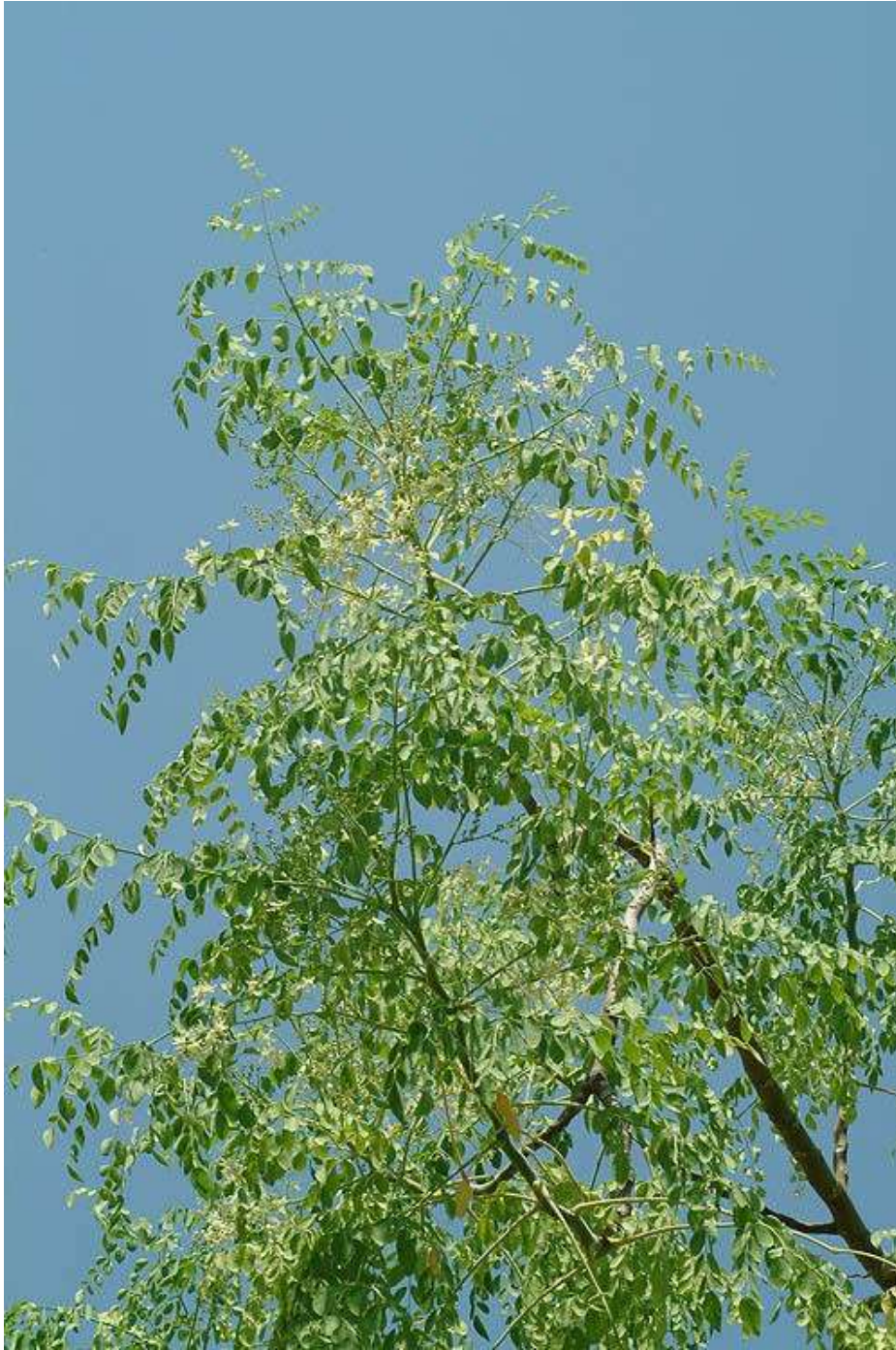


***Moringa stenopetala* (Baker f.) Cufod.**

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***Moringa stenopetala* (Baker f.) Cufod.**

Local and common names: Haleko (Daw, Gam, Gof, Kon and Wol); Shelagda (Sid); Mukaa raajii, Ykn kumarraa (Oro); ሞሪንጋ Moringa, ሽፊራው Shiferaw (Amh); African Moringa, Cabbage Tree (Eng)

Voucher number and identification: GA062/AHRI/2025

Synonyms: *M. stenopetala* is also known under the synonyms *Donaldsonia stenopetala* and *Moringa streptocarpa*.

Varieties recorded in Ethiopia: There are no formally recognized infraspecific taxa or registered varieties of *M. stenopetala*.

Family: Moringaceae

Botanical and habitat distribution

M. stenopetala is a medium-sized, deciduous tree, typically growing 6–10 m tall with soft wood and trunk that is thick at base, covered with white to pale grey or silvery bark. The leaves are large, up to 55 cm long, and are divided into smaller leaflets that are oval, thick and fleshy. The flowers are cream-white, fragrant, and appear in loose clusters. The pods are three-angled, 19-50 cm long, pendulous, sometimes slightly bumpy along their length (torulose) and may twist slightly when young but straighten as they mature. Each pod contains light, smooth winged seeds that range in colour from cream to brown. This species occurs naturally in the semi-arid lowlands of Southern Ethiopia and Northern Kenya, at elevations ranging from about 390-2200 masl, both in the wild and under cultivation.

