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Brideliae Ovatae Folium

Bridelia Ovata Leaf

Category Mild laxative.

Bridelia Ovata Leaf is the dried leaf of *Bridelia ovata* Decne. (*B. ovata* Decne. var. *genuina* Müll. Arg.) (Family Phyllanthaceae), Herbarium Specimen Number: DMSC 5331, Crude Drug Number: DMSc 1152.

Constituents Bridelia Ovata Leaf contains triterpenoids such as friedelin. It also contains sterols, etc.

Description of the plant (Fig. 1) Scrambling shrub to tree, up to 8 m tall, monoecious; branchlets glabrous, with scattered lenticels. Leaves simple, alternate, elliptic, oblong to ovate, 5 to 18 cm long, 2 to 8(–10) cm wide, apex obtuse, rounded to bluntly acute, base slightly cordate to obtuse, margin entire or undulate, chartaceous, glabrous, venation prominent on both sides, nerves in 13 to 17 pairs, joining into marginal vein, tertiary veins reticulate; petiole terete, 3 to 6 mm long, glabrous; stipule narrowly triangular or subulate, up to 1 cm long and 1.2 mm wide, glabrous, caducous. Inflorescence glomerule, axillary; bract ovate-triangular, up to 2 mm long, 1 to 1.5 mm wide. Flowers unisexual, 1 to 20 or more per glomerule, subsessile; pedicel 1.5 to 2.5 mm long; sepals 5, triangular, up to 2 mm long and 1.5 mm wide, glabrous, greenish cream tinged with red; petals 5, elliptic, 0.5 to 1.2 mm long, 0.7 to 1 mm wide, whitish yellow, apex notched or sometimes rounded. Male flower 3 to 5 mm in diameter, disc about 2 mm in diameter; stamens 5, staminal column about 1 mm long, free part of filament up to 0.8 mm long, anther shortly ellipsoid, about 0.5 mm long, 0.3 to 0.4 mm wide; pistillode conical-ovoid, up to 0.7 mm long and 0.4 mm wide, apex bifid. Female flower 4 to 6 mm in diameter, flat disc about 2.5 mm in diameter, tubular disc up to 1 mm long, fully covering ovary; ovary superior, globose, 0.6 to 1 mm in diameter, 2-loculed, each locule with 2 ovules, styles 2, up to 1.2 mm long, basally united, stigma deeply bifid; pedicel often shorter and stouter than that of male flower. Fruit drupaceous, tardily dehiscent, up to 9 per glomerule, depressed-ellipsoid to globose, bilobed, apically emarginate, 5 to 7 mm long, 6 to 7.5 mm wide, pale greenish when young, becoming purple to black when aged; endocarps woody, subglobose, brown. Seed subglobose, 3.5 to 5 mm long, 4.5 to 5 mm wide, laterally furrowed, reddish black, shiny.

Description Odour, mild, characteristic; taste, bitter.

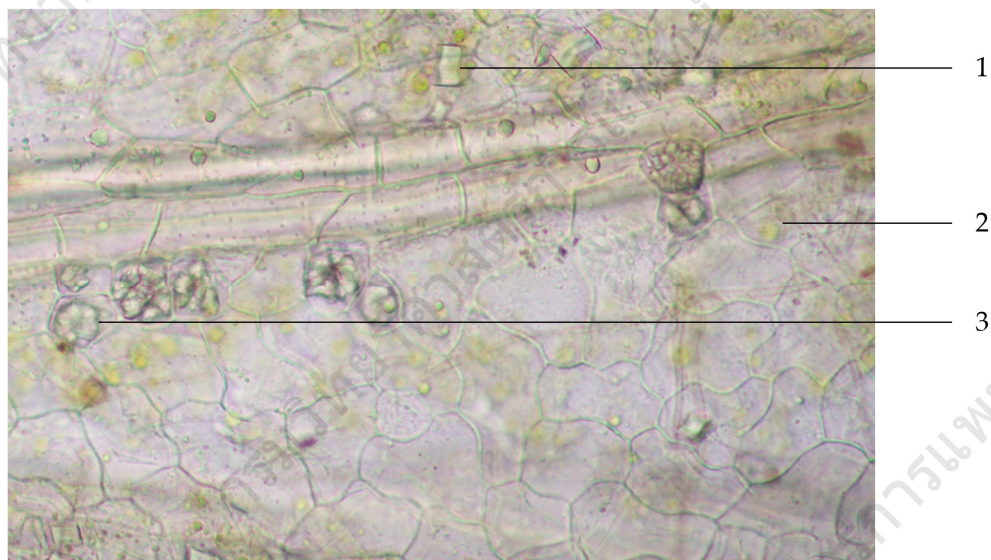
Macroscopical (Fig. 1) Dried entire or broken leaves, shortly petiolate, blade chartaceous, greenish brown, upper surface slightly shiny, lower surface with some farina; entire leaves elliptic, oblong to ovate, apex obtuse, rounded to bluntly acute, base slightly cordate to obtuse, margin entire or undulate.

