

Verbascum sinaiticum Benth
የኦሎም ጆሮ፣ ቀጠጢና



***Verbascum sinaiticum* Benth**

Local and common names: የአሕያ ጆሮ Ye'ahya Joro, የፈረስ ዘንግ Ye'feres Zeng, ቀጠጢና Ketetina (Amh); Gurra Harree, Abookeena (Oro); Sinai Mullein, Mullein (Eng)

Voucher number and identification: GA065/AHRI/2025

Synonyms: *V. sinaiticum* is known by five synonyms, among which *V. nubicum*, *V. somaliense* and *V. barradense* are the later published names.

Varieties recorded in Ethiopia: There are no recognized infraspecific taxa or registered varieties of this species in Ethiopia.

Family: Scrophulariaceae

Botanical and habitat distribution

V. sinaiticum is a biennial herbaceous plant. It is an herb growing 60–150 cm (occasionally up to 2 m) tall. It often forms a rosette of leaves in its first year, followed by an erect, flowering stem in the second year. The flowering stem is generally tall and covered with dense, yellowish-white hairs (tomentose or lanate). The leaves, especially the basal ones, are large, often described as felted or woolly due to the dense covering of hairs. The flowers are arranged at the top of the stem. They are bright yellow colored, have five lobed corolla (colored part of the flower), and often are **radially symmetrical (actinomorphic)**. The stamens are typically five, with hairy filaments. The species commonly grows in cultivated fields and grasslands at elevations of 1300-3300 masl.

Conservation status

V. sinaiticum is not currently included in the IUCN Red List. However, POWO reports that the species is not threatened, which broadly corresponds to the IUCN category of Least Concern.

Propagation method

V. sinaiticum can be propagated naturally by seeds. *In vitro* propagation methods using tissue culture have also been reported.

Cultivation in botanic garden

The plant was planted in the AHRI-ALERT botanic garden in October 2024, using a whole plant collected from the former mini medicinal plant garden at the Ethiopian Public Health Institute (Accession number 0114).

Ethnomedicinal uses

In Ethiopian folkloric medicine, the primary and most consistently documented traditional use of the plant is for the management of wounds. The root is the predominantly utilized plant part; it is crushed or powdered and mixed with butter to prepare a cream or ointment, which is applied topically to wounds caused by fire burns and other external injuries. Infusions are taken orally to treat diarrhea, abdominal colic, and anthrax; leaf smoke or teas are used to alleviate blood pressure and asthma; and leaf filtrates are administered into ears or nostrils to treat trypanosomiasis in livestock. Other ailments treated with preparation of the plant include syphilis, tumors, liver disorders, diabetes, scabies, fever, hemorrhage and viral infections. Beyond its medicinal value, fibers of the plant are used to make cordage and it also serves as an important source of fodder during dry season.

Major phytoconstituents

Major bioactive phytochemicals were isolated from the aerial parts of *V. sinaiticum*. Compounds such as iridoids glycoside (ajugol, harpagoside and aucubin), and flavonoid constituent such as luteolin and chrysoeriol-7-O-glucoside have been isolated. Furthermore, six phenylethanoid glycosides including Verbascoside, Eukovoside, Martynoside, Jionoside D, Campneoside I and Campneoside II were reported.

Pharmacological and safety evidences

Preclinical evidences

Antimicrobial effect: Acetone, aqueous, and ethanol root extracts of *V. sinaiticum* exhibited broad-spectrum *in vitro* antibacterial activity against both Gram-positive (*Bacillus subtilis*) and Gram-negative bacteria (*Klebsiella aerogenes*, *Escherichia coli*, and *Vibrio cholerae*). Additionally, *in vivo* studies demonstrated trypanocidal activity in *Trypanosoma*-infected Swiss albino mice.

Antidiarrheal effect: In castor oil-induced diarrhea, enteropooling, and intestinal motility test models, the crude extract of the root of *V. sinaiticum* and its aqueous and ethyl acetate fractions, at

400 mg/kg, delayed the onset of diarrhea and produced significant reductions in the volumes of intestinal content. The plant also suppressed the intestinal transit of charcoal meal and peristaltic index compared to the negative control.

Wound healing effect: Ointments (5% and 10% w/w) of the 80% methanolic leaf extract of *V. sinaiticum* significantly accelerated excision wound contraction by 92%, shortened epithelialization time, and enhanced tensile strength in the incision wound model in rats.

Antidiabetic effect: The 80% methanolic leaf extract of *V. sinaiticum* significantly reduced blood glucose at 400 mg/kg. The aqueous residue and ethyl acetate fractions showed even stronger antihyperglycemic effects without causing hypoglycemic shock in normoglycemic mice. Furthermore, both the crude extract and its fractions of *V. sinaiticum* exhibited significant glucose-lowering activity in streptozotocin-induced diabetic mice.

Other pharmacological effects: Anti-inflammatory, analgesic, antioxidant, hepatoprotective and cytotoxic effect

Clinical evidences

There are no reported clinical trials so far.

Safety

Solvent extracts from various parts of *V. sinaiticum* exhibited no observable toxicity in Swiss albino mice, with an LD₅₀ exceeding 2000 mg/kg. Furthermore, topical application of the highest ointment concentration (10% w/w) produced no signs of inflammation or edema in rodent models.

References

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