

## ***Terminalia bellerica* (Gaertn.) Roxb.**

### **Belleric Myrobalan Fruit**

#### *Bellericae myrobalani Fructus*

#### Sanskrit: Bibhitaki

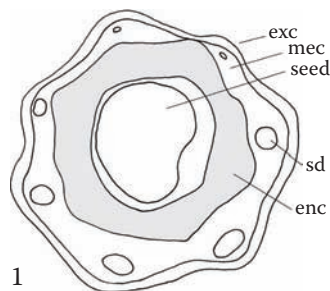
#### Combretaceae

Belleric myrobalan, more commonly referred to in the herb trade by the names *behada* or *bibhitaki*, is an ingredient in the most widely used formula of ayurvedic medicine: the three-fruit combination *triphala*, which consists of behada with amla (*Phyllanthus emblica*) and harada (*Terminalia chebula*). The three fruits are often sold combined. Although the quality of the fruits can vary substantially, the identity is typically correct. Fruits are traded in whole form and with the seed removed. This characterization describes both the fruit and the seed.

### **A. Fruit**

**Surface view:** Exocarp of very small epidermal cells, most modified into a unicellular, orange-colored, covering trichome; these are of differing lengths, up to 150  $\mu\text{m}$ , thin- or slightly thick-walled, with the apex rounded or acute.

**Transverse section:** Exocarp of small rectangular cells, most modified and extended to form a unicellular trichome, giving a characteristic fringe-like appearance;



outer mesocarp consists of parenchyma and numerous groups of tangentially elongated, lignified sclereids with heavily thickened and pitted walls; inner mesocarp consists of large, thin-walled parenchyma cells and embedded sclereids that are only slightly thick walled and heavily pitted and may be found singly or in groups; vascular bundles are accompanied by rows of small calcium oxalate cluster crystals approximately 20  $\mu\text{m}$  diameter; secretory ducts in the mesocarp are often associated with fiber bundles; large, very hard endocarp consists of a complex network of heavily thickened, pitted, lignified fibers or fiber-sclereids.

### **B. Seed**

**Surface view:** Brown testa, polygonal, thin-walled epidermal cells; below is a broader zone of cells with conspicuous tangled filiform structures. Innermost zone of testa is like numerous narrow annular vessels arranged parallel without distance.

**Transverse section:** Testa with the conspicuous tangled filiform structures. Endosperm and cotyledons of thin-walled parenchyma with large amounts of oil.

**Powder:** Sclereids; parenchyma of the seed with oil droplets; fragments of the exocarp with covering trichomes; infrequent vessels with attached rows of calcium oxalate cluster crystals.

