

**Botanical introduction –
Macroscopic and microscopic knowledge**

1., Macroscopic featuring of crude drugs

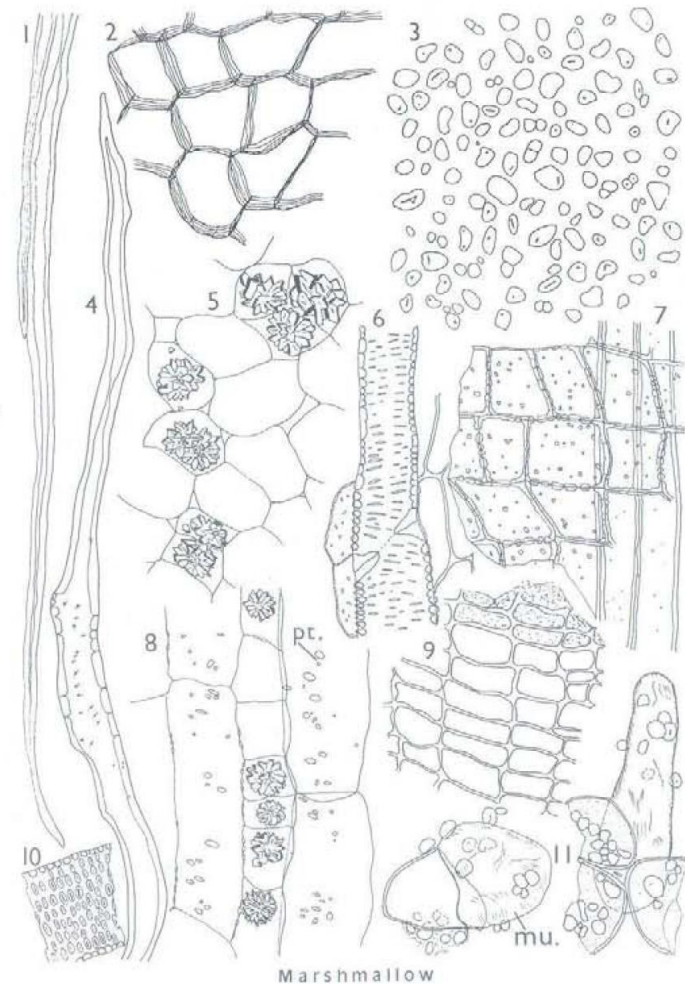
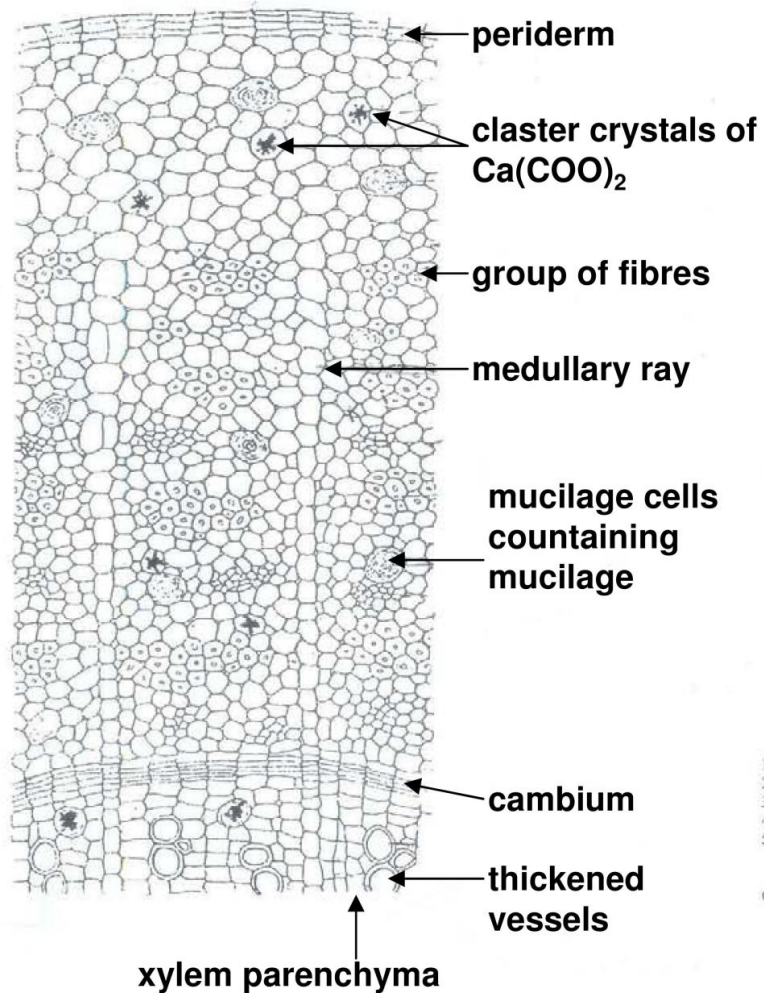
examples:

- radix – Ginseng radix
- rhizoma – Graminis rhizoma
- folium – Pulmonariae folium, Uvae Ursi folium
- flos – Malvae flos, Hibisci sabdariffae flos, Caryophylli flos, Calendulae flos
- fructus – Foeniculi fructus
- cortex – Frangulae cortex
- semen – Psyllii semen, Strychni semen
- pseudofructus – Rosae pseudofructus (Cynosbati pseudofructus)
- summitas – Crataegi folium cum flore
- herba: Hyperici herba
- Secale cornutum
- Visci albae stipes

