Crataegus monogyna Jacq.

Hawthorn Fruit

Fructus Crataegi

Rosaceae

Hawthorn fruit is one of the most widely used of all cardiotonics throughout Europe and the United States. It possesses myriad beneficial actions on the cardiovascular system including documented effects as an antioxidant, an ability to increase coronary output and mildly lower blood pressure and cholesterol, and the ability to promote a slow and steady heartbeat, among other uses. The two most widely used species are *C. laevigata* and *C. monogyna*. These are considered to be interchangeable. Additional species of *Crataegus* that share a similar chemical profile may also be used interchangeably. However, most research has been done with these two species. Now that there is more of an amalgamation of Asian and Western herb suppliers, Asian species of *Crataegus* may be mixed up with the Western species. These are readily distinguished macroscopically.

A. Fruit

Surface view: Polygonal, orange-brown epidermal cells, with walls appearing lighter than the cell lumen.

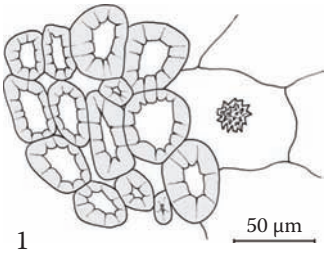
Transverse section: Exocarp of polygonal epidermal cells, orangish brown—frequently groups of two to four thin-walled cells are surrounded by thicker walls; mesocarp of thin-walled parenchyma cells, small cells in outer mesocarp, toward the endocarp, becoming larger with frequent intercellular spaces; calcium oxalate cluster crystals up to 25 µm diameter and prisms up to 40 µm in length are frequent; sclereids are scattered in the mesocarp, solitary or, more frequently, in groups—in large groups adjacent to vascular bundles; numerous calcium oxalate prisms occur along vascular bundles; broad, sclerenchymatous endocarp consists of both fibers and sclereids; sclereids have numerous pits and cell lumen is often orangish brown.

B. Seed

Surface view: Polyhedric testa epidermal cells, mostly hexagonal and elongated, with underlying cells containing calcium oxalate prisms visible through the surface; epidermal cells are considerably larger in *C. monogyna* compared to *C. laevigata*.

Transverse section: Mucilaginous testa epidermal cells are mucilage striated and slightly birefractive, swelling during sample preparation and rupturing the outer cell wall; underlying one to three layers (usually one in *C. laevigata,* two or three in *C. monogyna*) of very thin-walled brown cells, with walls hardly visible, each cell containing a calcium oxalate prism; inner testa consists of a striated layer of compressed cells; polygonal endosperm and embryo cells, colorless cell walls, abundant oil droplets and aleurone.

Powder: Sclereids of the endocarp; sclereids with attached parenchyma from the mesocarp; fragments of parenchyma from the mesocarp; exocarp; testa epidermis with associated prisms; endosperm and embryo parenchyma with oil droplets; calcium oxalate cluster and prism crystals.



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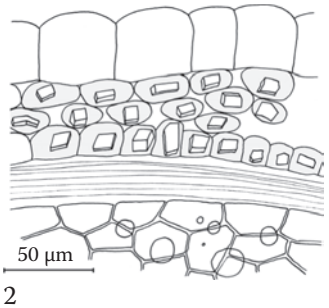

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Drawings

1. Sclereids and a calcium oxalate cluster crystal from the mesocarp (*ts*).
2. Seed transverse section: testa epidermal cells; several rows of underlying cells, each cell containing a prism; inner testa of compressed cells; and endosperm with oil droplets.