Microscopical (Figs. 2a–2d) Transverse section of the leaf through the midrib shows upper epidermis, mesophyll, vascular tissue, and lower epidermis. Upper epidermis: 1 to 2 layers of polygonal cells, some containing rosette aggregate or prismatic crystals, or microcrystals. Mesophyll: 1 to 2 layers of cylindrical palisade cells, some containing prismatic or rosette aggregate crystals or brown substances; spongy cells, round-shaped, some containing prismatic or rosette aggregate crystals or microcrystals; collenchyma and parenchyma, some containing brown substances and/or rosette aggregate or prismatic crystals or microcrystals, in the upper and lower parts of the midrib. Vascular tissue: phloem and xylem. Lower epidermis: a layer of subrounded cells, some containing rosette aggregate crystals or brown substances, and stomata.

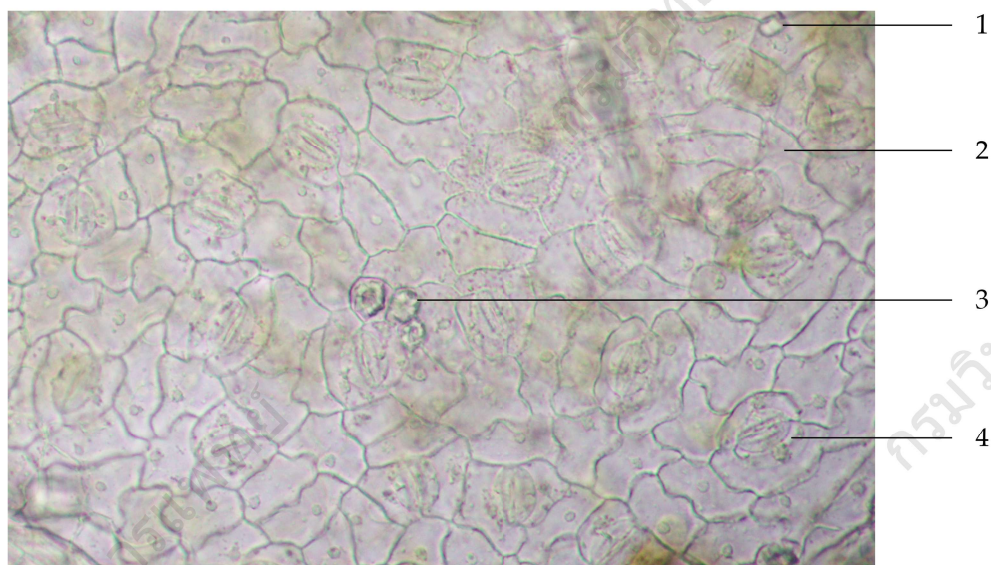


Fig. 1 *Bridelia ovata* Decne.

