

***Phyllanthus emblica* L.****Amla Fruit***Phyllanthi emblicae Fructus*

Pinyin: Yu gan zi

Sanskrit: Amalaki

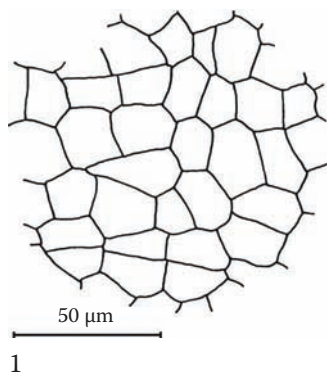
*Euphorbiaceae*

Amla fruit, also known as *amalaki* in Sanskrit and Indian gooseberry in English, is one of the most popularly used and widely consumed of all herbal foods and medicines in India. It is a component of the legendary ayurvedic herbal compound *triphala*, which is used by ayurvedic practitioners as a digestive aid, detoxifier, and longevity tonic. There are varying qualities of amla in international trade. The fruits should be picked directly from the tree, deseeded, and properly dried. Material on the market ranges from fruits with seeds that have fallen to the ground and are harvested after prolonged periods of time, resulting in degradation of the fruit, to relatively high-quality material with or without seeds. The characterization provided is of the entire fruit with seed.

**A. Fruit**

**Surface view:** Polygonal epidermal cells, usually nearly quadratic groups of three or four cells surrounded by a slightly thicker cell wall. Exocarp may be partly detached from mesocarp, forming enrolled cylinders, which appear under the stereomicroscope as white strands on the surface of the fruit.

**Transverse section:** Exocarp of small polygonal cells covered with a thick cuticle; small mesocarp cells toward the exterior become larger toward the center; sclereids are abundant in the mesocarp; sclereids are mostly solitary,



surrounded by parenchyma, and up to 350 μm long; vascular bundles in the mesocarp contain vessels and pitted fibers; endocarp is approximately 2 mm thick with a very solid layer of thickened and pitted sclereids and fibers. Abundant calcium oxalate crystals differ considerably in shape and size (e.g., needles, crystal sand, or small to very large cluster crystals). Some mesocarp cells frequently are completely filled with amorphous birefractive masses.

**B. Seed**

**Surface view:** Rectangular epidermal cells with rounded edges, cell wall slightly thickened and pitted, wall light-colored, cell lumen light brown.

**Transverse section:** Testa consists of several layers of sclereids. Heavily thickened and pitted sclereids inside the epidermal cells are partly like a macrosclereid layer and partly quadratic in outline, with two or three sclereids on top of each other. Endosperm is covered by two rows of brown parenchymatic cells, and has droplets of fatty oil and small cluster crystals of calcium oxalate.

**Powder:** Fragments of parenchyma, sometimes with solitary sclereids or amorphous gray crystalline masses; pitted fibers; sclereids. Calcium oxalate crystals are in different shapes and parenchyma cells are filled with birefractive masses.

