

BACKGROUND

These are the dried flower buds of *Eugenia caryophyllus* belonging to the family Myrtaceae.

The present study is aimed to evaluate the morphology, histology and powder characteristics of clove.

REQUIREMENTS

Apparatus: Microscope

Cover slip

Blotting paper

Spirit lamp

Brush

Watch glass

Needle

Glass slide

Blade

Chemicals: Potassium

Phoroglucinol

Sodium hydroxide

Hydrochloric acid

Alcohol

Glycerin

Ferric chloride

PROCEDURE

Preparation of mount

The thinnest possible section of plant part is taken on a slide and mounted in a solution of chloral hydrate on slightly warming the solution of chloral hydrate cover the section carefully with cover slip. Care must be taken so that no air bubble should produce within the cover slip. Glycerin also added to the mounted medium.¹

Morphology

1. Plump is heavy, about 16-20 mm long.
2. Reddish brown in colour.
3. Lower stalk-like portion called 'hypanthium' upper 'crown' or 'cap'
4. Hypanthium subcylindrical, slightly flattened and tapering below, 10-13 mm long, 4 mm wide, 2 mm thick.
5. Upper portion shows inferior bilocular ovary and oil glands.
6. Crown consists of calyx, corolla, stamen and style.
7. Calyx – 4 thick walled spreading sepals
8. Corolla – dome shaped with yellow, imbricate membranous petals.
9. Stamens-numerous, free, introse, tetradelphous.
10. Gynaecium-inferior bilocular ovary with numerous ovules and axile placentation, style in the centre, nectar disc at the base.
11. Strong, spicy, aromatic odour
12. Pungent aromatic taste
13. Should sink when put in freshly boiled and cooled water
14. Exudes volatile oil when pressed between the fingers.

Histology

Transverse section through hypanthium of clove shows the following characteristics.

- Epidermis with thick cuticle with stomata.
- Collenchymatous parenchyma containing numerous schizolysigenous oil glands.
- Calcium oxalate clusters in parenchyma.
- Zone of slightly thick walled cells embedding a ring of about 15 bilateral vascular bundles.
- Meristele enclosed by lignified pericyclic fibres.
- Xylem of 5-6 lignified vessels.
- Parenchyma containing air spaces or lacuna or aerenchyma.
- Central columella- Thick walled parenchymatous cells containing cluster crystals of calcium oxalate and 20-25 small vascular bundles.

Transverse section through region of ovary shows the following characteristics.

- Ovary and with ovarian wall.
- Parenchymatous dessepiment
- Ovules with axile placentation.
- Starch, prisms of calcium oxalate and stone cells are absent.

Powder characteristics

- Epidermis with stomata.
- Pollen grains.
- Lignified fibres with parenchyma.
- Oil glands.
- Aerenchyma.
- Fibrous layer of anther wall.

Important constituents

Volatile oil: Eugenol

Identification test

Thick section of hypanthium with 5% potassium hydroxide; needle shaped crystals of potassium eugenolate are observed under microscope. A drop of chloroform extract with 3% sodium hydroxide; crystals of sodium eugenolate are formed. Alcoholic extract of drug treated with solution of ferric chloride shows blue colour.

Use: antiseptic, Carminative.

CONCLUSION

Morphology, histology and powder characteristics of clove is evaluated.

REFERENCES

1. Kokate CK. Practical Pharmacognosy, 4th edition, Nirali Prakashan, Pune; 1994: 48-49.
2. <http://www.yourarticlelibrary.com/biology/plants/clove-sources-cultivation-and-uses-with-diagram>.