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Zingiber officinale Roscoe. (ချင်း/ချင်းတက်)

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Zingiber officinale* Roscoe. (ချင်း/ချင်းတက်)*1. Scope**

This standard prescribes the specification and identification for quality criteria of *Zingiber officinale* Roscoe. (ချင်း/ချင်းတက်) rhizome powder to be used as a single agent or as an ingredient in the traditional medicine formulations.

2. Definition

Zingiber officinale Roscoe. (Ginger) belongs to the family Zingiberaceae; its rhizome is used in Traditional Medicines.

3. Description**3.1. Macroscopic characteristics**

Dried rhizome horizontal, tuberous. Externally buff coloured, longitudinally striations and internally pale yellow with fibrous surface. Aromatic and characteristic odour, pungent and hot taste.

3.2. Microscopic characteristics

Transverse section of *Zingiber officinale* Roscoe. rhizome shows:

- outer cork layer composed of irregular parenchymatous cells
- a few layer of inner cork consists of parenchymatous cells radially arranged in regular rows
- cortex, a broad zone characterized by parenchymatous cells containing starch granules, oils, oleoresin and resin. This region is divided into outer and inner parts by thin-walled pseudoendodermis layer
- fibro vascular bundles are scattered throughout the cortex

3.3. Characters of the powdered drug

Creamy coloured powder, characteristic aromatic odour and pungent and slightly hot taste. The diagnostic characters are:

- cork cells in surface view
- thin-walled septate fibres
- starch granules
- parenchyma filled with starch granules

4. Specification

4.1. Physicochemical data

- Loss on drying at 105°C : Not more than 6.8 %
- Foreign matter : Not more than 2.0 %
- Total ash : Not more than 4.10 %
- Acid-insoluble ash : Not more than 0.01 %
- Ethanol soluble extract : Not less than 5.75 %
- Water soluble extract : Not less than 13.25 %

5. Identification

5.1. Phytochemical test

- A) Dissolve a few mg of alcoholic extract of the powder in 5 mL of distilled water, add 2 M hydrochloric acid until an acid reaction occurs, then add 1 mL of Dragendorff's reagent, orange precipitate is produced immediately.
- B) Add a few drops of Mayer's reagent to 1 mL of acid aqueous extract. A white precipitate is formed.
- C) Add 1 mL of conc. sulphuric acid to 2 mL of chloroform extract of the sample, from the side of the test tube. Red colour is produced in the chloroform layer.

5.2. TLC analysis

To 1 g of powdered drug add 10 mL of chloroform, shake for 15 minutes at room temperature, filter and use the filtrate for chromatography.

- Application volume : 5 μ L
- Developing solvent system : Toluene: Ethyl acetate (97:3)
- Spray reagent : Vanillin-sulphuric acid
- Stationary phase : Silica gel G (A & D are glass plates, B & C are aluminium sheets GF₂₅₄)

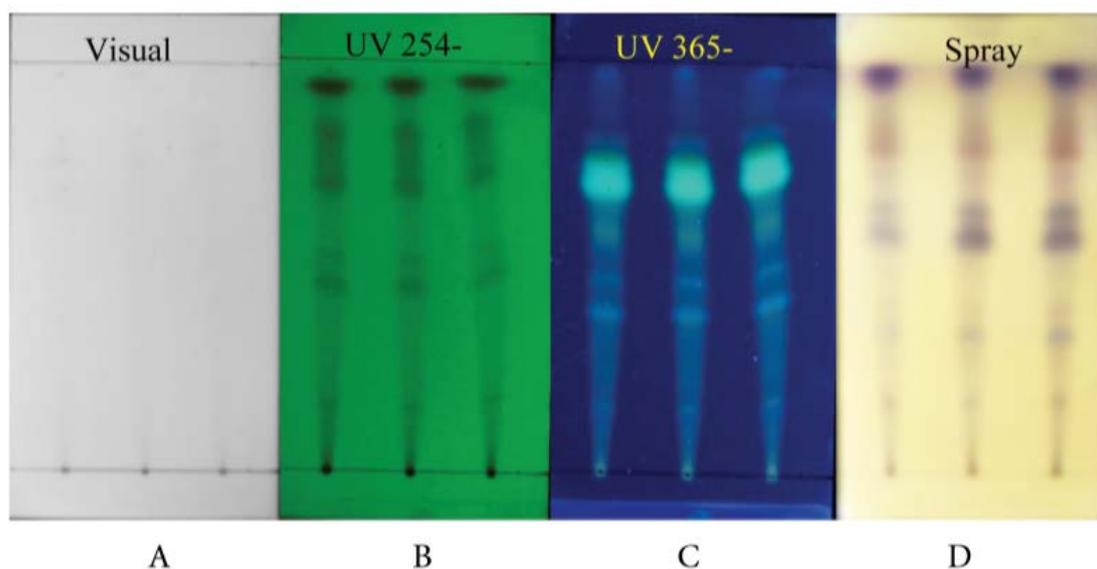


Fig.1. Thin-layer Chromatogram of chloroform extract of the rhizome of *Zingiber officinale* Roscoe.

Table.1. R_f values of components in chloroform extract of the rhizome of *Zingiber officinale* Roscoe.

R _f	Visual	UV 254 nm	UV 365 nm	Spray
0.99- 0.98	-	Yellow	Light green	Violet
0.81	Faint yellow	Brown	-	Violet
0.76	-	Brown	-	Violet
0.71	-	-	Light green	-
0.69-0.64	-	Brown	-	Bluish black
0.58	-	-	Light green	Violet
0.51	-	Light violet	Light green	-
0.45	-	Light violet	Light green	-

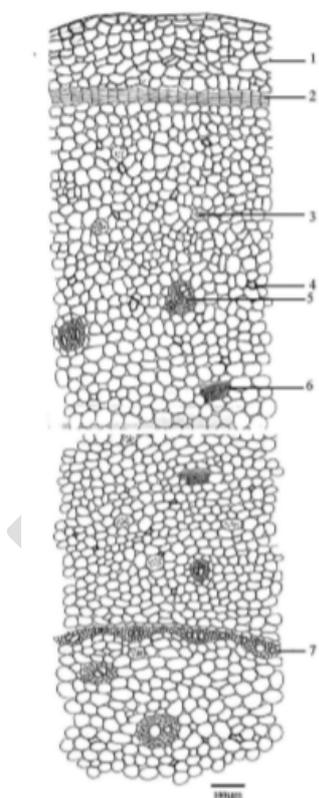


Fig.2. Transverse section of *Zingiber officinale* Roscoe. Rhizome

1. Outer cork
2. Inner cork
3. Starch
4. Yellow oil
5. Vascular bundle
6. Vessel
7. Pseudoendodermis layer

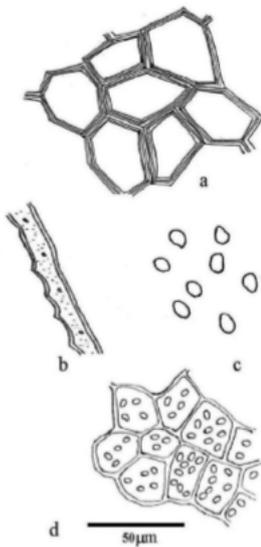


Fig.3. Characters of the powdered drug

- a. Cork cell in surface view
- b. Septate fibre
- c. Starch granules
- d. Parenchyma containing starch

6. Reference

Department of Traditional Medicine, Ministry of Health. Myanmar Herbal Pharmacopoeia. VOLUME I. Nay Pyi Taw, Myanmar; 2013. Pg 90-94.