

ทองพันชั่ง, ใบ (THONG PHAN CHANG, BAI)

ทองคันชั่ง, ใบ (THONG KHAN CHANG, BAI), หญาแมนไก่, ใบ (YA MAN KAI, BAI)

Rhinacanthi Nasuti Folium

Snake Jasmine Leaf

Synonyms Dainty Spur Root, White Crane Flower Root

Category Antipyretic, antifungal (topical), antibacterial (topical).

Snake Jasmine Leaf is the dried leaf of *Rhinacanthus nasutus* (L.) Kurz (*Justicia nasuta* L., *Rhinacanthus communis* Nees) (Family Acanthaceae), Herbarium Specimen Number: DMSC 5372, Crude Drug Number: DMSc 1274.

Constituents Snake Jasmine Leaf contains naphthoquinones (e.g., rhinacanthins and rhinacanthone). It also contains polyphenols, flavonoids, etc.

Description of the plant (Fig. 1) Subshrub, up to 2 m tall; stem erect, stout, quadrangular, much branched, finely striated, densely pubescent when young, becoming glabrescent with age; young branch hairy. Leaves simple, opposite decussate, ovate-elliptic, elliptic to lanceolate, 6 to 12 cm long, 2 to 5 cm wide, apex acute to shortly acuminate, base cuneate or attenuate, margin entire or slightly undulate, abaxially densely pubescent, adaxially sparsely pubescent to subglabrous, secondary veins 5 or 6 pairs; petiole 1 to 1.5 cm long. Inflorescence paniculate, terminal or axillary, up to 50 cm long; rachis densely pubescent; bract lanceolate, about 2 mm long, about 0.5 mm wide; bracteole minute. Flower white to greenish white, bilabiate, sessile to subsessile; calyx 5 to 6 mm long, deeply 5-lobed, lobe lanceolate, up to 4 mm long, about 0.7 mm wide, both surfaces pubescent, outer surface with glandular trichome; corolla tube 1.5 to 2.5 cm long, upper lip upright, oblong, 8 to 9 mm long, 2 to 3 mm wide, revolute, lower lip obovate, 3-lobed, with red marking at base, 1 to 1.5 mm long, 1 to 1.3 mm wide; stamens 2, attached to apex of corolla tube, filament short, glabrous; ovary superior, elliptic, 2-loculed, each locule with 2 ovules, style slender, sparsely pubescent, stigma 2-lobed. Fruit a capsule, oblong-elliptic, 1.5 to 2 cm long, about 2 mm wide. Seeds 4, subglobose, about 2.5 mm in diameter, papillose.

Description Odour, aromatic, characteristic; taste, slightly bitter.

Macroscopical (Fig. 1) Dried whole or broken leaves, with or without petioles; whole leaves apex acute or shortly acuminate, base cuneate or attenuate, margin entire or slightly undulate, blade thin, wrinkled, slightly curled, brownish green to brown.

Microscopical (Figs. 2a–2d) Transverse section of the leaf through the midrib shows upper epidermis, mesophyll, vascular bundle, and lower epidermis. Upper epidermis: a layer of epidermal cells, stomata, glandular and multicellular uniseriate trichomes, and lithocysts. Mesophyll: palisade cell, a layer of columnar cells; spongy cell, loosely parenchyma; several layers of angular collenchyma in midrib. Vascular bundle: phloem and xylem. Lower epidermis: a layer of epidermal cells, stomata, glandular and multicellular uniseriate trichomes, and lithocysts.

