



## Valuing of indigenous pesticidal plant leaflet *Lippia javanica* (Burm. f.) Spreng growing in the northern parts of KwaZulu-Natal

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### Taxonomy and nomenclature

Family: Verbenaceae

Common names:

IsiZulu: umsuzwane

IsiXhosa: inzininiba

IsiSwati: sutwane, umsutane

English: lemon bush/ fever tea

Afrikaans: lemoenbossie/koorsbossie

Tswana: bokhukhwane/musukudu



FIGURE 1: *Lippia javanica* (Burm.f.) Spreng plant.

### Botanical description

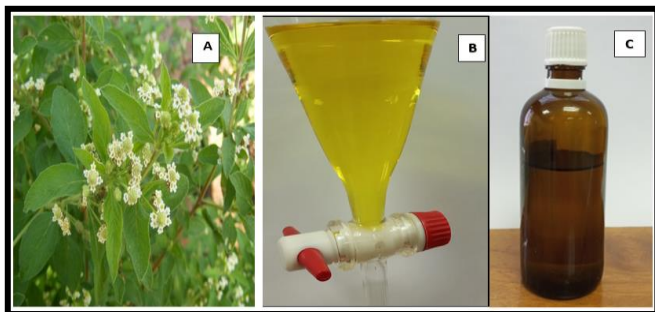
*Lippia javanica* occurs as an erect, multi-stemmed woody shrub approximately 1-2 m in height. The stems are profoundly branched and the leaves are elliptical, 3-4 cm in length and when crushed give off a unique intense lemon-like aroma. The leaf margins are dentate, lightly-toothed and hairy on both sides. The flowers are creamy white, clustered together in a

dense round spike at the apex of the stem (Mpati 2007; Maroyi 2017). It is one of the most aromatic indigenous shrubs. The small, cream flowers can be found on the shrub from summer to autumn in some areas and in others are produced all year. These flowers are arranged in dense, rounded flower heads. The fruit are rather inconspicuous, small and dry.

### Uses

**Medicinal** - Leaves contain medicinal properties and leaf infusions are used as a fever tea to treat coughs, aching muscles, diarrhoea and sometimes used to treat malaria (Juckett 1999). *Lippia javanica* leaves are infused with hot water, allowed to cool and used as a lotion, which can be used to treat skin disorders such as heat rash, bites and stings and other rashes. It can be used to treat parasites such as scabies, mosquitoes and lice (Viljoen *et al.* 2005). Roots and twigs are used as antidotes for suspected food poisoning and for bronchitis and sore eyes (Lukwa *et al.* 2009).

**Pesticidal** – essential organic compounds activate and promote bio-insecticide properties that control and repel insects such as bark beetles (Maroyi 2017). It is used in pre- and post-harvest pest management, as well as for ecto-parasite control in livestock (Madzimure *et al.* 2011). Plant extracts, in the form of leaf powder, at concentrations of 12.5% w/v using 0.1% v/v soap can be used against rape aphids and Tomato spider mites.



**FIGURE 2:** *Lippia javanica* essential oil extraction: **a.** *Lippia javanica* leaves, **b.** oil isolation and quantification and **c.** storage.

### Chemical composition

Phytochemical constituents responsible for medicinal activity (Chagonda and Chalchat 2015; Osunsanmi *et al.*, 2019) are presented in Tables 1 and 2.

**TABLE 1:** Antioxidant content of *Lippia javanica*.

Parameter	Concentration (ppm)
Flavonoids	573
Anthocyanin	72
Phenol acids	137
Alkaloids	266

**TABLE 2:** *Lippia javanica* essential oil composition.

Parameter	Concentration (ppm)
1.8 Cineole	78
Gamma terpenes	72
Myrcene (monoterpene)	1868
Camphor (terpene Ketone)	11761
p-cymene	198
Alpha pinene	34
Alpha terpinene	208
Terpinolene	665
Alpha terpineol	42

### Distribution and habitat

*Lippia javanica* is an indigenous *Lippia* species. The plants are widespread throughout large parts of

KwaZulu-Natal, predominantly in northern KwaZulu-Natal. Typically they grow in open veld, in the bush, as well as on forest margins.

### Growing *Lippia javanica*

*L. javanica* is usually planted in herb gardens, rather than the floral display area. It can be grown from seed, but also grows easily from cuttings. It grows relatively fast and prefers sunny areas. *L. javanica* is not very fussy and seems to do well in most soil types. It is known to colonise disturbed areas, making it a pioneer plant. These plants are usually very hardy and can grow under difficult circumstances, requiring little maintenance.

### Conclusion

A high concentration of volatile compounds called terpenes enables this plant to be used in aromatherapy and to give health support and improved well-being for the KwaZulu-Natal community. High concentrations of phytochemicals, particularly total flavonoids, suggests a great medicinal and agricultural crop potential, however, this crop has not been valued by the communities and agricultural sector. Cultivation studies should continue to identify plants with more stable chemotypes, which could then be promoted as major crops to transform and better the lifestyles of many KwaZulu-Natal rural communities.

### References

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