1. habit 2. leaves 3. flowering twig 4. female inflorescences 5. female flowers
6. infructescences 7. mature fruits 8. crude drug



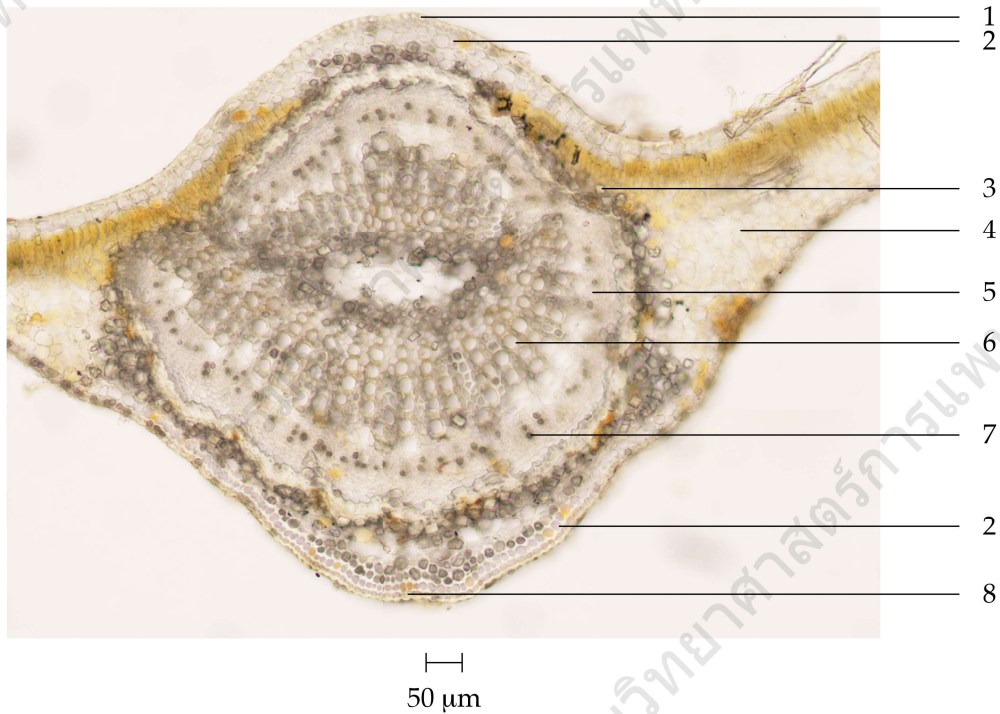
Upper Epidermis of the Lamina



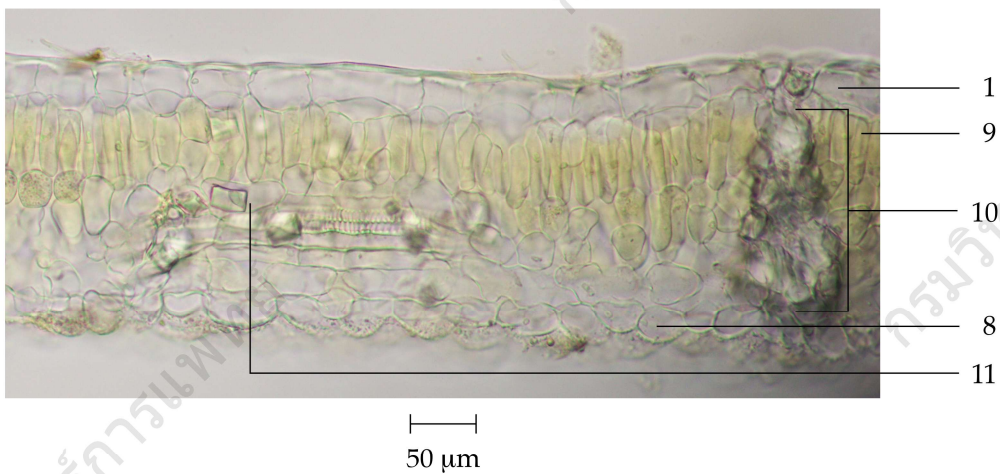
Lower Epidermis of the Lamina

Fig. 2a Photomicrographs of Epidermises of the Leaf of *Bridelia ovata* Decne.

- | | |
|----------------------|------------------------------|
| 1. prismatic crystal | 3. rosette aggregate crystal |
| 2. epidermal cell | 4. paracytic stoma |



Transverse Section of the Midrib



Transverse Section of the Lamina

Fig. 2b Photomicrographs of Transverse Sections of the Leaf of *Bridelia ovata* Decne.

