Cinnamomum tamal (Buch.-Ham) T. Nees & C.H. Eberm.

(ကရုဝေး)

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1. Scope

This standard prescribes the specification and identification for quality criteria of *Cinnamomum tamala* (Buch.-Ham.) T. Nees & C.H. Eberm (ကရုဝေး) mature leaf powder to be used as a single agent or as an ingredient in the traditional medicine formulations.

2. Definition

Cinnamomum tamala (Buch.-Ham.) T. Nees & C.H. Eberm (Bay leaf) belongs to the family Lauraceae; its leaf is used in Traditional Medicines.

3. Description

3.1. Macroscopic characteristics

Leaves simple, opposite to nearly opposite, shortly petiolate, slightly sulcate adaxially, elliptic-oblong, tri-nerved from the base to the apex, margin entire, apex acute to broadly cuneate, upper surface smooth, shiny and leathery, lower surface slightly rough; glabrous on both surfaces, triplinerved. Odour characteristic, taste spicy and mucilaginous.

3.2. Microscopic characteristics

Transverse section of *Cinnamomum tamala* (Buch.-Ham.) T. Nees & C.H. Eberm leaf shows:

- both of the upper and lower epidermis composed of one-layered of scler- enchymatous cell covered by thick cuticle layer
- a few-layered of collenchymatous hypodermis, beneath the adaxial side and above the abaxial side of mid-rib
- mesophyll composed of one-layered of palisade parenchyma and a few layered of spongy parenchyma cells

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- stone cells distinct, occur in the spongy layer of mesophyll
- mucilage cells, oil cells and prismatic crystal containing cells are scattered in the mesophyll layer
- vascular bundle surrounded by a sclerenchymatous sheath

3.3. Characters of the powdered drug

Dark greenish yellow powder, characteristic odour, mucilaginous and spicy taste. The diagnostic characters are :

- leaf fragment in sectional view
- upper epidermis with paracytic stomata
- mucilage canal
- stone cells

4. Specification

4.1. Physicochemical data

- Loss on drying at 105°C : Not more than 7.61%
- Foreign matter : Not more than 0.5 %
- Total ash : Not more than 4.75 %
- Acid-insoluble ash : Not more than 1.25 %
- Ethanol soluble extract : Not less than 20.56 %
- Water soluble extract : Not less than 22.30 %

5. Identification

5.1. Phytochemical test

A) Boil 0.5 g of powdered sample in 20 mL of distilled water and filter. Add a few drops of 10 % ferric chloride solution, blue colour is produced.

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B) In a test tube containing about 5 mL of aqueous extract of the sample, add a few drops of 1% solution of lead acetate. A yellow precipitate is formed.

C) One drop of aqueous extract of sample is taken and spotted on a filter paper using a capillary tube, allowed to dry and spray with ninhydrin reagent. The filter paper is dried at room temperature and then kept in oven at 110 °C for five minutes. Spot color is changed to violet color.

5.2. TLC analysis

Extract 1 g of crude dried powdered sample in a stoppered container with 10 mL of dichloromethane for a period of 6 hours and allowed to stand. Then the mixture is filtered and evaporated. The dried residue is dissolved in 1.0 mL of dichloromethane and used for Thin Layer Chromatography investigation.

- Application volume : 5 µL
- Developing solvent system : Hexane: Ethyl acetate (10:2)
- Spray reagent : Vanillin-sulphuric acid
- Stationary phase : Silica gel GF_{254} Aluminium sheet

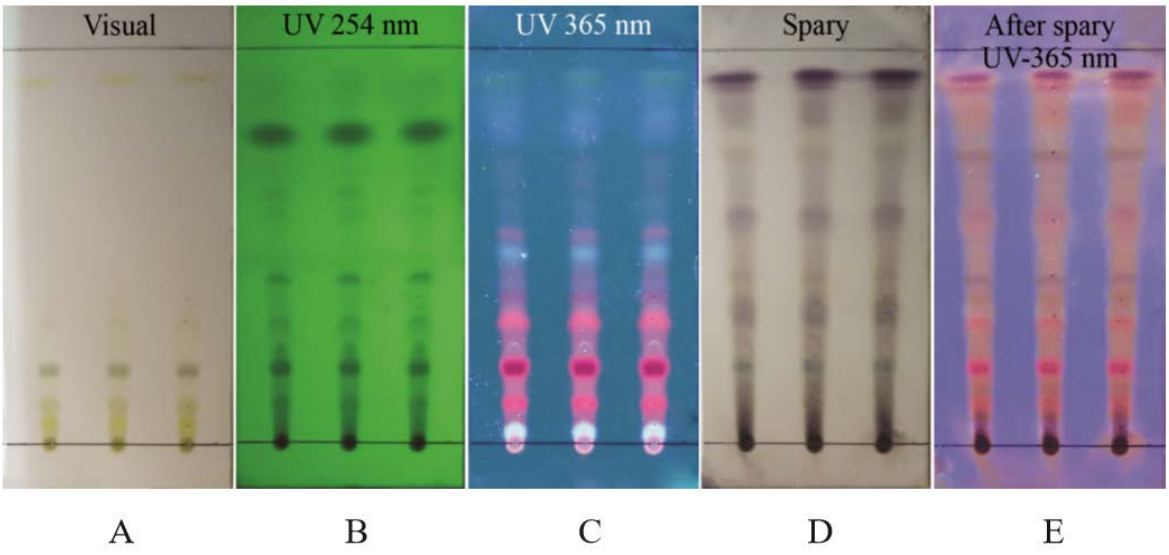

Fig.1. Thin-layer Chromatogram of dichloromethane extract of the leaves of *Cinnamomum tamala* (Buch.-Ham.) T. Nees & C.H. Eberm