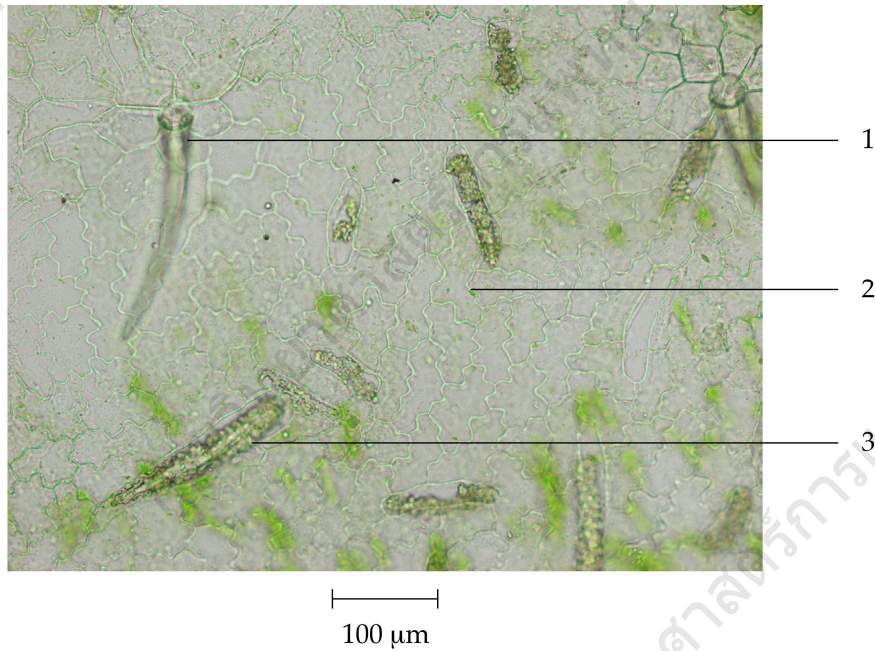
Transverse section of the petiole shows epidermis, cortex, and vascular tissue. Epidermis: a layer of subrounded cells, stomata, glandular and multicellular uniseriate trichomes, and lithocysts. Cortex: several layers of angular collenchyma, chlorenchyma, numerous round-shaped parenchyma. Vascular tissue: U-shaped collateral vascular bundles; phloem and xylem.

Snake Jasmine Leaf in powder possesses the diagnostic microscopical of the unground drug. The combination of lithocyst, glandular and multicellular uniseriate trichomes, are characteristic and can be seen in abundance.

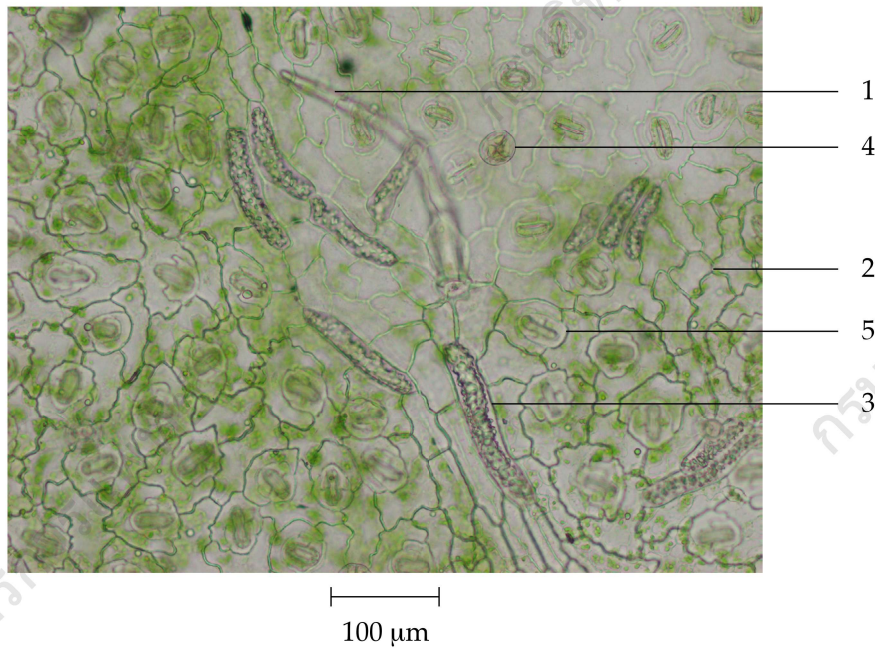


Fig. 1 *Rhinacanthus nasutus* (L.) Kurz

1. habit 2. leaves and flowers 3. part of inflorescences 4. partially bloomed flower
5. flowers (top view) 6. crude drug



