due to its endangered status of *E. kebericho*.

References

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