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Table.1. R_f values of components in dichloromethane extract of the leaves of *Cinnamomum tamala* (Buch.-Ham.) T. Nees & C.H. Eberm

R_f	Visual	UV 254 nm	UV 365 nm	Spray	After spray
0.93	Orange	Faint brown	Pale greenish blue	Deep violet	Pink brown
0.83	-	-	Blue	Brown	-
0.79	-	Deep brown	-	-	-
0.74	-	-	-	Pale yellow brown	Pink purple
0.63	-	Pale brown	-	-	-
0.58	-	Pale brown	-	Violet brown	Pink
0.53	-	-	Pale pink	-	-
0.49	-	-	Blue	-	-
0.42	-	Brown	Blue pink	Pale brown	Pink brown
0.37	Faint brown	-	-	-	-
0.31	Faint brown	Brown	Pink	Violet brown	Pink
0.20	-	Brown	Red	-	Pink
0.10	-	Brown	Red	-	Pink brown
0.05	Orange	-	-	-	-
0.02	-	-	Faint brown	Black	-

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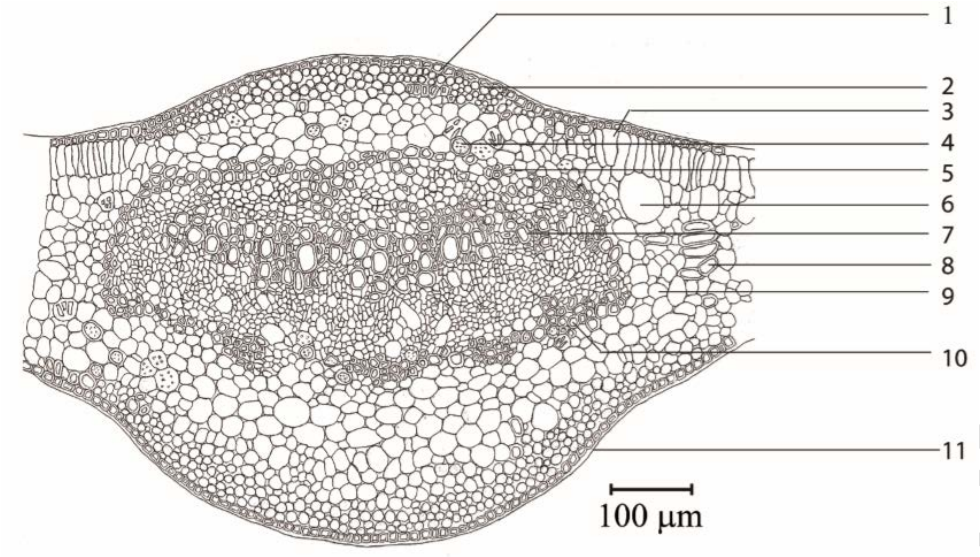

Fig.2. Transverse section of *Cinnamomum tamala* (Buch.-Ham.) T. Nees & C.H. Eberm leaf

1. Upper epidermis with cuticle layer
2. Collenchymatous hypodermis
3. Palisade parenchyma
4. Oil cell
5. Fibre
6. Mucilage cell
7. Vascular bundle
8. Stone cell
9. Spongy parenchyma
10. Sclerenchymatous bundle sheath
11. Lower epidermis with cuticle layer

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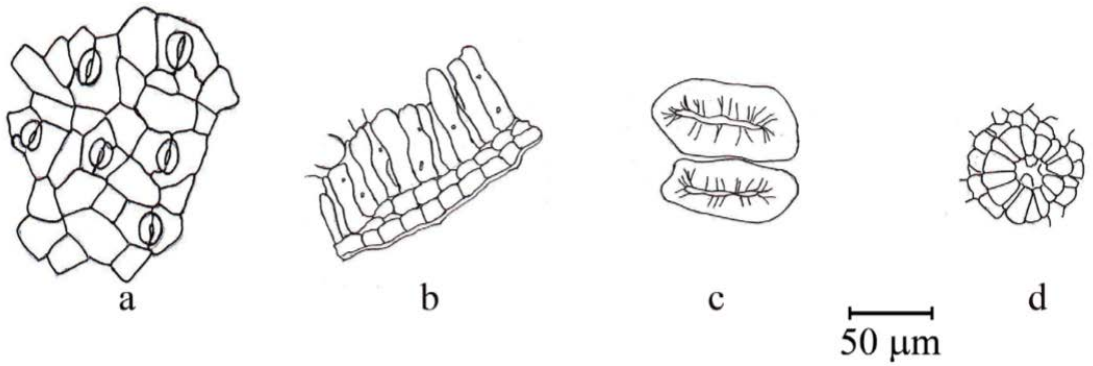

Fig.3. Characters of the powdered drug

a. Upper epidermis with paracytic stomata
b. Leaf fragments in sectional view
c. Stone cells
d. Mucilage canal

6. Reference

Department of Traditional Medicine, Ministry of Health. Myanmar Herbal Pharmacopoeia. VOLUME II. Nay Pyi Taw, Myanmar; 2018. Pg 37-42.

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