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*Alpinia conchigera* Griff. (ပဲခူးကြီး)

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*Alpinia conchigera* Griff. (ပတ်ကောကြီး)**1. Scope**

This standard prescribes the specification and identification for quality criteria of *Alpinia conchigera* Griff. (ပတ်ကောကြီး) rhizome powder to be used as a single agent or as an ingredient in the traditional medicine formulations.

**2. Definition**

*Alpinia conchigera* Griff. (Mussel Galangal) belongs to the family Zingiberaceae; its rhizome is used in Traditional Medicines.

**3. Description****3.1. Macroscopic characteristics**

Rhizome horizontal, cylindrical, branches short, swelling at the base of aerial shoot covered with wavy annulations of the leaf bases. Externally reddish brown, internally light yellow, surface rough, fibrous. Odour pleasant, taste hot and sweet.

**3.2. Microscopic characteristics**

Transverse section of *Alpinia conchigera* Griff. rhizome shows:

- the epidermis, a single-layered of parenchyma with cuticle layer
- cortex, broad, many-layered of irregularly rounded parenchymatous cells
- the cortical cells contain starch grains
- larger size of cortical vascular bundles many, scattered in the cortical zone
- xanthophyll pigmented cells are present in the cortex and stellar regions
- the endodermis lies below the cortex, one-layered of barrel-shaped parenchyma, consists of starch grain, below the endodermis 1-2 layered of

parenchyma cells, the pericycle, annular vessels are scattered throughout the rhizome

- smaller size of vascular bundles many, scattered in the stelar region of rhizome

### 3.3. Characters of the powdered drug

Orange-brown powder, characteristic and pleasant odour, spicy and sweet taste. The diagnostic characters are:

- fragments of the isodiametric parenchyma with dark secretory cells and numerous simple starch granules
- club-shaped, large starch granules from the cortex

## 4. Specification

### 4.1. Physicochemical data

- Loss on drying at 105°C : Not more than 6.41 %
- Foreign matter : Not more than 1.0 %
- Total ash : Not more than 10.85 %
- Acid-insoluble ash : Not more than 5.15 %
- Ethanol soluble extract : Not less than 17.52 %
- Water soluble extract : Not less than 18.20 %

## 5. Identification

### 5.1. Phytochemical test

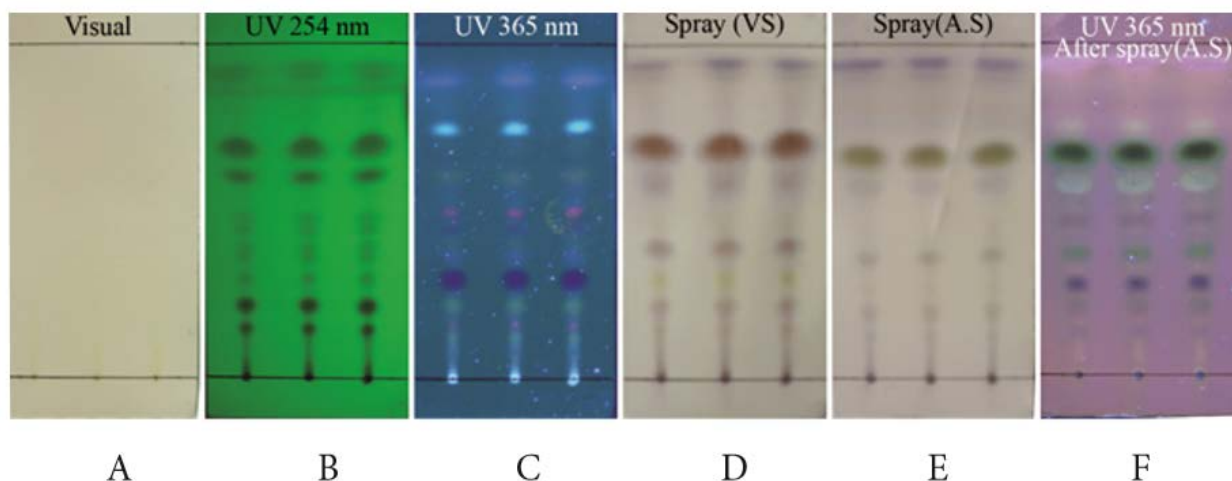
- A) One drop of aqueous extract of sample is taken and spotted on a filter paper using a capillary tube, allowed to dry and spray with ninhydrin reagent. The filter paper is dried at room temperature and then kept in oven at 110 °C for five minutes. Spot color is changed to violet color.

- B) Two millilitres of aqueous extract of the sample is added to 1 mL of a mixture of equal part of Fehling's solution 'A' and Fehling's solution 'B' and boiled the contents of the test tube for a few minutes. A brick red coloured precipitation is produced.
- C) The drug 1 g is introduced into the test tube and followed by the addition of 10 mL of distilled water and shaken vigorously for a few minutes, a long lasting foam is produced.
- D) Add 10 mL of chloroform to 1 g of the drug for 6 hours and filter. The filtrate is added to 0.3 mL of acetic anhydride followed by a few drops of concentrated sulphuric acid. A red colour is formed.