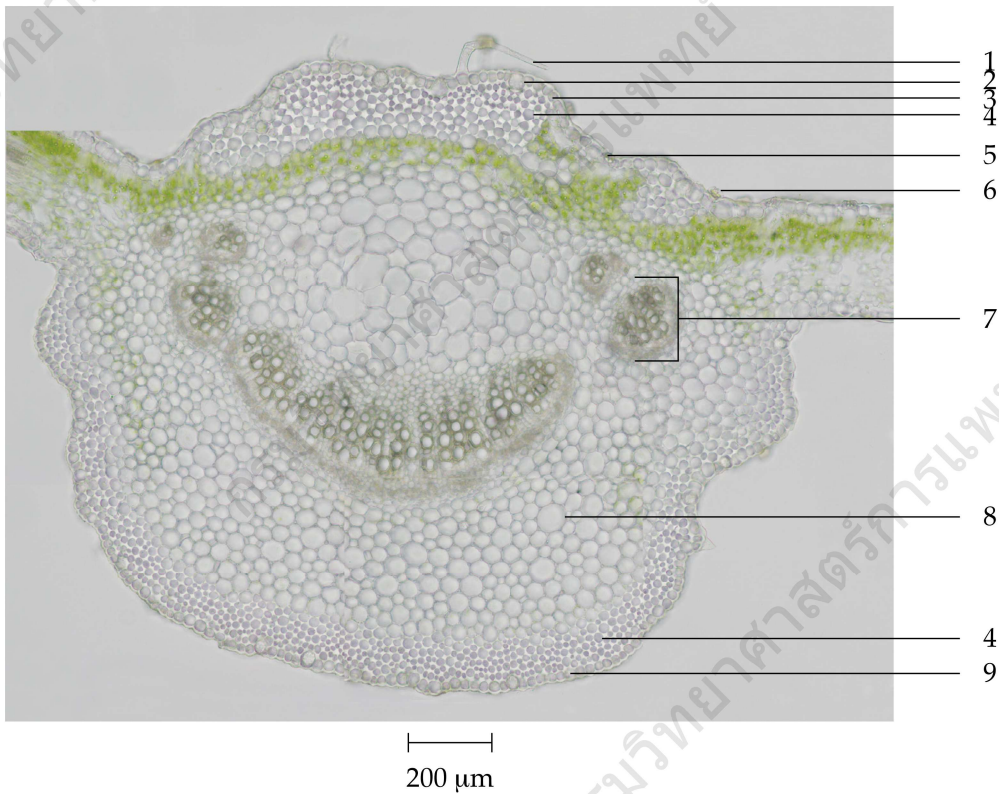
Upper Epidermis of the Lamina



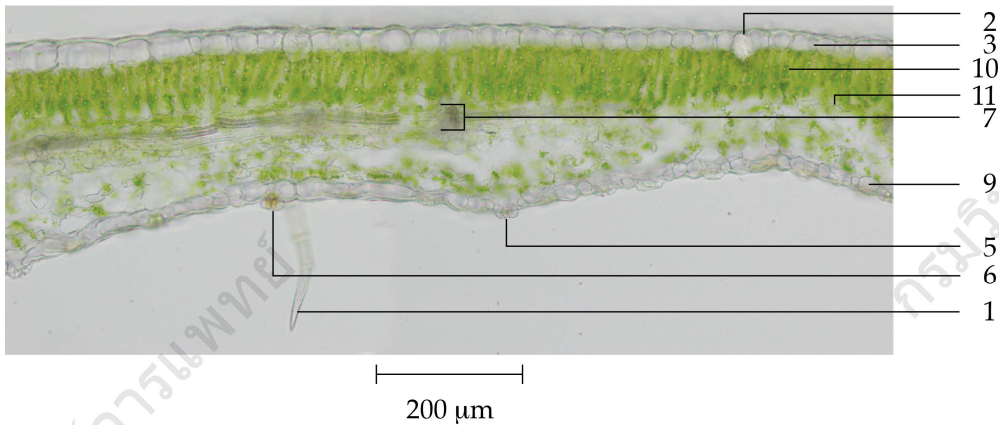
Lower Epidermis of the Lamina

Fig. 2a Photomicrographs of Epidermises of the Leaf of *Rhinacanthus nasutus* (L.) Kurz