2, Microscopic knowledge

Marshmallow

Althaeae radix



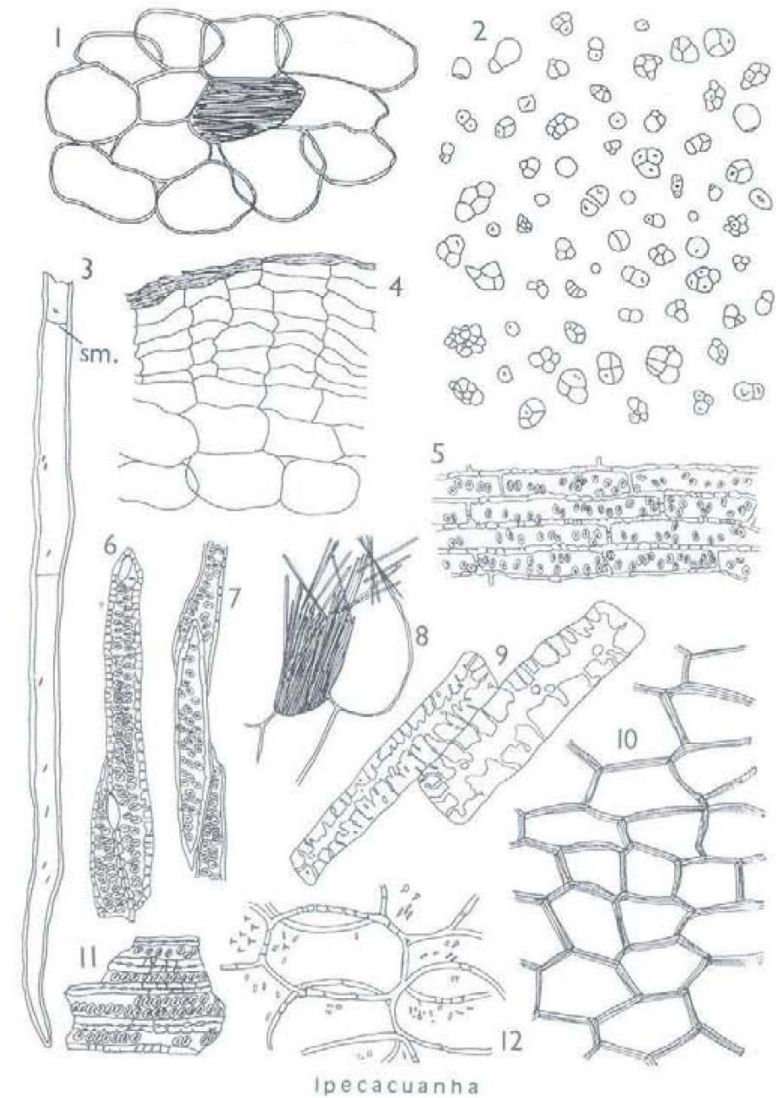
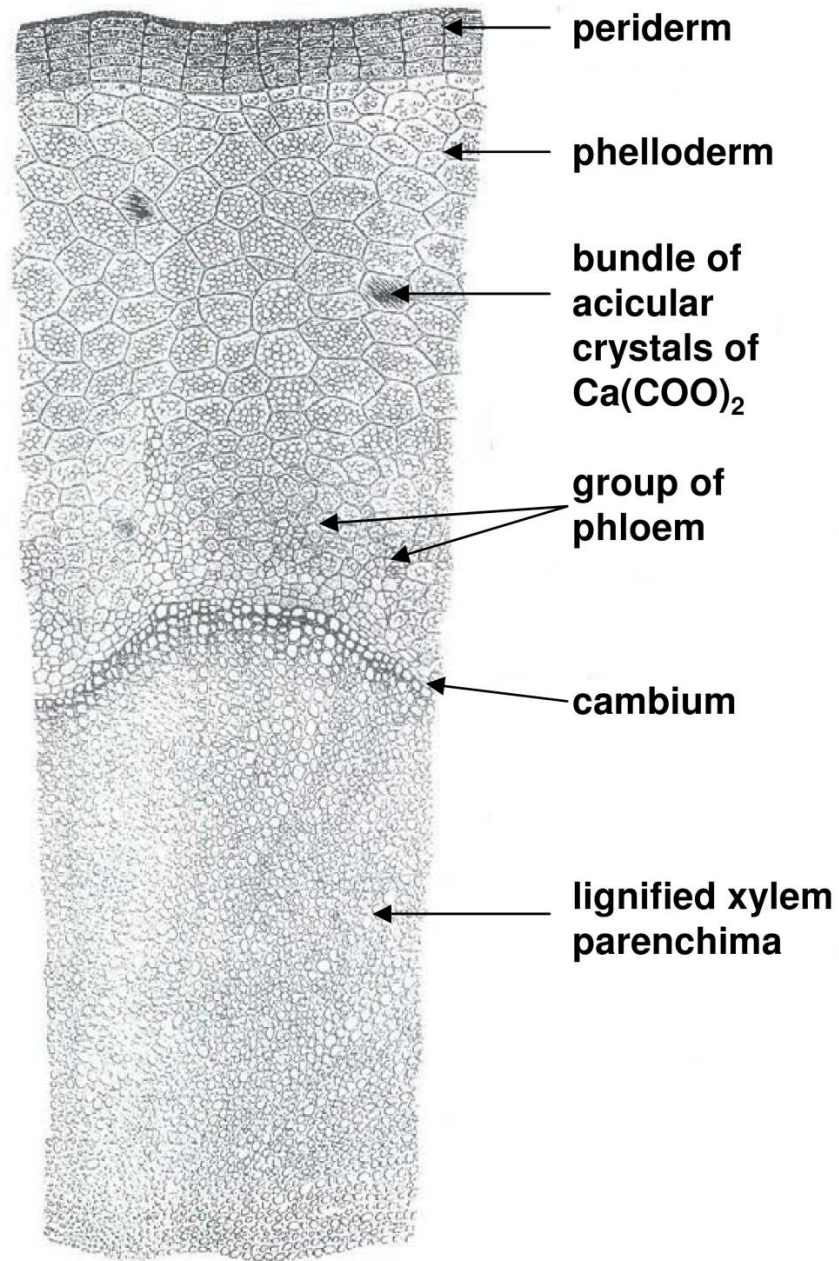
Marshmallow

×330

- 1 Part of a group of fibres.
- 2 Cork in surface view.
- 3 Starch granules.
- 4 Part of a single fibre showing pits.
- 5 Parenchyma in transverse section showing cluster crystals of calcium oxalate in some of the cells.
- 6 Scleriformly thickened vessels with adjacent xylem parenchyma.
- 7 Fibres and xylem parenchyma in longitudinal section.
- 8 Parenchyma in longitudinal section showing pits (pt.) and cluster crystals of calcium oxalate occurring in a vertical file.
- 9 Cork in sectional view.
- 10 Fragment of a bordered pitted vessel.
- 11 Mucilage cells containing mucilage (mu.) with adherent starch granules.

Ipecacuanha

Ipecacuanhae radix

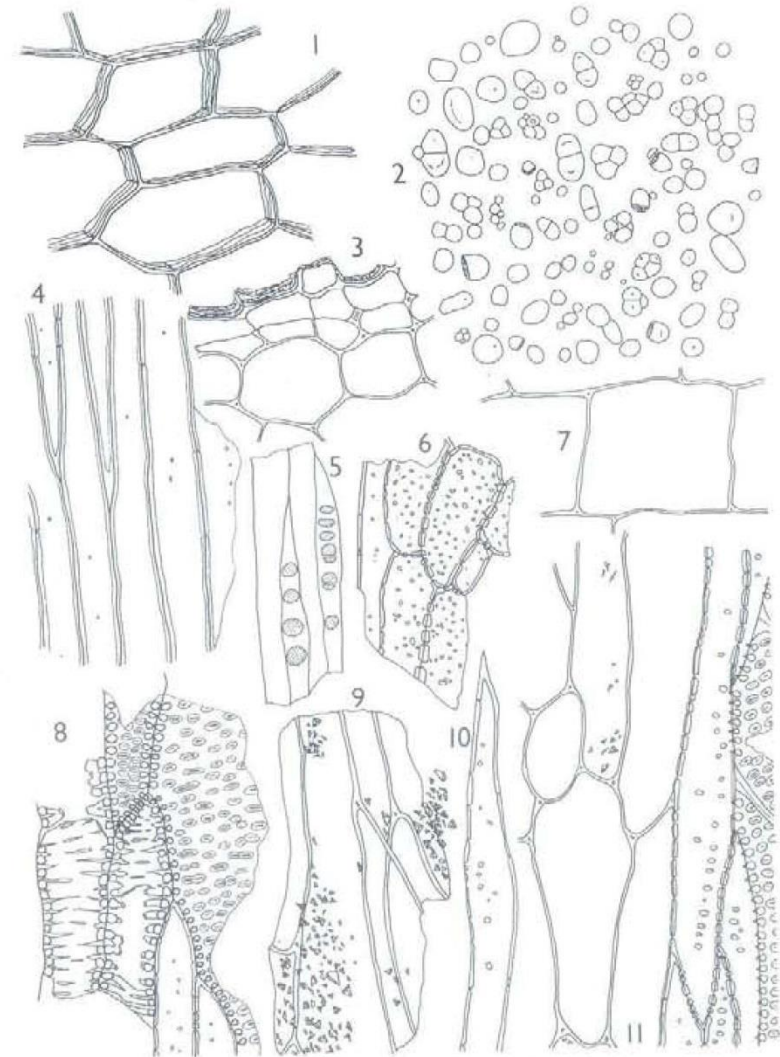
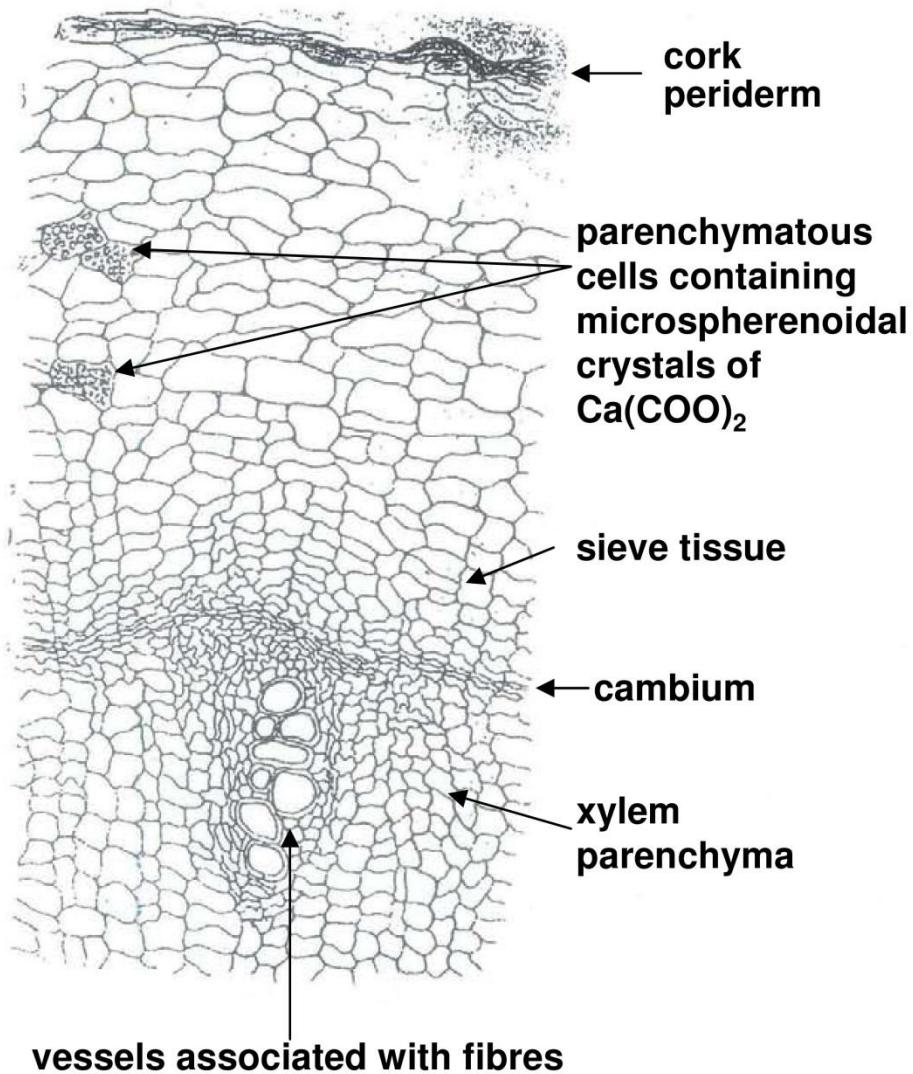