## 5.2. TLC analysis

Extract 0.5 g of crude drug with 15 mL of dichloromethane under reflux for 10 minutes. Filter and filtrate is evaporated to dryness at room temperature. The dried residue is dissolved in 1 mL of dichloromethane for TLC investigation.

- Application volume : 10  $\mu$ L
- Developing solvent system : Hexane: Ethyl acetate (10:3)
- Spray reagent : Vanillin - sulphuric acid (VS)  
: Anisaldehyde - sulphuric acid (AS)
- Stationary phase : Silica gel GF<sub>254</sub> Aluminium sheet

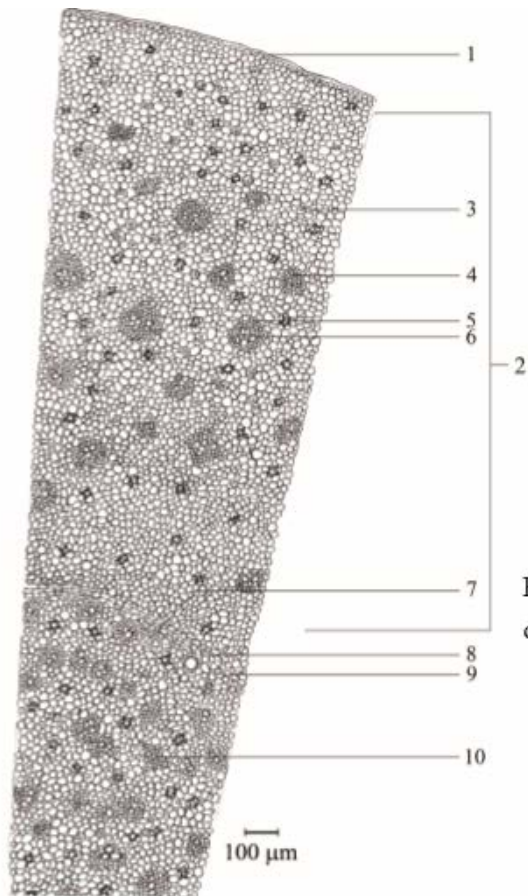


**Fig.1. Thin-layer Chromatogram of dichloromethane extract of the dried rhizome of *Alpinia conchigera* Griff.**

**Table.1.  $R_f$  values of components in dichloromethane extract of the dried rhizome of *Alpinia conchigera* Griff.**

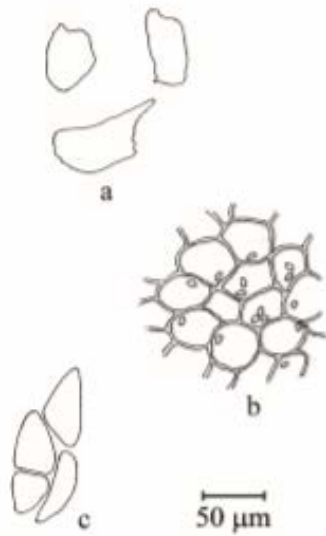
$R_f$	Visual	UV 254 nm	UV 365 nm	Spray (V.S)	Spray (A.S)	UV 365 nm After spray (A.S)
0.93	-	Pale brown	-	Dark violet	Violet	Pink
0.90	-	Faint brown	Blue	Pale violet	Pale violet	-
0.75	-	Pale brown	Light blue	-	-	White
0.70	-	-	Pale white	-	-	-
0.68	-	Brown	-	Reddish brown	Greenish yellow	Dark green
0.60	-	Dark	Pale	Pale	Pale	Pale white

		brown	white	reddish brown	dark blue	
0.48	-	Pale brown	Pink	-	-	Pale violet
0.45	-	Pale brown	-	Pale yellow	Pale yellow	-
0.40	-	Pale brown	-	Reddish brown	Greenish yellow	-
0.37	-	Pale brown	Faint blue	-	-	Green
0.30	-	Pale brown	Purple	Pale yellow	Pale yellow	Purple
0.22	-	Dark brown	Pale white	Reddish brown	Greenish yellow	Pale green
0.17	-	-	Faint pink	-	-	-
0.13	-	Dark brown	Pale white	-	-	Pale purple



**Fig.2. Transverse section of *Alpinia conchigera* Griff. rhizome**

1. Epidermis
2. Cortex
3. Starch grains
4. Cortical vascular bundle
5. Phloem
6. Xylem
7. Vessel
8. Endodermis
9. Pericycle
10. Stelar vascular bundle



**Fig.3. Characters of the powdered drug**

- a. Secretory cell
- b. Parenchyma with simple starch granules
- c. Club-shaped large starch granules from the cortex.

## 6. Reference

Department of Traditional Medicine, Ministry of Health. Myanmar Herbal Pharmacopoeia. VOLUME II Nay Pyi Taw, Myanmar; 2018. Pg 7-12.