

**Bioprospecting Potential of *Leucas martinicensis* (Jacq.)
for Access and Benefit Sharing**



Reviewed by Tesfaye Bekele

Genetic Resources Access and Benefit Sharing Directorate

September, 2018

1. Introduction

The National Competent Authority, the Ethiopian Biodiversity Institute (EBI), through the Access Benefit Sharing Directorate, plays a practical role in the implementation of the Nagoya Protocol on Access and Benefit Sharing of Genetic Resources and Associated Community Knowledge. Based on Proclamation No 482/2006 and Regulation 169/2009 (Access to Genetic Resources and Community Knowledge and Community Rights), Ethiopia has been implementing the access and benefit sharing objective of the CBD.

The Access and Benefit Sharing provisions of the Convention on Biological Diversity (CBD) are designed to ensure that the physical access to genetic resources is facilitated and that the benefits obtained from their use are shared equitably with the providers. In some cases, this includes valuable traditional knowledge associated with genetic resources owned by the indigenous local community. The objective of this review is to encourage the bioprospectors to use this identified potentially valuable genetic resource for medicinal, pharmaceutical and industrial uses through ABS agreement.

2. Plant Description

Leucas martinicensis is an erect annual herb growing up to 1 m tall, with white flowers that bear spiny calyces. The plant is locally named “Ras Kimir” in Amharic (Ermias Dagne, 2009). The lamina is oval lanceolate with strongly serrated margin. The whole plant is pubescent. The flowers are assembled in axillary glomeruli surrounding the stem. The leaves are simple, opposite and decussate along the stem. They are held by long petioles, 5 to 20 mm long. The lamina is oval to lanceolate, measuring 4 to 9 cm long and 2 to 4 cm wide. The margin is sharply serrated. The plant multiplies from a small number of individuals producing many seeds. It also multiplies from many late and undeveloped individuals during flowering, but largely increases the soil seed bank (http://plants.jstor.org/stable/10.5555/al.ap.upwta.3_30).

3. Ecology and distribution

Leucas martinicensis is commonly distributed throughout the disturbed bushland and grassland, savannas, weed in cultivations at an altitude of up to 2500m above sea level. It is widely distributed in Tigray, Amhara, Oromia and SNNP Regions (Hedberg *et al.*, 2006).

4. Significance

Leucas martinicensis has been used traditionally to treat diverse medical ailments.

4.1. Medicinal value

Leucas martinicensis is reported to have phytochemical compounds like saponins, tannins and flavonoids (Timothy *et al.*, 2016; Muhammad *et al.*, 2012; Eze *et al.*, 2013). The decoction of its leaves is used in traditional medicine to treat many ailments such as kidney disorders, rheumatism, inflammations, cough, diarrhoea, fevers, skin rashes, epilepsy and convulsions (Minja, 1999; Agra *et al.*, 2007; Ugwah-Oguejiofor *et al.*, 2015). Besides, pharmacological studies revealed that *Leucas species* has antimalarial (Valsaraj *et al.*, 1997), anti-inflammatory (Reddy *et al.*, 1986) and antidiabetic (Saha *et al.*, 1998), properties. The crushed leaves of *Leucas* species can be applied to wounds, sores, especially those of the eyes and nose, chronic skin diseases, such as psoriasis and scabies. The crushed leaves are also used to treat mild fevers, colds, rheumatism and snake bites, and as a decoction against roundworm, mainly for children. The plant is reported to have antibacterial and antifungal properties as it is used to prevent diarrhea around Yabello areas in Ethiopia (Muhammad *et al.*, 2012). Ugwah-Oguejiofor *et al.* (2015) reported that *Leucas martinicensis* as having anticonvulsant and sedative activities and thus partly lend pharmacological credence to the use of the plant extract in traditional medicine in the treatment of epilepsy and convulsions.

4.2. Pharmaceutical and Industrial uses

The chemical study on volatile oil extracted from *Leucas martinicensis* showed that it is suitable for use in pharmaceuticals, cosmetic and food products such as lotions, creams, cantimos mosquito repellent, soaps, shampoos, rinses, gargles, candies.

Therefore, the active parts including roots, seeds, stem, leaves, and whole plant parts of *Leucas martinicensis* has a bioprospecting potential.

References

Agra, M.F., Freitas, P.F. and Barbosa-filho, J.M. (2007). Synopsis of the plants known as medicinal and poisonous in Northeast of Brazil. *Brazilian Journal of Pharmacognosy* **17**(1): 114-140.

- Ermias Dagne (2009). Natural Database for Africa (NDA).Version 1.0, Addis Ababa, Ethiopia.
- Eze, U.A., Bello, S.O., Etuk, E.U., Ameh, G.I., Ugwah, O.M., and Ugwah-Oguejiofor, C.J. (2013). Phytochemical and preliminary toxicological studies of the aqueous leaf extract of *Leucas martinicensis* in wistar rats. *International Journal of Medicinal Plants Research* **2**(3): 166-169.
- Hedberg, I., Ensermu Kelbessa, Edwards, S., Sebsebe Demissew and Pearson, E. (2006). Flora of Ethiopia and Eritrea. Gentianaceae to Cyclocheilaceae. Vol. 5. Addis Ababa University, Addis Ababa and Uppsala University, Uppsala, Sweden.
http://plants.jstor.org/stable/10.5555/al.ap.upwta.3_30 Accessed on October 31, 2017.
- Minja, M.M.J. (1999). The Maasai Wonder Plants. Tropical Pesticides Research Institute, Arusha, Tanzania, p. 3.
- Muhammad, S., Fatima, A. and Yahaya, M.M. (2012). The Phytochemical Components of *Leucas martinicensis* that cause repellence of adult mosquito. *International Journal of Modern Botany* **2**(1): 1-5.
- Reddy, M.K., Viswanathan, S., Sambantham, P.T., Ramachandran, S. and Kameswaran, L. (1986). Effects of *Leucas aspera* on experimental inflammation and mast cell degranulation. *Ancient Science Life* **5**:168–171.
- Saha, K., Mukherjee, P.K., Das, J., Mandal, S.C., Pal, M. and Saha, B.P. (1998). Hypoglycemic activity of *Leucas lavandulaefolia* Rees. in streptozotocin-induced diabetic rats. *Phytotherapy Research* **11**: 463–466.
- Timothy, S.Y., Sugun, M.Y., Tata, F.Y., Milagawanda, H.H. and Ibrahim, A.W. (2016). Antibacterial and Antiepileptic activity of Ethanol Extract of Whole Plant of *Leucas martinicensis* (Jacq.) *International Journal of Pharmacy and Pharmaceutical Research (IJPPR), Human* **6** (3): 423-433.
- Ugwah-Oguejiofor, C.J., Eze, U.A., Bello, S.O., Etuk, U., Ameh, I. and Ugwah, M. (2015). Anticonvulsant and sedative activities of aqueous leaf extract of *Leucas martinicensis* (Jacq.) R. Br. *Nigerian Journal of Basic and Applied Science* **23**(2): 87-91.
- Valsaraj, R., Pushpangadan, P., Smitt, U.W., Adsersen, A. and Nyman, U. (1997). Antimicrobial screening of selected medicinal plants from India. *J. Ethnopharmacol.* **58**: 75-83.