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- 1 Parenchymatous cells of the phelloderm showing a bundle of acicular crystals of calcium oxalate in one of the cells.
- 2 Starch granules.
- 3 Part of a fibrous cell showing septa (sm.).
- 4 Part of the cork and phelloderm in sectional view.
- 5 Lignified xylem parenchyma in longitudinal section.
- 6 Tracheidal vessels.
- 7 Part of a group of tracheids.
- 8 Parenchyma with acicular crystals of calcium oxalate.
- 9 Sclereids from the rhizome.
- 10 Cork in surface view.
- 11 Fragment of xylem elements.
- 12 Parenchyma of the pith of the rhizome.

Belladonna root

Belladonnae radix



Belladonna Root

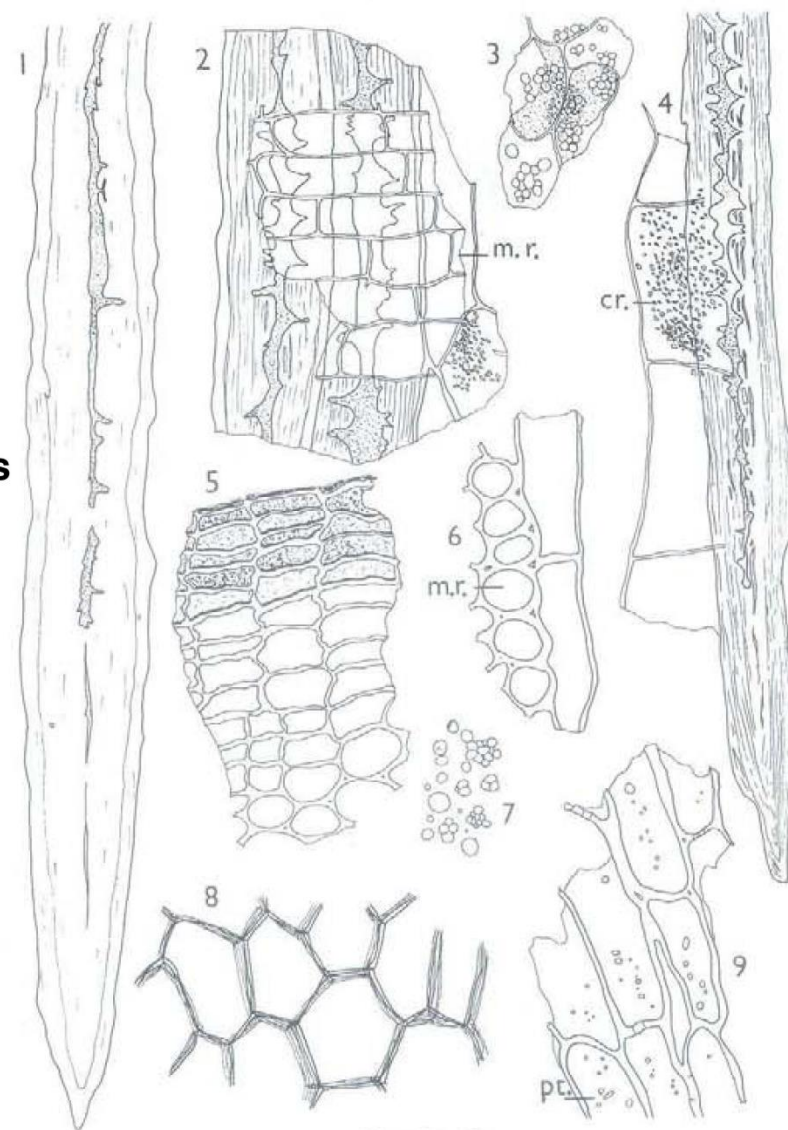
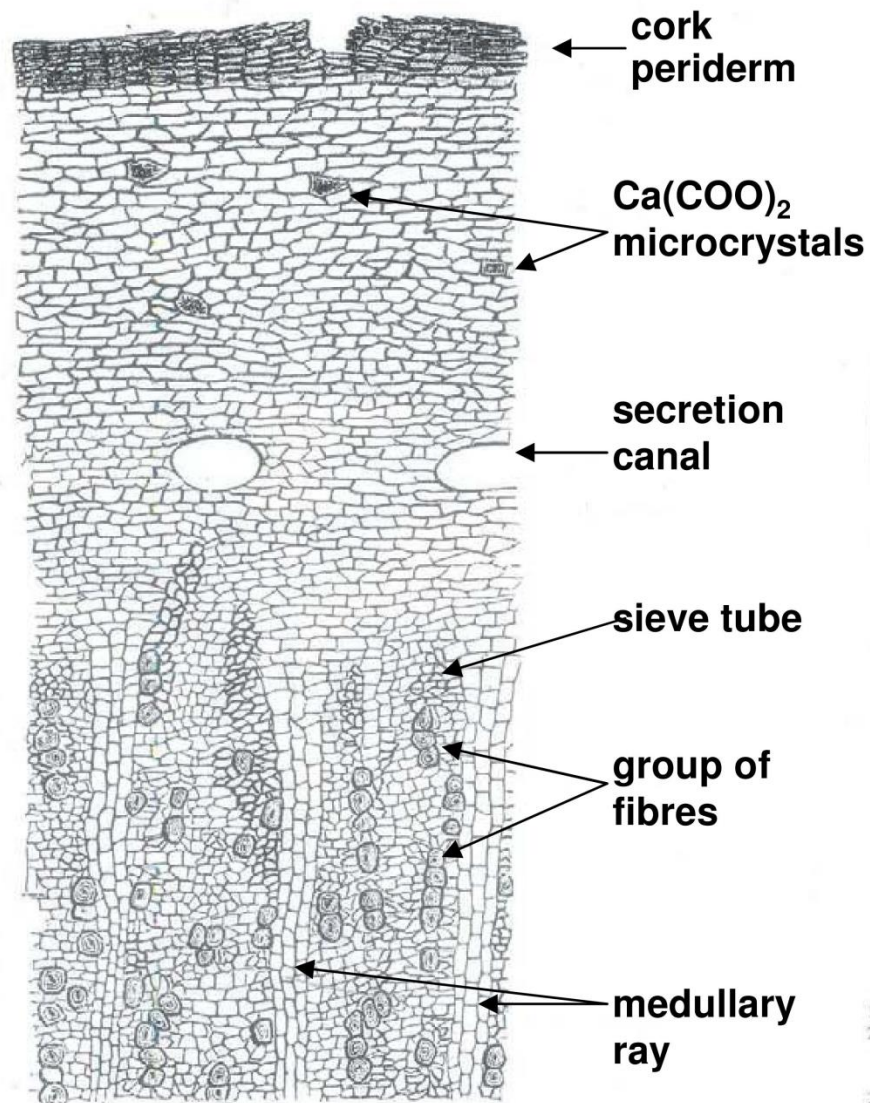
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- 1 Cork in surface view.
- 2 Starch granules.
- 3 Cork and outer tissues in sectional view.
- 4 Part of a group of fibres.
- 5 Sieve tissue.
- 6 Xylem parenchyma and part of a fibre.
- 7 Cells of a medullary ray in radial longitudinal section.