1. multicellular uniseriate trichome	4. glandular trichome
2. epidermal cell	5. diacytic stoma
3. lithocyst	



Transverse Section of the Midrib



Transverse Section of the Lamina

Fig. 2b Photomicrographs of Transverse Sections of the Leaf of *Rhinacanthus nasutus* (L.) Kurz

1. multicellular uniseriate trichome	7. vascular tissue
2. lithocyst	8. parenchyma
3. upper epidermis	9. lower epidermis
4. collenchyma	10. palisade cell
5. stoma	11. spongy cell
6. glandular trichome	



Fig. 2c Photomicrograph of Transverse Section of the Petiole of *Rhinacanthus nasutus* (L.) Kurz

- | | |
|----------------|---------------------------|
| 1. epidermis | 5. phloem |
| 2. lithocyst | 6. vessel |
| 3. collenchyma | 7. multicellular trichome |
| 4. parenchyma | |

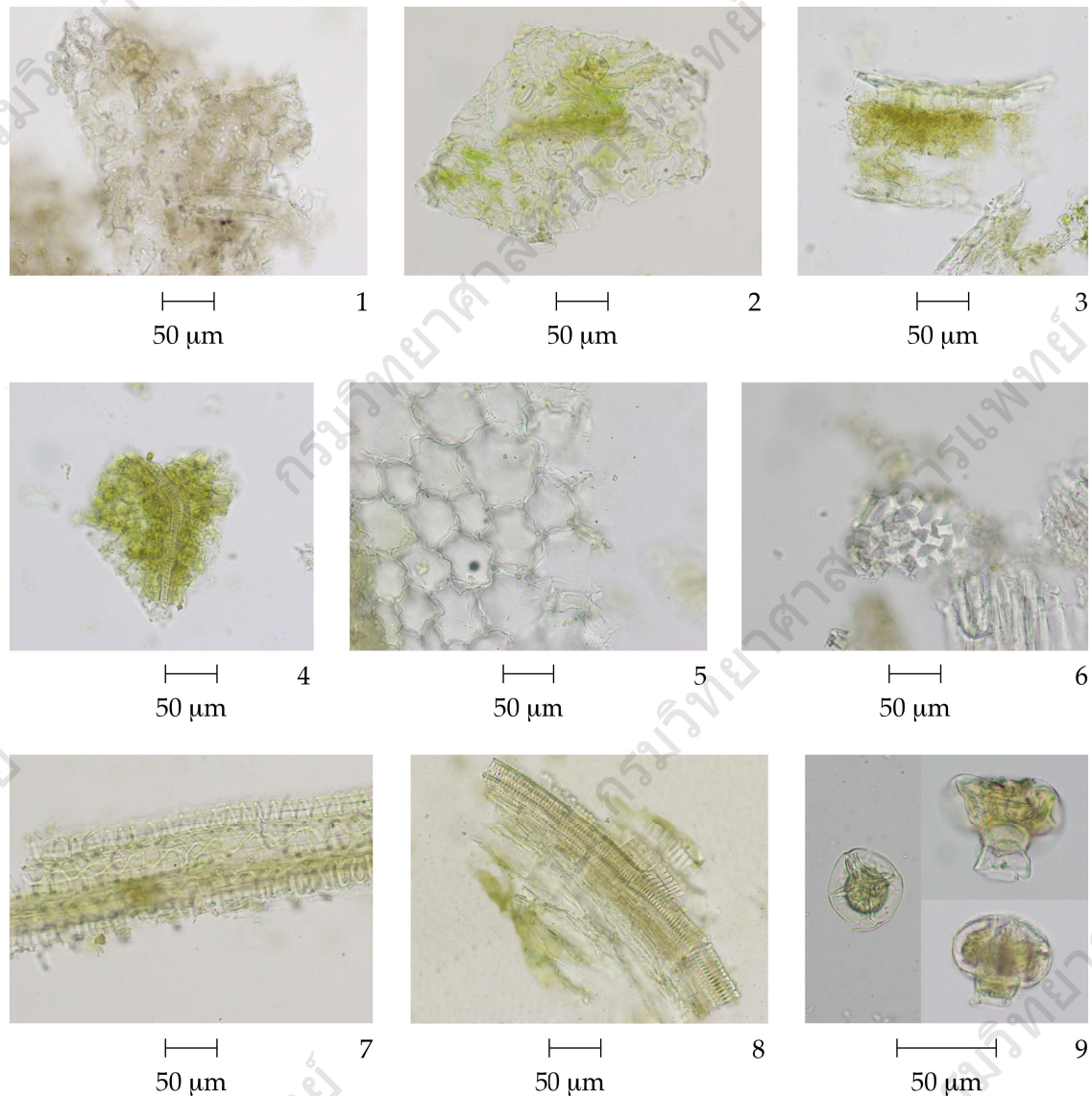
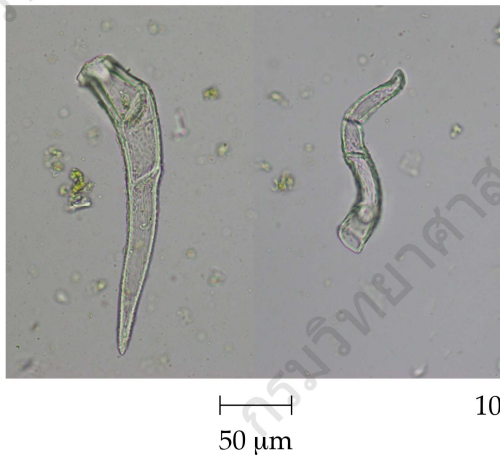
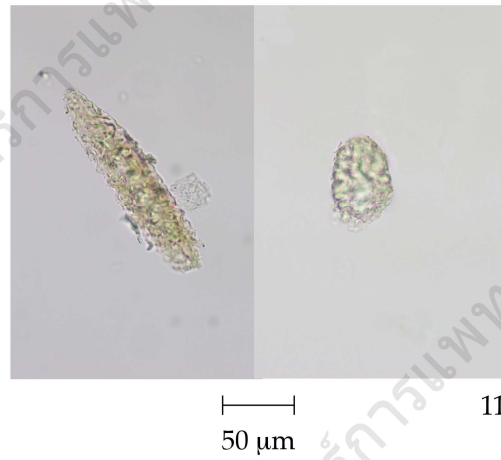


Fig. 2d Photomicrographs of Powdered Drug of the Leaves of *Rhinacanthus nasutus* (L.) Kurz

1. upper epidermis and lithocyst, in surface view
2. epidermis, glandular trichome, cystolith, and diacytic stomata
3. lamina in sectional view, showing epidermis, palisade cells, spongy cells, and lower epidermis
4. lamina, in surface view, showing spongy cells and veinlets
5. parenchyma containing acicular crystals
6. collenchyma in sectional and longitudinal views
7. spiral vessels
8. reticulate vessels, fibres, and parenchyma, in longitudinal view
9. glandular trichomes



10



11

Fig. 2d (continued)

10. multicellular uniseriate trichomes

11. cystoliths

Packaging and storage Snake Jasmine Leaf shall be kept in well-closed containers, protected from light, and stored in a dry place.

Identification

A. Reflux 500 mg of the sample, in powder, with 10 mL of *chloroform* for 15 minutes and filter. To 2 mL of the filtrate, add 1 mL of *strong ammonia solution*: a pink colour develops.