Conservation status

M. stenopetala is not currently included in the IUCN Red List, although POWO reports that the species is not threatened, which broadly corresponds to the IUCN category of Least Concern. In Ethiopia, it is cultivated in various regions for food and other uses, which contributes to its conservation.

Propagation method

M. stenopetala is propagated both by direct sowing of seeds without pretreatment and vegetatively using branch cuttings. The optimum temperature for germination is about 25 °C. Germination under full sunlight reaches about 54%, compared to 92% in half shade. Seeds should be sown approximately 2 cm deep in soil that is moist but not waterlogged.

Cultivation in botanic garden

The species was planted at AHRI-ALERT botanic garden in July 2024 using seedlings obtained from ALERT (Accession number 0069).

Ethnomedicinal uses

Local communities in different parts of Ethiopia use *M. stenopetala* extensively for traditional medicine. The leaves are the most commonly used part; they are often crushed or dried and powdered. The leaf powder may be taken orally, sometimes mixed with water or prepared as syrup, to treat ailments such as anemia, malaria, and high blood pressure. Fresh leaves can also be pressed to extract juice, which can be applied externally or administered in small drops to treat eye or ear infections. The roots are another medicinal part of the plant. Fresh roots are crushed or juiced and taken orally for stomach aches and dysentery, smoke from burned roots is inhaled in the management of epilepsy. In addition to their medicinal uses, the species has important practical applications. When the leaves and seeds are ground into powder and added to turbid water, they act as natural coagulant, causing suspended particles to settle and thereby improving water clarity and safety for drinking. Ethnobotanical studies document this practice, highlighting the multipurpose role of *M. stenopetala* in local communities.

Major phytoconstituents

A diverse range of bioactive compounds including glucomoringin, *O*-(rhamnopyranosyloxy)benzylglucosinolate, hydroxycinnamic acids, and quercetin-3-*O*-rutinoside have been reported from the leaf and seed of *M. stenopetala*.

Pharmacological and safety evidences

Preclinical evidences

Antimicrobial effect: The methanol, ethanol, aqueous and chloroform extracts of the dried leaves of *M. stenopetala* showed inhibitory activity against Gram-positive (*Klebsiella pneumoniae*, *Bacillus cereus*, *Streptococcus pneumoniae*, *S. pneumoniae*, *Staphylococcus aureus*, *Listeria monocytogenes*) and Gram-negative bacteria (*Escherichia coli*, *Salmonella Typhimurium* and *P. aeruginosa*). Moreover, the ethanol leaf extract exhibited inhibitory activity against *Candida albicans* and *Aspergillus niger*.

Antiparasitic effect: Ethanolic and aqueous leaf extracts show dose-dependent parasite suppression in *Plasmodium berghei*-infected mice. In addition, the ethanol extract of fresh leaves and root of *M. stenopetala* showed anti-leishmanial effect. Essential oil of *M. stenopetala* seed and its isolated compound showed trypanocidal activities.

Antidiabetic effect: The ethanol extract of dried leaves of *M. stenopetala* showed antihyperglycemic activity. Moreover, the chloroform and butanol fractions of the leaf extract exhibited hypoglycemic and antihyperglycemic effects.

Antihypertensive and hypolipidemic effect: Aqueous and hydroalcoholic leaf extract of *M. stenopetala* exhibited vasodilatory, reductions in systolic and diastolic blood pressure effects. The aqueous and hydroalcoholic leaf extract show decreases in total cholesterol, LDL, triglycerides along with elevation of HDL in hyperlipidemic rats.

Antioxidant effect: High phenolic and flavonoid content of the leaf extract provides robust free radical-scavenging activity, extracts reduce oxidative stress markers such as, MDA (malondialdehyde), Improve (superoxide dismutase) SOD and catalase activity.

Other pharmacological effects: The leaf extract of *M. stenopetala* exhibited Antidiarrheal, cytotoxic, anti-inflammatory, hepatoprotective and nephroprotective effects. Whereas the infusion of the leaves was found to enhance immune function.

Clinical evidences

There is no high-quality clinical trial evidence to support therapeutic claims of *M. stenopetala*. The human-related research remains limited to observational, ethnopharmacological, or nutritional-survey studies.

Safety

In oral acute toxicity study, there was no behavioral change on live animals and abnormality was not observed on postmortem examination up to the dose of 5000 mg/kg. In repeated administration of leaves of herbal tea blend (250–1000 mg/kg), no mortality or any toxic effect on food consumption, body weight gain, organ weight, hematological and biochemical parameters. In the prenatal oral administration of herbal formulations from the leaves of *M. stenopetala* didn't show mortality or signs of morbidity in pregnant rats. However, the methanol seed extract of *M. stenopetala* exhibited developmental toxicity when administered to pregnant rats (250–1000 mg/kg) during gestation (days 6–12). The highest dose (1000 mg/kg), showed prenatal growth retardation, reduced litter weight and crown-rump length, delayed development of sensory organ systems, increased fetal resorptions, and greater fetal death rate compared to controls.

Research gaps and recommendations

The absence of well-designed clinical trials remains the largest barrier, preventing reliable conclusions about therapeutic safety and efficacy. In addition, the poor standardization of extracts and formulations leads to inconsistent quality, dosage, and bioactive profiles, making reproducibility difficult.

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