- 8 Reticulately thickened and bordered pitted vessels associated with fibres.
- 9 Parenchymatous cells containing microspheeroidal crystals of calcium oxalate.
- 10 Part of a fibre.
- 11 Part of a vessel, fibres and a medullary ray in tangential longitudinal section.

Cinchona

Chinae cortex

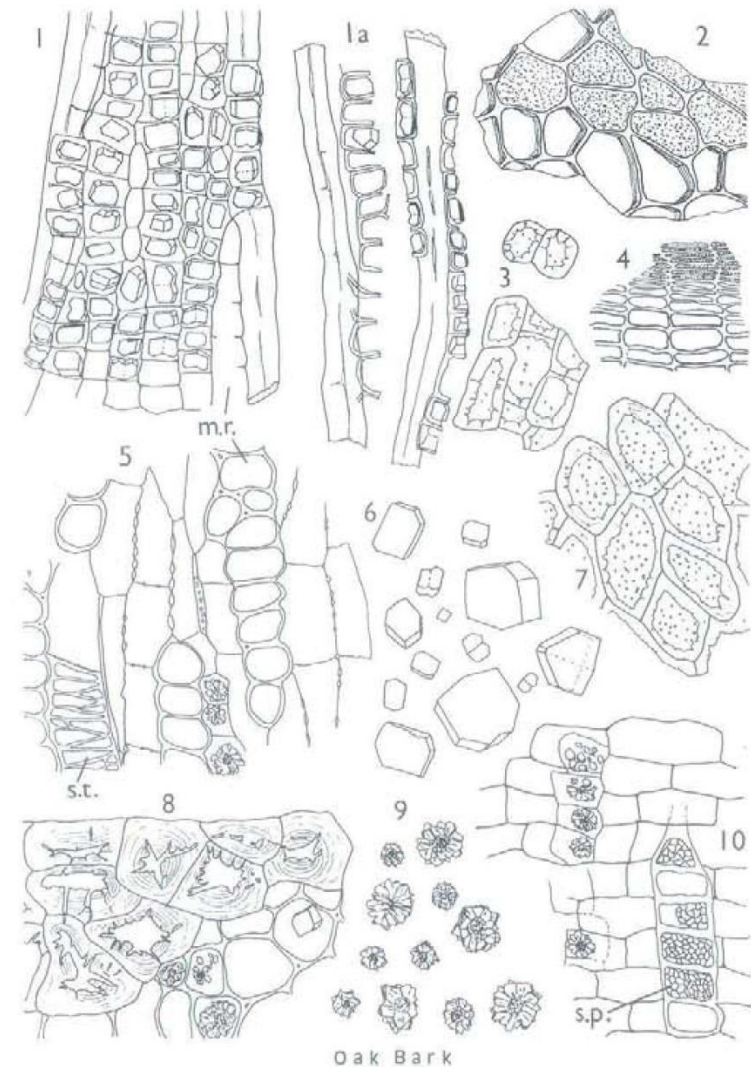
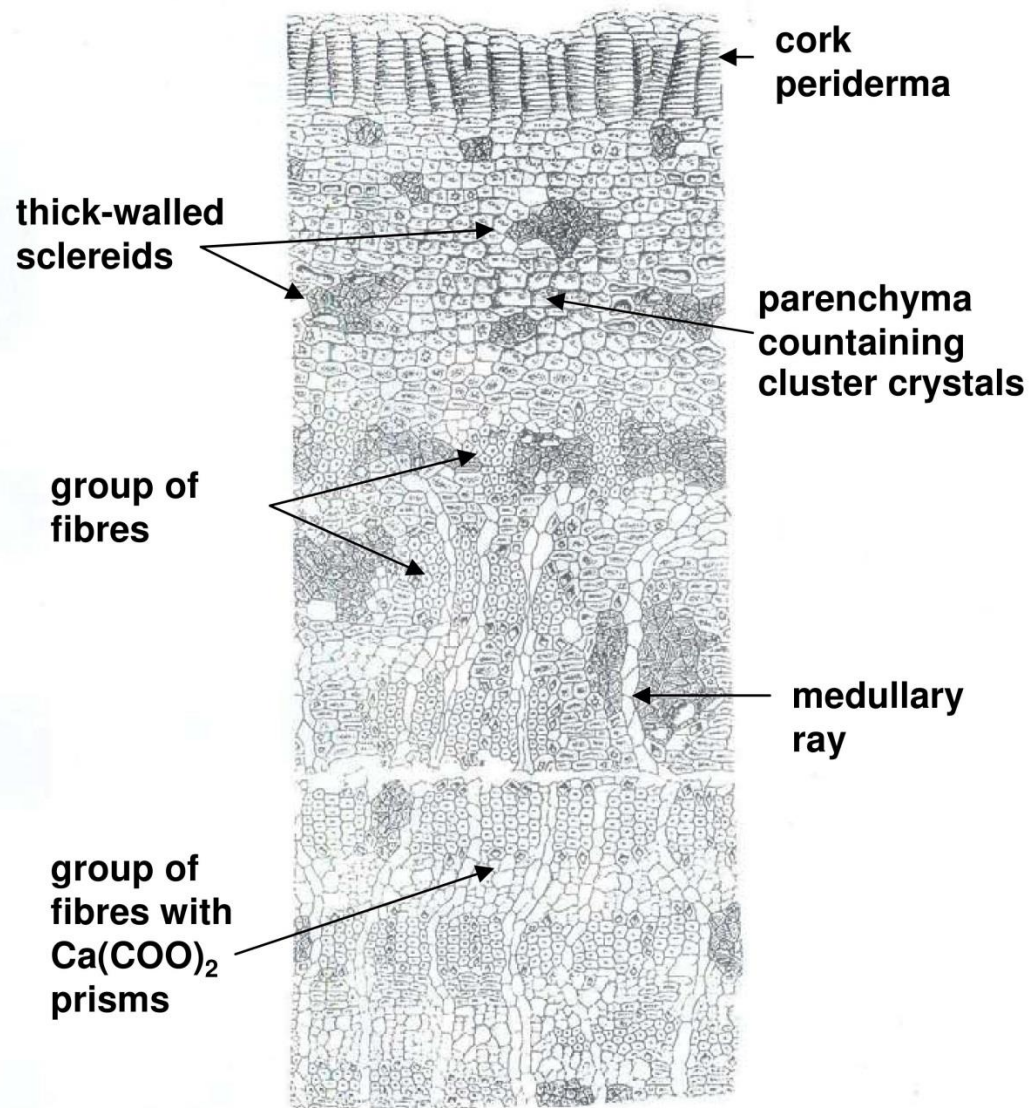


Cinchona

×330

- 1 Part of a single fibre.
- 2 Part of a group of fibres and phloem parenchyma with overlying medullary ray (m.r.) in radial longitudinal section.
- 3 Parenchymatous cells containing starch granules and brown pigment.
- 4 Part of a fibre with phloem parenchyma, one cell containing calcium oxalate microcrystals (cr.).
- 5 Cork and phelloderm in sectional view.
- 6 Phloem parenchyma and part of a medullary ray (m.r.) in tangential longitudinal section.
- 7 Starch granules.
- 8 Cork in surface view.
- 9 Phloem parenchyma with pits (pt.).