B. Reflux 500 mg of the sample, in powder, with 10 mL of *ethanol* for 15 minutes and filter. Add 200 mg of *activated charcoal* to the filtrate, swirl, allow to stand for 5 minutes, and filter. To the filtrate obtained, add a few drops of a 10 per cent w/v solution of *potassium hydroxide* in *ethanol* and mix. Apply a few drops of this solution to a filter paper and examine under ultraviolet light (366 nm): a greenish blue colour appears.

C. Carry out the test as described in the “Thin-Layer Chromatography” (Appendix 3.1), using a high-performance plate with *silica gel GF254* as the coating substance and a mixture of 65 volumes of *hexane* and 35 volumes of *ethyl acetate* as the mobile phase and allow the solvent front to ascend 8 cm above the line of application. Apply to the plate as a band of 8 mm, 10 µL of the test solution prepared by refluxing 500 mg of the sample, in powder, with 10 mL of *ethanol* for 15 minutes and filtering. Add 100 mg of *activated charcoal* to the filtrate, swirl, allow to stand for 5 minutes, and filter. After removal of the plate, allow it to dry in air. Spray the plate with a 10 per cent w/v solution of *potassium hydroxide* in *ethanol* and examine the plate under ultraviolet light (366 nm); one blue and two bluish green fluorescent bands are observed (Fig. 3).

Loss on drying Not more than 10.0 per cent w/w after drying at 105° to constant weight (Appendix 4.15).

Foreign matter Not more than 2.0 per cent w/w (Appendix 7.2).

Total ash Not more than 18.0 per cent w/w (Appendix 7.7).

Ethanol-soluble extractive Not less than 4.0 per cent w/w (Appendix 7.12).

Water-soluble extractive Not less than 15.0 per cent w/w (Appendix 7.12).

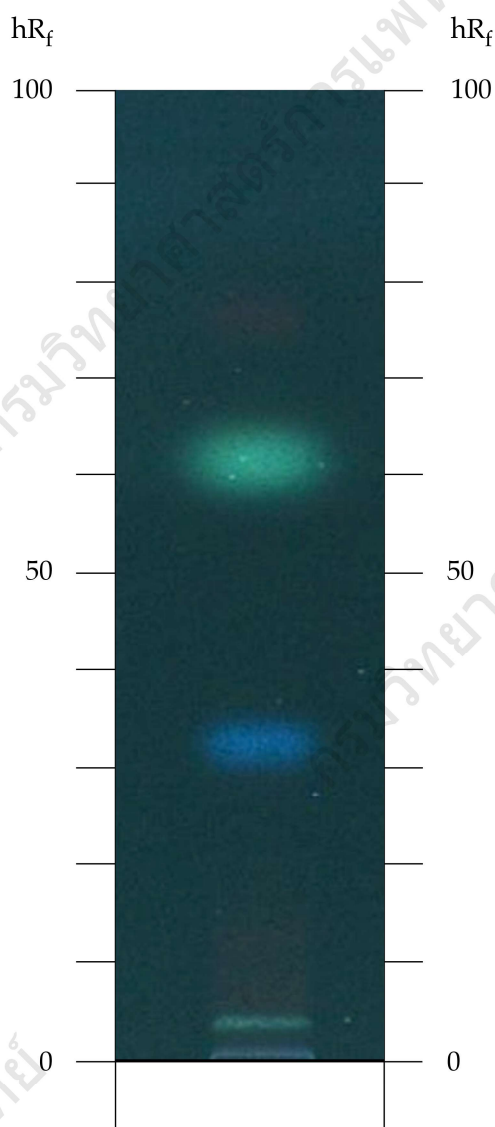


Fig. 3 Thin-Layer Chromatogram of Ethanolic Extract of the Leaves of *Rhinacanthus nasutus* (L.) Kurz, Detected Under UV Light (366 nm) After Spraying With a 10 Per Cent W/V Solution of *Potassium Hydroxide* in *Ethanol*