- | | |
|----------------------|--|
| 1. upper epidermis | 7. rosette aggregate crystal |
| 2. collenchyma | 8. lower epidermis |
| 3. prismatic crystal | 9. palisade cell |
| 4. parenchyma | 10. vascular tissue |
| 5. phloem | 11. spongy cell, some containing prismatic crystal |
| 6. vessel | |

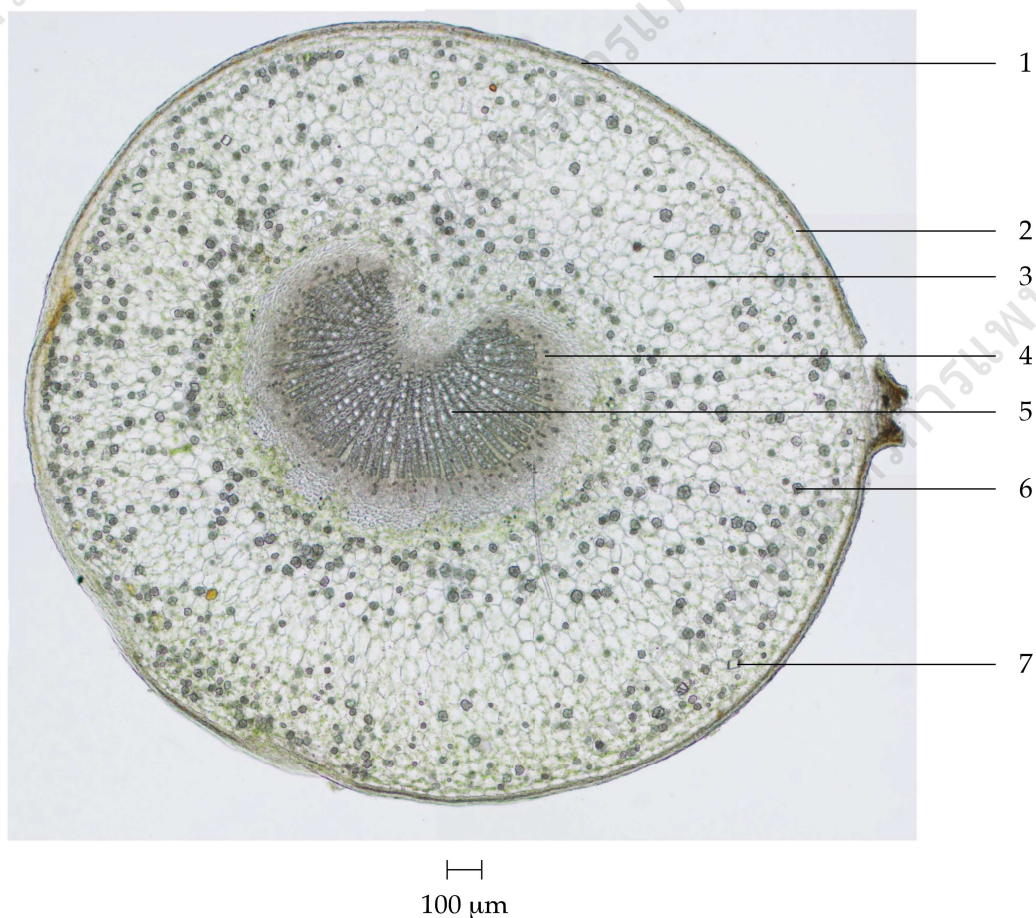


Fig. 2c Photomicrograph of Transverse Section of the Petiole of *Bridelia ovata* Decne.