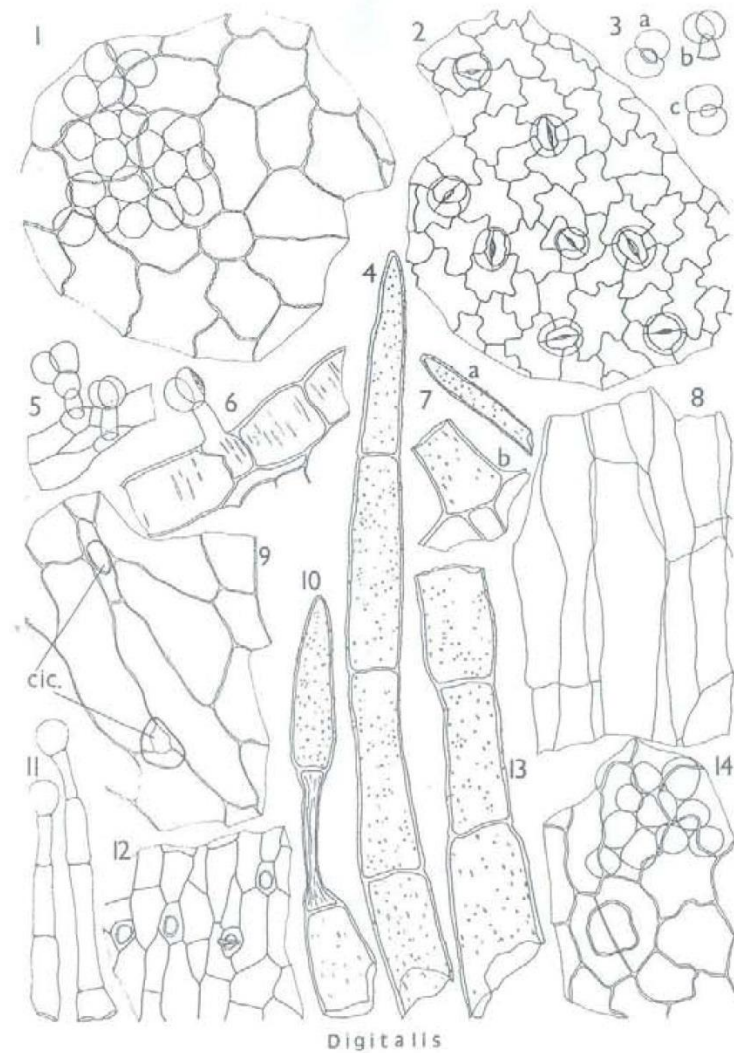
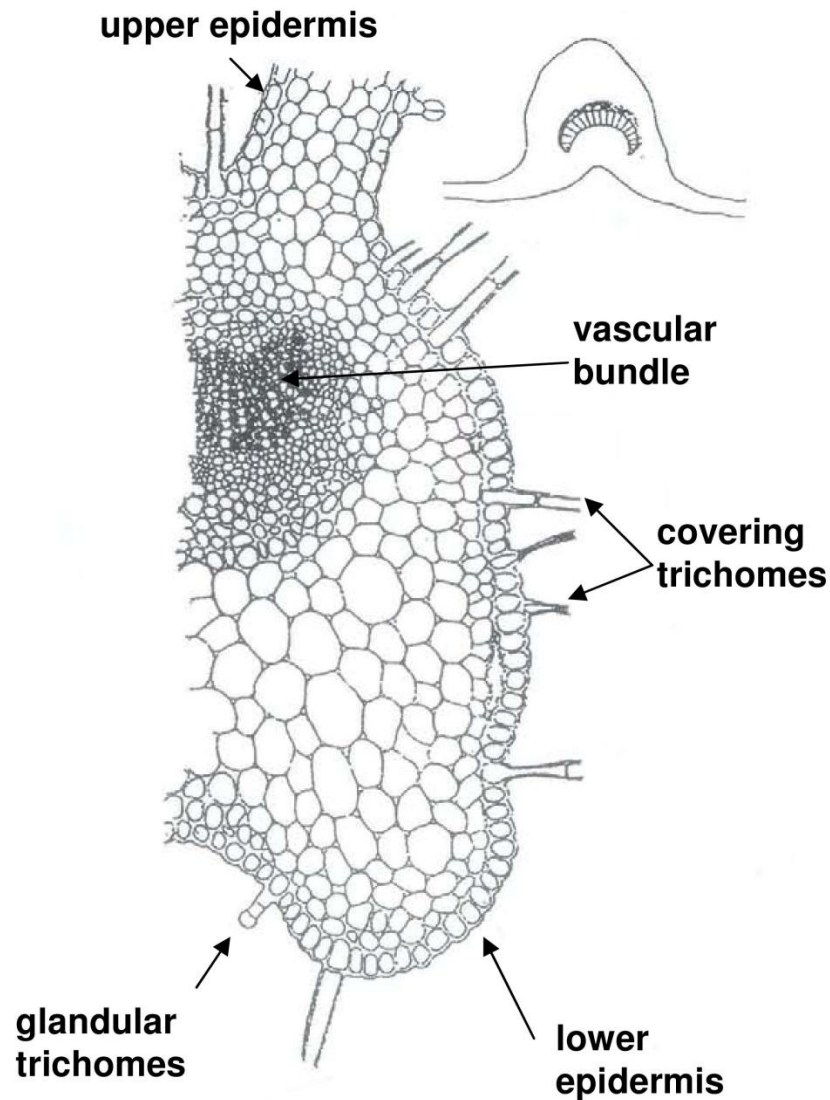
Oak bark *Quercus cortex*



- 1 Part of a group of fibres with calcium oxalate prism sheath, associated with a medullary ray (m.r.) in tangential longitudinal section.
- 1a Part of a group of fibres showing the thickened walls of the parenchymatous cells.
- 2 Cork in surface view.
- 3 Groups of thin-walled sclereids.
- 4 Cork in sectional view.
- 5 Part of the phloem in tangential longitudinal section showing a sieve tube (s.t.), medullary ray (m.r.) and phloem parenchyma containing cluster crystals of calcium oxalate.
- 6 Prisms of calcium oxalate.
- 7 A group of larger, thin-walled sclereids.
- 8 A group of thick-walled sclereids with associated parenchyma containing calcium oxalate crystals.
- 9 Cluster crystals of calcium oxalate.
- 10 Part of the phloem in radial longitudinal section showing a medullary ray, sieve tube with sieve plates (s.p.), and parenchyma containing crystals of calcium oxalate.

