Frangula alnus Mill. syn. *Rhamnus frangula* L.

Frangula Bark

Cortex Frangulae alni

Rhamnaceae

More commonly known in the herbal trade as buckthorn, *Frangula* has a long history of use as a purging laxative. Formerly named *Rhamnus,* frangula contains anthraquinone glycosides and is closely related to other anthraquinone-containing botanicals such as cascara sagrada (*F. purshiana*). The various species of *Frangula* may get confused in trade and can be distinguished histologically. *F. alnus* lacks sclereids and the medullary rays do not converge at the outer end, whereas *F. purshiana* does contain sclereids and the medullary rays converge at the outer end (Youngken 1930).

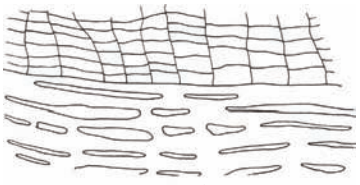
Transverse section: Cork consists of numerous layers of rectangular cells filled with reddish brown contents; narrow phelloderm is composed of tangentially elongated cells with thickened tangential walls (resembling lamellar collenchyma); cortex of roundish cells, calcium oxalate prisms and cluster crystals up to 25 µm diameter are abundant; mucilage-containing cavities occur in some cell rows; these are circular to tangentially elongated and up to 200 µm diameter in the tangential direction; secondary phloem has distinct medullary rays, usually up to three cells broad and composed of radially elongated cells; numerous rectangular, tangentially elongated groups of fibers with narrow lumens occur in the phloem, surrounded by calcium oxalate prism sheaths; fibers in the outer part of the secondary phloem are not lignified or only slightly lignified; those in the inner part are lignified (staining red with phloroglucinol-HCl); phloem parenchyma cells are partly pitted; calcium oxalate prisms and cluster crystals are abundant except in the medullary rays.

Longitudinal section: Calcium oxalate prisms and cluster crystals are arranged in columns in the secondary phloem parenchyma; prisms in a crystal sheath are associated with groups of fibers.

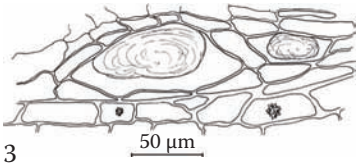
Starch: Infrequent in all parenchymatous tissues; granules are usually solitary, irregular in shape, mostly <5 µm, some up to 15 µm.

Powder: Groups of fibers with calcium oxalate prism sheaths; parenchyma containing cluster crystals and calcium oxalate prisms; reddish brown fragments of cork; occasional starch granules.

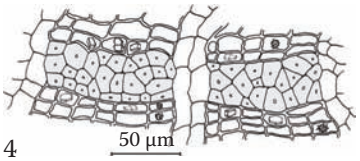
1



2



3



4