***Plumbago zeylanica* L.**

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Plumbago zeylanica L.

Local and common names: አማራ Amera (Amh); Meerxees (Oro); Merxs (Som); Wild Plumbago (Eng)

Voucher number and identification: GA055/AHRI/2025

Synonyms: *P. zeylanica* is known by 24 synonyms, among which *P. maximowiczii*, *P. scandens* var. *erecta* and *P. scandens* var. *densiflora* are the later published names.

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

Family: Plumbaginaceae

Botanical and habitat distribution

P. zeylanica is a scrambling shrub and grows primarily in the seasonally dry tropical biome with wiry, often diffusely branched, glabrous stems up to 1.5–2.5 meters long. The leaves are simple, alternate, often ovate to lance-elliptic in shape. Roots are straight, smooth, branched or unbranched, with or without secondary roots and about 30 cm long. Up on drying their color changed from light- yellow to reddish-brown. The roots have a strong and characteristic odor with acrid and bitter taste. Flowers are bright white in color and are borne in axillary and terminal elongated spikes. *P. zeylanica* is widely distributed in disturbed habitats along roadsides and paths, as well as in bushland, woodland and grassland, at altitudes ranging from 700-2200 masl.

Conservation status

According to IUCN Red List, *P. zeylanica* is categorized globally as a species of Least Concern.

Propagation method

Vegetative propagation by splitting the whole plant and cuttings is a highly reliable method, providing a rapid means of establishing new plants. Propagation by seed is also possible; however, under normal conditions it often results in a low germination and establishment.

Cultivation in botanic garden

The plant was established in the botanic garden in October 2024, using a whole plant transplanted from a wildly growing population at the AHRI-ALERT Health Village (Accession number 0083).

Ethnomedicinal uses

The leaves and roots of *P. zeylanica* are used to treat conditions such as glandular and bone tuberculosis, as well as common ailments including impotence, malaria, heart disease, and hemorrhoids. Furthermore, leaves and root are employed in the management of intestinal parasitic infection, urinary problems, gonorrhea, and generalized body swelling. Fresh leaves are also used to relieve rheumatic pain. Although primarily valued for its medicinal applications, the species is also locally recognized as an important honeybee plant, producing abundant nectar.

Major phytoconstituents

The primary chemical component of *P. zeylanica* is plumbagin, a naphthoquinone. Other naphtoquinones, such as zeylanone, chitanone, and 3, 3-bisplumbagin, are also reported.

Pharmacological and safety evidences

Preclinical evidences

***Antimicrobial and Anthelmintic effect*:** The aqueous extract of the leaves and methanol extract of the root inhibit the growth of broad range of bacteria and fungi**.** The methanol root extract was also found to exhibit a significant anthelmintic effect. Furthermore, the chloroform and ethanol extracts of *P. zeylanica* roots paralyzed and killed earth-worms in lesser time than that of the piperazine citrate and albendazole.

***Anti-inflammatory and Antioxidant effect*:** The methanol and dichloromethane root extract of *P. zeylanica* reduced carrageenan induced rat paw edema whereas the methanol extract of the root exhibited antioxidant activity in diphenyl Picrylhydrazyl (DPPH) model.

***Wound healing effect*:** The methanol extract and the isolated compound, plumbagin exhibited wound healing activity in mice. The ointment (10%w/w) of ethanol extract also showed increase in tensile strength.

Other pharmacological effect: Ant-ulcer, antihypertensive, hepatoprotective, anticancer and anti-diabetic.

Clinical evidences

There are no clinical trials reported.

Safety

In the acute oral toxicity studies, the LD_{50} for hydroalcoholic and acetone extract were 928.4 mg/kg whereas the LD_{50} of dichloromethane extract of the root was 2000 mg/kg.

Research gaps and recommendations

Further chromatographic isolation and spectroscopic characterization on the phytoconstituents is recommended. Furthermore, correlation between the compounds and their pharmacological properties should be carried out.

References

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