Digitalis

Digitalis purpureae folium

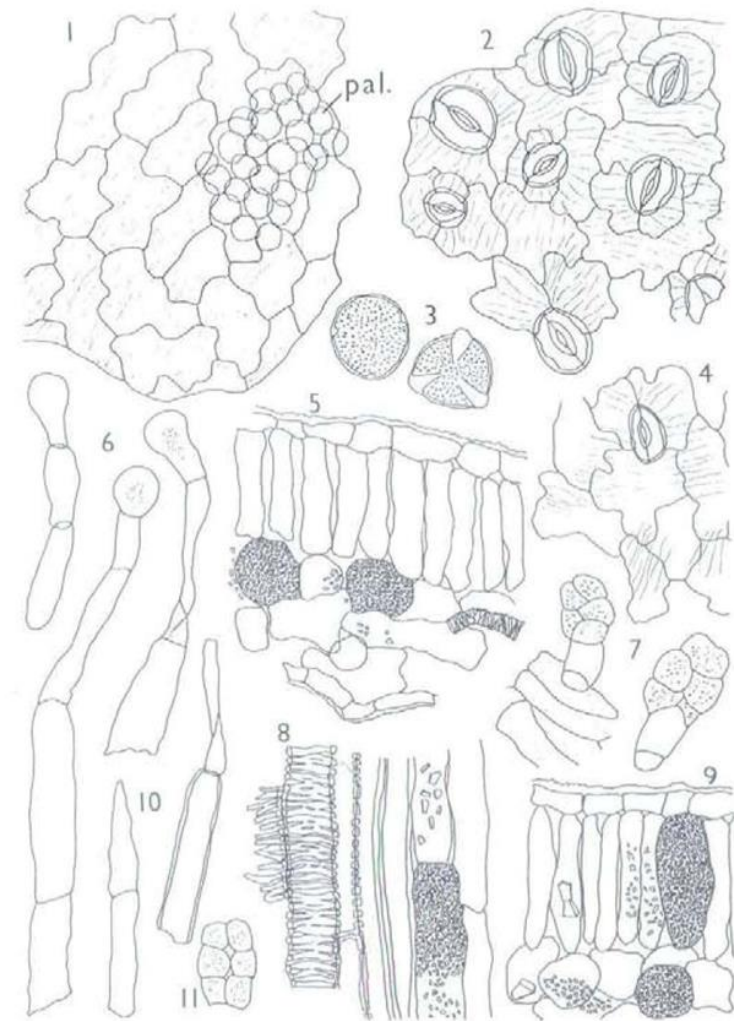
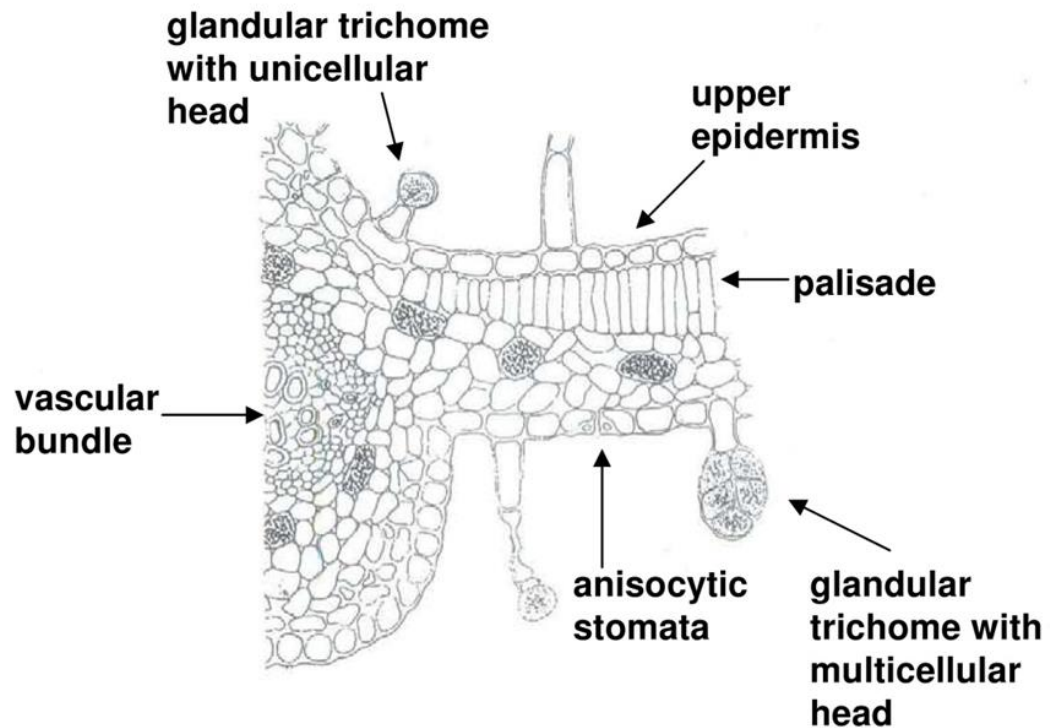


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- 1 Upper epidermis in surface view with underlying palisade cells.
- 2 Lower epidermis in surface view with anomocytic stomata.
- 3 Glandular trichome with bicellular heads seen (a) from below (b) from the side and (c) from above.
- 4 Part of a covering trichome.
- 5 Glandular trichomes attached to a fragment of the epidermis.
- 6 Epidermis in sectional view showing pitting in the walls and a glandular trichome.
- 7 Fragments of covering trichomes: (a) apical cell
- 8 Cortical parenchyma in longitudinal view.
- 9 Epidermis in surface view showing cicatrices (cic.).
- 10 Part of a covering trichome showing a collapsed cell.
- 11 Glandular trichomes with uniseriate stalks and unicellular heads.
- 12 Epidermis from over a vein in surface view, showing cicatrices.
- 13 Fragment of a large covering trichome.
- 14 Upper epidermis in surface view showing a cicatrix and underlying palisade cells.

Belladonna Herb

Belladonnae folium



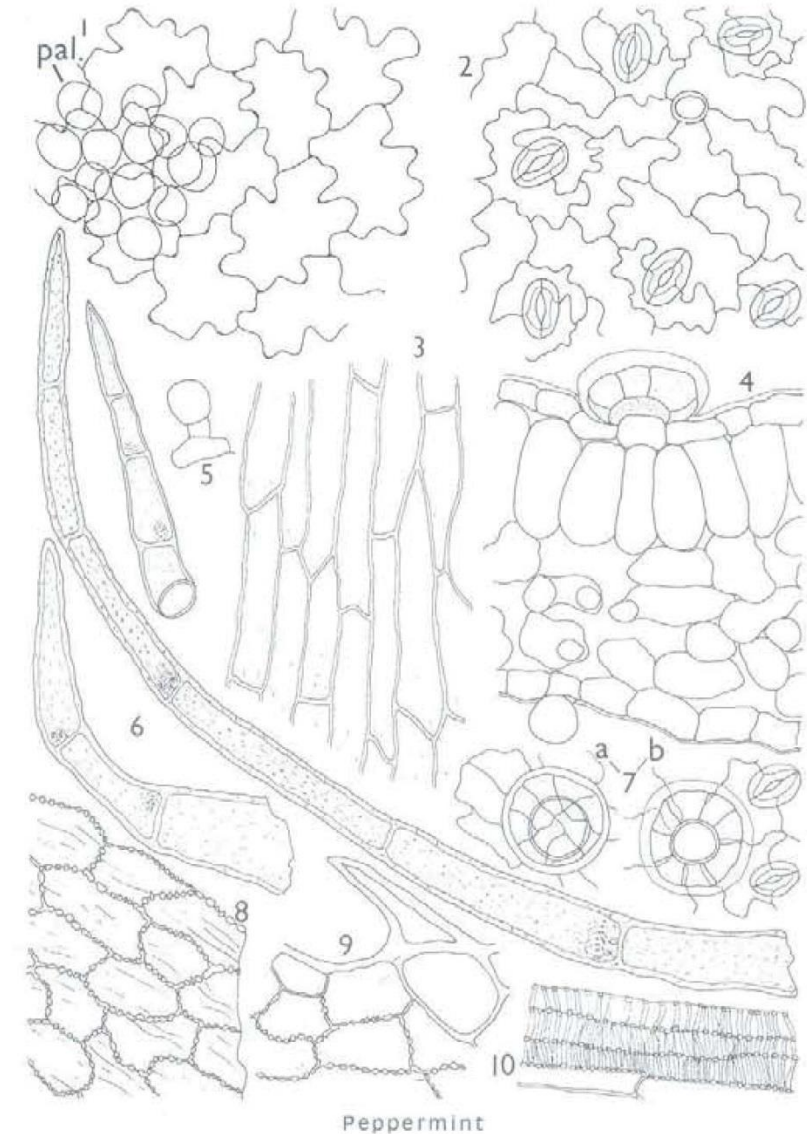
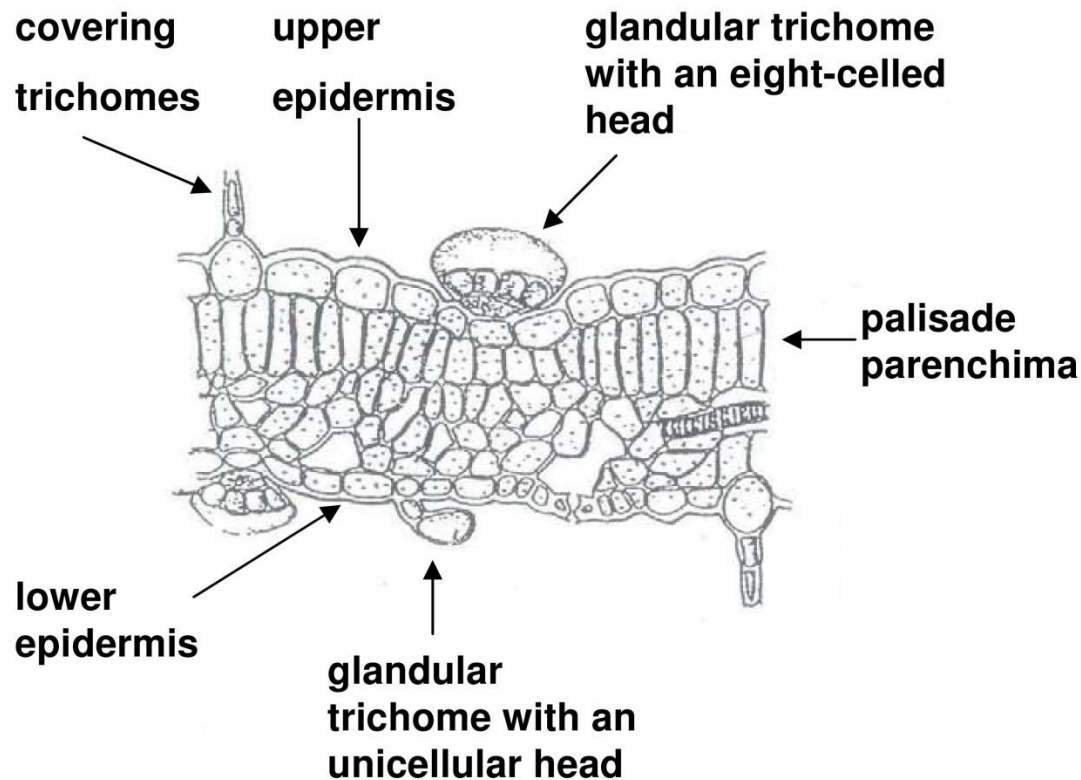
Belladonna Herb