- | | |
|----------------|------------------------------|
| 1. epidermis | 5. vessel |
| 2. collenchyma | 6. rosette aggregate crystal |
| 3. parenchyma | 7. prismatic crystal |
| 4. phloem | |

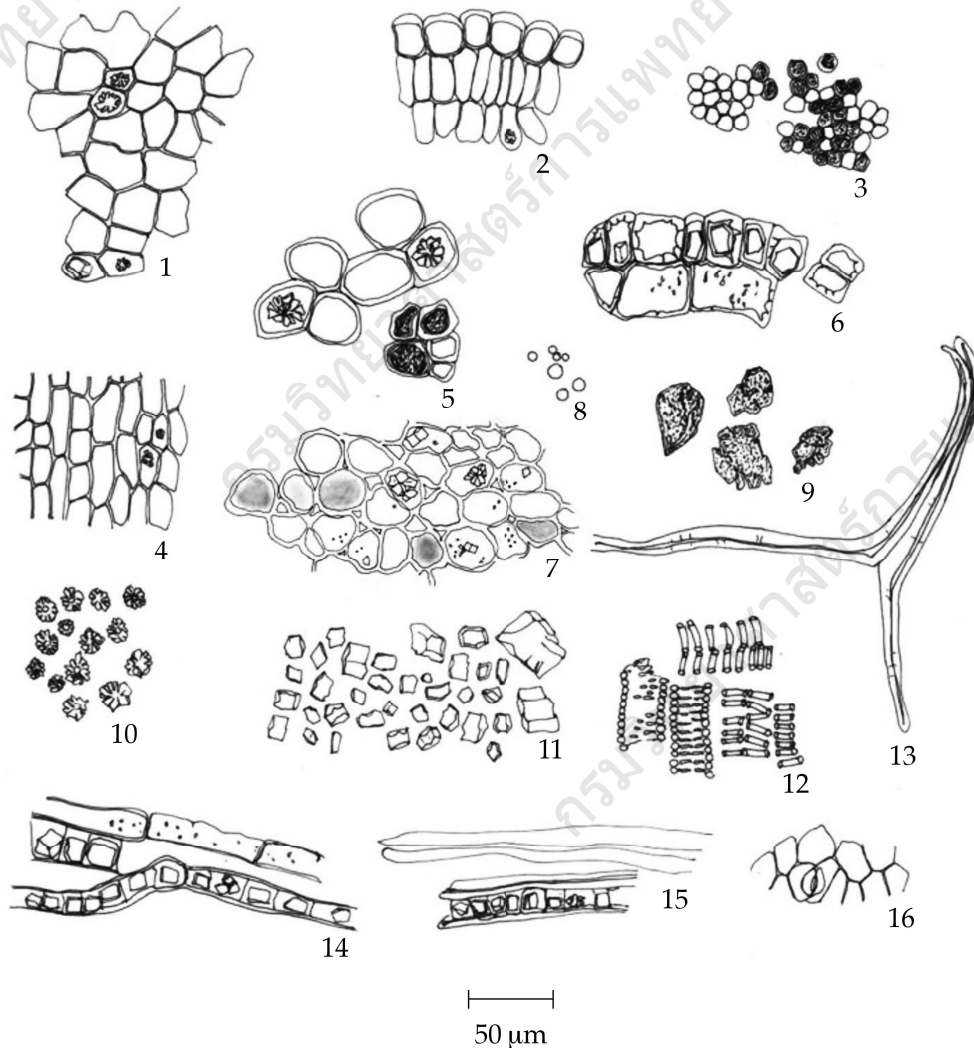


Fig. 2d Line Drawings of Powdered Drugs of the Leaves of *Bridelia ovata* Decne.

1. epidermis, in surface view, some containing rosette aggregate or prismatic crystals
2. upper epidermis and palisade cells, some containing rosette aggregate crystal, in sectional view
3. palisade cells, in top view, some containing brown substances
4. epidermis, in surface view, some containing rosette aggregate crystals
5. parenchyma, some containing rosette aggregate crystals and brown substances
6. sclereids, some containing prismatic crystals
7. collenchyma, some containing yellowish substances, microcrystals, rosette aggregate crystals, or prismatic crystals
8. oil droplets
9. dark brown substances
10. rosette aggregate crystals
11. prismatic crystals
12. pitted, reticulate, and spiral vessels
13. fibres
14. parenchyma and fibre with prismatic sheaths
15. fibres and fibres associated with prismatic sheath
16. lower epidermis with paracytic stoma

Transverse section of the petiole shows epidermis, cortex, and vascular tissue. Epidermis: a layer of subrounded cells containing brown substances. Cortex: 1 to 2 layers of collenchyma, some containing rosette aggregate crystals; parenchyma, numerous round-shaped cells, some containing rosette aggregate or prismatic crystals or microcrystals or brown substances, and sclereids. Vascular tissue: slight secondary growth, phloem and xylem; phloem, several layers of fibres, phloem ray, some containing rosette aggregate crystals, sieve tube cells, and companion cells; xylem, vessels, xylem rays, xylem fibres, and xylem parenchyma, some containing brown substances.

