Ocimum lamiifolium Hochst. Ex Benth.
ዳማከሴ

Ocimum lamiifolium Hochst. ex Benth.

Local and common names: ዳማከሴ Damakese, አንጨባ Ancheba (Amh); Qoricha-michii, Anchabbi (Oro); ዳማቹ Damachu, ዳማከር Damakher (Tig)

Voucher number and identification: GA056/AHRI/2025

Synonyms: *O. lamiifolium* is known by four synonyms, among which *O. hararense*, *O. nakurense* and *O. rothii* are the later published names.

Varieties recorded in Ethiopia: There are no recognized infraspecific classifications or registered varieties of *O. lamiifolium* in Ethiopia.

Family: Lamiaceace

Botanical and habitat distribution

O. lamiifolum is an aromatic perennial shrub. It grows up right and is much-branched, reaching up to 3 m tall. The leaves are opposite, egg shaped (ovate), and have toothed edges (serrate). The leaves give off a strong, pleasant aroma when crushed. The flowers are small tube shaped (tubular), and grow in loose clusters (lax inflorescences). It is a hardy plant that tolerates a wide range of environmental conditions. This species occurs in forest edges, bushlands, and grasslands at elevations of 1000-2500 masl. It prefers sunny areas with well-drained soils and can grow in both tropical and subtropical climates.

Conservation status

O. lamiifolum 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

O. lamiifolum is commonly propagated by stem cuttings and seeds, methods widely used for *Ocimum* species for producing vigorous and uniform plants. For vegetative propagation, healthy non flowering stem-cuttings about 5 to 10 cm long and bearing several nodes are taken from disease free plants and rooted in a well-draining soil mix. The cuttings are maintained in a warm, bright environment with indirect sunlight and high humidity often achieved by covering with

plastic bag or humidity dome to reduce moisture loss and promote rooting. This method is generally preferred over seed propagation because it ensures genetic uniformity and faster establishment. The species can also be propagated from seeds, which are sown in well-drained soil and allowed to germinate under warm and moist conditions. Both propagation methods are widely used for small to large scale cultivation of *O. lamifolium* and others *Ocimum* species.

Cultivation in botanic garden

The plant was established at AHRI-ALERT Botanic Garden from a whole wild-grown plant collected in May 2024 along the road to Adadi Mariam, which branches eastward from Addis Ababa-Butajira Road (Accession number 0075).

Ethnomedicinal uses

O. lamiifolium is one of the popular medicinal plant species in Ethiopia. The leaf juice is commonly used to treat cough and eye diseases, while leaf infusions are taken for colds, stomach distention and as antipyretic. As part of polyherbal preparation, decoctions prepared from powdered leaves combined with parts of other plant species, honey, and butter are administered orally to treat whooping cough. Leaves are also widely used in the management of diarrhea, stomach disorders, abdominal pain, headache, fever, cough, measles, and eye infections as well as for skin conditions and wound treatment. Moreover, the leaves are applied topically for the treatment of skin conditions and wounds, and fresh or burned leaves are traditionally used as mosquito repellent.

Major phytoconstituents

Linalool (28.52%) and 1-octen-3-yl-npropionate (20.82%) were identified as the essential oil's (EO's) primary ingredients, followed by 3,7,11-trimethyl-(E,E)-2,6,10-dodecatrienal (12.14%).

Pharmacological and safety evidences

Preclinical evidences

Antimicrobial effect: *O. lamiifolium* fresh leaves methanol extract shows antimicrobial activity against microbial pathogens: *S. aureus*, *E. coli*, and *P. aeruginosa*. Moreover, the aqueous, methanol and chloroform extracts of *O. lamiifolium* leaves exhibited significant antiplasmodial activities. The highest suppression was recorded from aqueous extract of *O. lamiifolium*.

Antidiabetic *effect:* Crude 80% methanol extract and solvent fractions of *Ocimum lamiifolium* leaves have been shown to significantly lower blood glucose levels in normoglycemic, glucose-loaded, and streptozotocin-induced diabetic mice.

Antidiarrheal effect: In enteropooling, castor oil–induced, and gastrointestinal motility models of diarrhea, both the solvent fractions and crude methanolic leaf extracts of *O. lamiifolium* significantly reduced the fluid content, weight, and volume of intestinal contents in mice.

***Other pharmacological effects*:** Anti-inflammatory, antipyretic, antioxidant, antiproliferative, and organo-protective.

Clinical evidences

There are no clinical trials reports.

Safety

O. lamiifolium extract demonstrates sub-chronic toxicity at high doses (600 mg/kg), causing reduced food intake, weight gain, increased liver/kidney enzymes, and potential liver damage in rats. However, lower doses (up to 400 mg/kg) showed no significant toxicity, and the essential oil was predicted to be safe by some in-silico studies.

Research gaps and recommendations

Although the plant widely utilized by the community, the phytochemicals have not yet been standardized. Standardizing the plant's phytoconstituents was therefore advised.

References

1. Megersa HG (2024). Damakase (*Ocimum lamiifolum* Hochest ex Benth): A medicinal plant used in Ethiopian Traditional Medicine: A critical review. *Journal of Plant Sciences* 12: 64-69.
2. Sahalie NA, Abrha LH and Tolesa LD (2018). Chemical composition and antimicrobial activity of leave extract of *Ocimum lamiifolium* (Damakese) as a treatment for urinary tract infection. *Cogent Chemistry* 4: 1440894.
3. Mequanint W, Makonnen E and Urga K (2011). *In vivo* anti-inflammatory activities of leaf extracts of *Ocimum lamiifolium* in mice model. *Journal of Ethnopharmacology* 134:32-36.
4. Adane F, Assefa W, Alem MB and Dessalegn M (2023). Sub-chronic toxicity of the aqueous leaf extract of *Ocimum lamiifolium* Hochst. ex Benth on biochemical parameters and histopathology of liver and kidney in rats: *in vivo* and *in-silico* toxicity studies. *BMC Complementary Medicine and Therapies* 23: 30.