×330

- 1 Upper epidermis in surface view showing cuticular striations and part of the underlying palisade (pal.).
- 2 Lower epidermis in surface view showing cuticular striations and numerous anisocytic stomata.
- 3 Pollen grains.
- 4 Upper epidermis in surface view showing an anisocytic stoma.
- 5 Part of the lamina in sectional view showing two idioblasts in the spongy mesophyll and scattered microphenoidal crystals of calcium oxalate.
- 6 Glandular trichome with unicellular stalk and multicellular heads.
- 7 Glandular trichomes with unicellular stalks and multicellular heads, one attached to a fragment of the epidermis over a vein.
- 8 Fragments of the inner tissues of the stem in longitudinal sectional view showing reticulate thickened vessels, xylem parenchyma, fibres and unligified parenchymatous cells containing calcium oxalate crystals.
- 9 Part of the lamina in sectional view showing the upper epidermis, an idioblast in the palisade and other cells containing scattered prisms and microphenoidal crystals of calcium oxalate.
- 10 Part of a covering trichome.
- 11 Multicellular head from a glandular trichome.

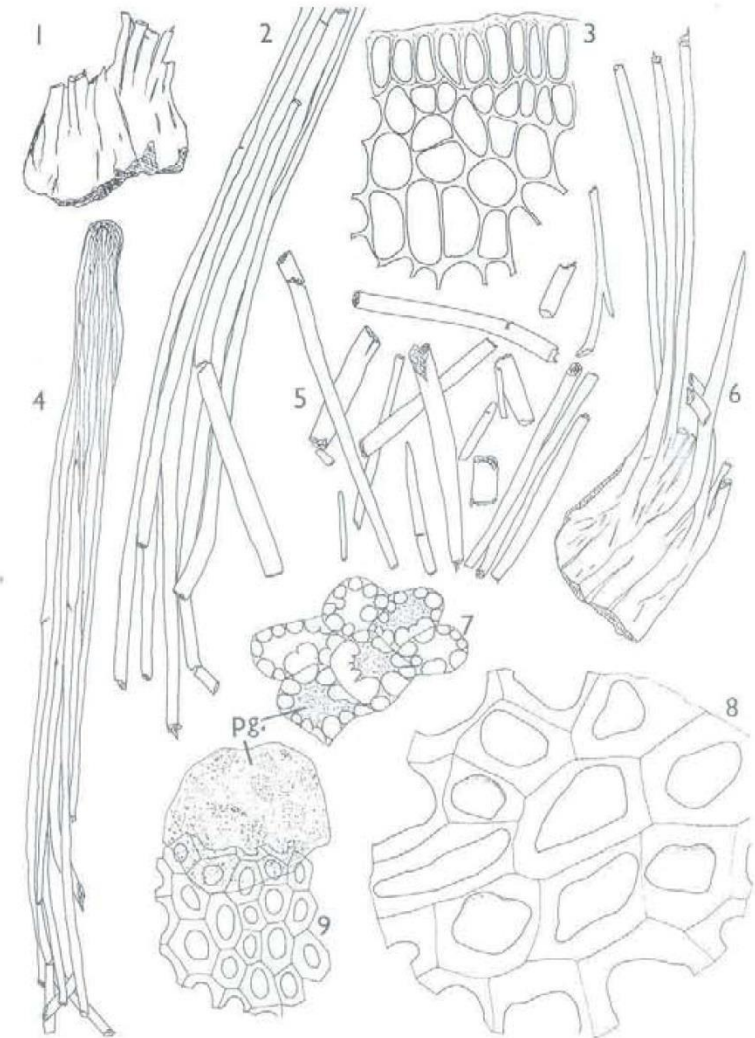
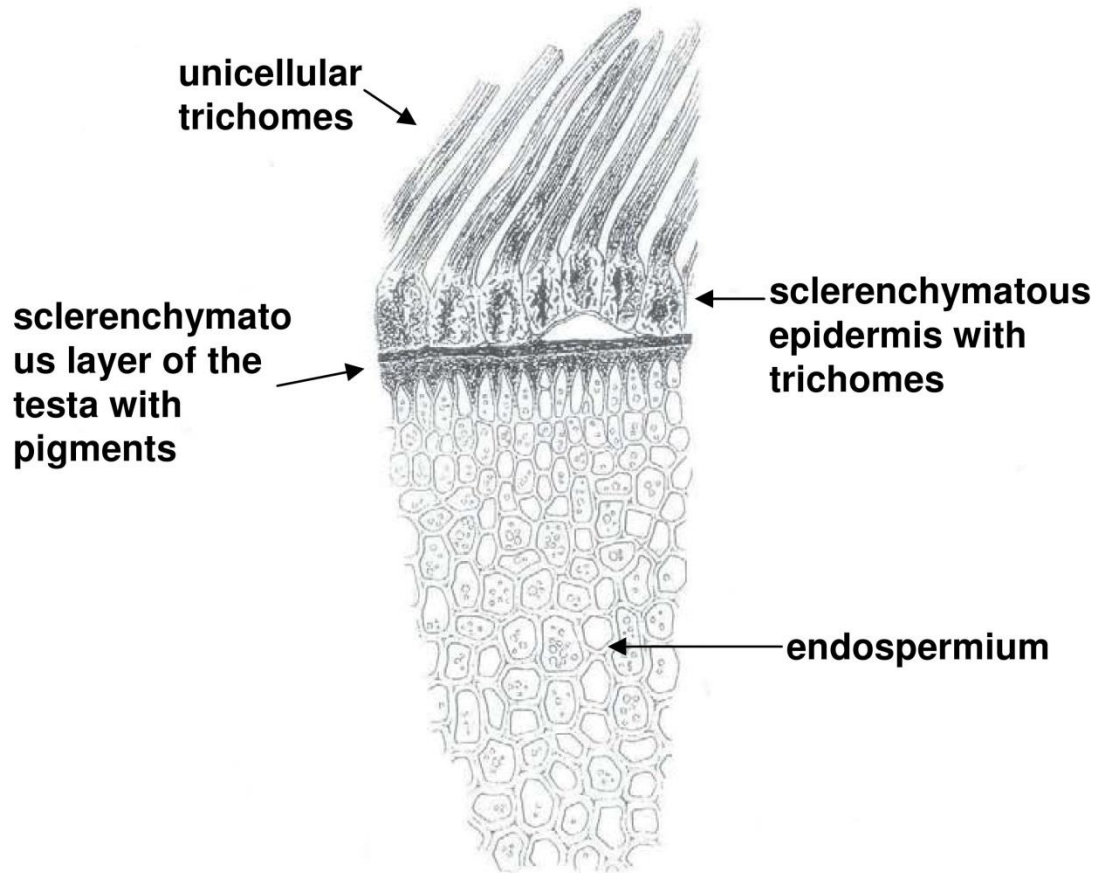
Peppermint