Bridelia Ovata Leaf in powder possesses the diagnostic microscopical of the unground drug. Microcrystals, rosette aggregate and prismatic crystals can be seen in abundance in almost all tissues, particularly in epidermis and palisade cells. Sclereids containing prismatic and rosette aggregate crystals are characteristic.

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

Identification

A. To 500 mg of the sample, in powder, add 10 mL of *methanol*, shake, allow to stand for 20 minutes, and filter. Evaporate 2 mL of the filtrate to dry and dissolve the residue in 1 mL of *acetic anhydride*. Slowly add 1 mL of *sulfuric acid* to form two layers: the upper layer changes to a green colour and a brownish red ring forms at the zone of contact.

B. 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 *chloroform* as the mobile phase and allowing the solvent front to ascend 8 cm above the line of application. Apply to the plate as a band of 10 mm, 15 µL of the test solution prepared by adding 10 mL of *methanol* to 500 mg of the sample, in *fine powder*, shaking, allowing to stand for 20 minutes, and filtering. After removal of the plate, allow it to dry in air. Spray the plate with *anisaldehyde TS*, heat at 105° for about 5 minutes, and examine under ultraviolet light (366 nm). Six grey and nine red fluorescent bands are observed (Fig. 3).

Loss on drying Not more than 7.0 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).

Acid-insoluble ash Not more than 1.0 per cent w/w (Appendix 7.6).

Total ash Not more than 12.0 per cent w/w (Appendix 7.7).

Ethanol-soluble extractive Not less than 5.0 per cent w/w (Appendix 7.12).

Water-soluble extractive Not less than 13.0 per cent w/w (Appendix 7.12).

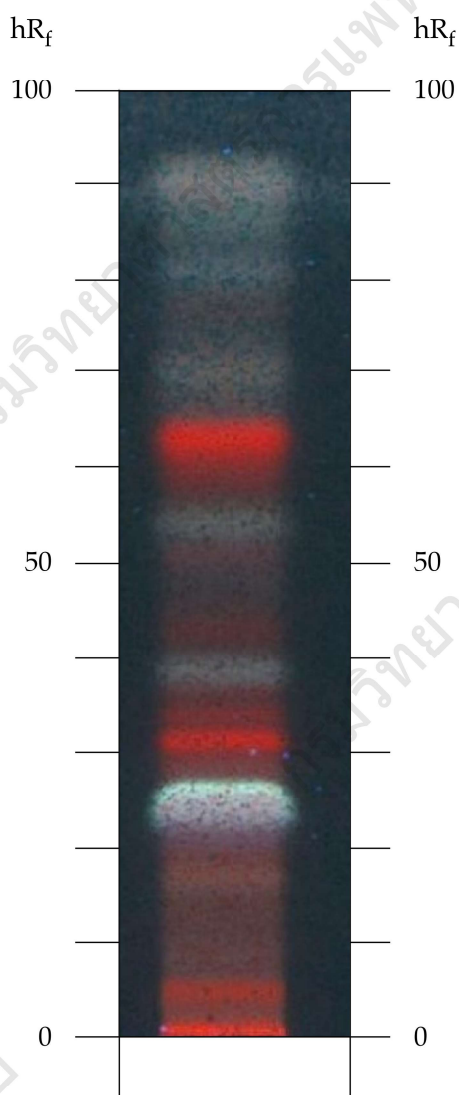


Fig. 3 Thin-Layer Chromatogram of Methanolic Extract of the Leaves of *Bridelia ovata* Decne., Detected Under UV Light (366 nm) After Spraying With *Anisaldehyde* TS