Menthae piperitae folium



- 1 Upper epidermis in surface view with part of the underlying palisade (pal.).
- 2 Lower epidermis in surface view showing diacytic stomata and a cicatrix.
- 3 Epidermis of the stem in surface view.
- 4 Part of the lamina in sectional view showing, in the upper epidermis, a glandular trichome with an eight-celled head and, in the lower epidermis, a glandular trichome with a unicellular head.
- 5 Glandular trichome with a unicellular head
- 6 Covering trichomes.
- 7 Multicellular-headed glandular trichomes, in surface view, attached to (a) a fragment of the upper epidermis and (b) a fragment of the lower epidermis.
- 8 Epidermis from near the leaf margin in surface view.
- 9 Epidermis from the leaf margin in surface view showing a unicellular, conical trichome.
- 10 Vessels and xylem parenchyma from the stem.

Nux vomica *strychni semen*



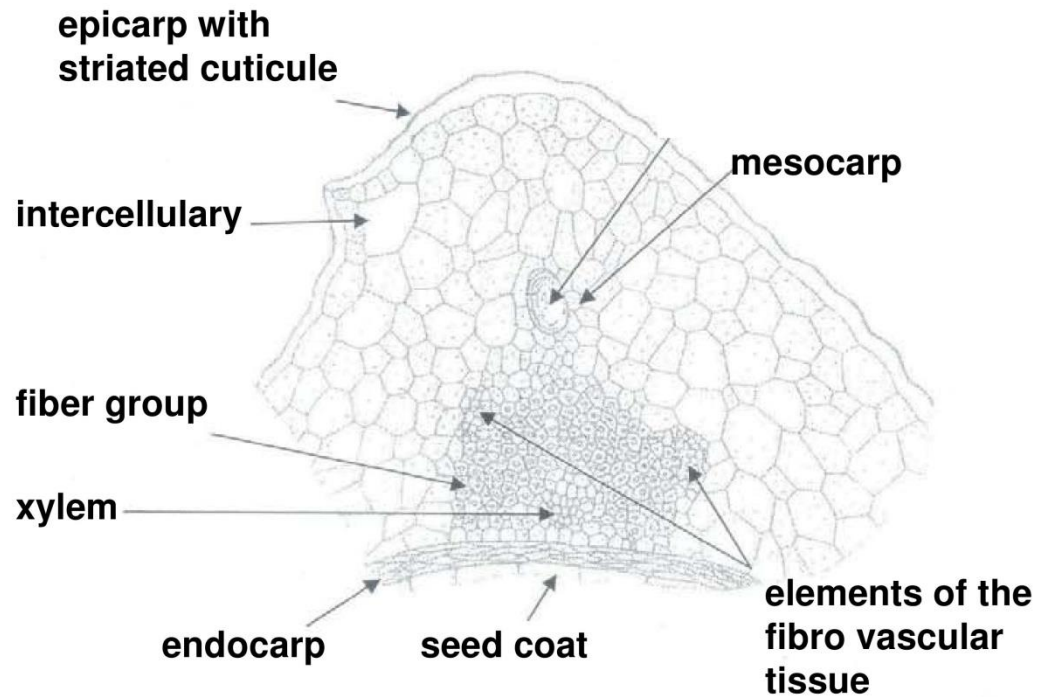
Nux Vomica

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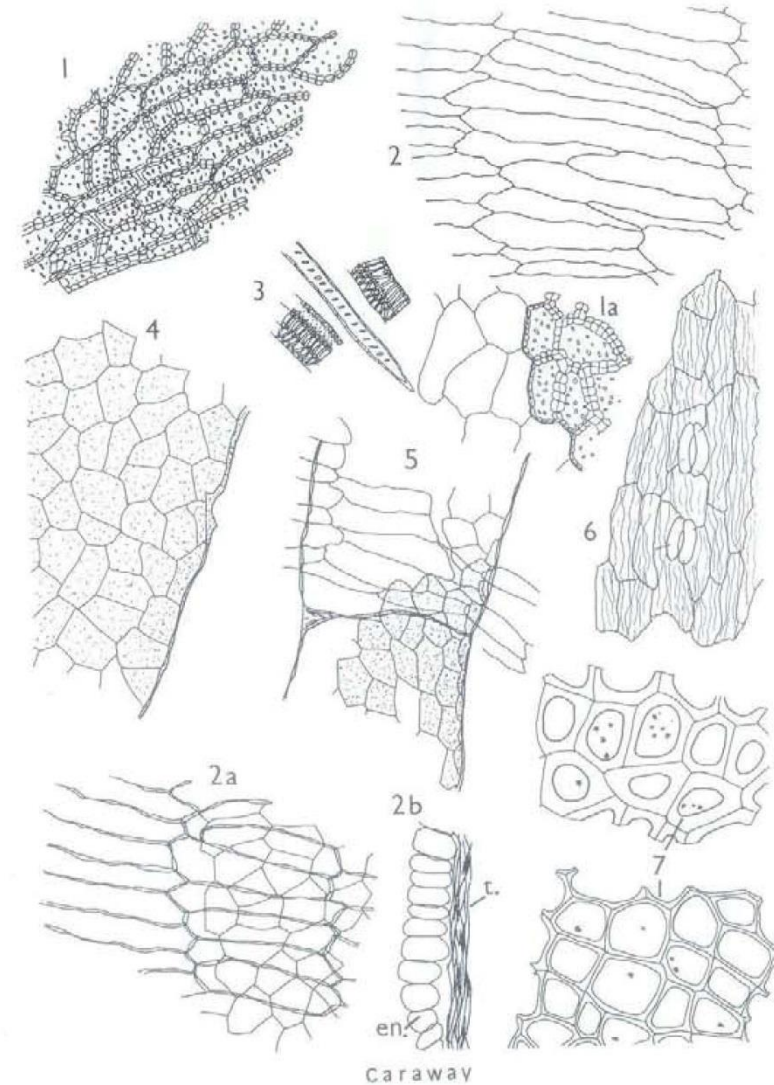
- 1 Part of the sclerenchymatous epidermis of the testa in side view, with broken-off remains of the trichome rods attached.
- 2 Part of a large trichome.
- 3 Outer part of the endosperm in sectional view.
- 4 An almost complete trichome showing the rounded apex.
- 5 Fragments of trichome rods.
- 6 Part of the sclerenchymatous epidermis of the testa in side view, with parts of the trichomes attached.
- 7 Sclerenchymatous layer of the testa in surface view showing the bases of the lignified rods and pigment (pg.) in some of the cells.
- 8 Endosperm cells from the central region.
- 9 Outer layer of the endosperm in surface view, with associated pigment layer of the testa (pg.).

Caraway

Carvi fructus



shizogenous
volatile oil duct



x330

- 1 Part of a group of sclereids from the mesocarp.
- 2 Endocarp in surface view.
- 2a Endocarp in surface view with underlying testa.
- 2b Endocarp (en.) and testa (t.) in sectional view.
- 3 Elements of the fibro-vascular tissue.
- 4 Fragment of a vitta.
- 5 Part of a vitta showing a transverse septum, with underlying endocarp in surface view.
- 6 Epicarp in surface view showing stomata and striated cuticle.
- 7 Endosperm containing microrosette crystals of calcium oxalate.