

# *Aesculus hippocastanum* L.

**Standardized Common Name:** Horse Chestnut

**Family:** Hippocastanaceae

**Taxonomy:** *Aesculus* includes about fifteen species, more than half of which are North American. *Aesculus hippocastanum* is the only species native to Europe, and is commonly cultivated in the United States.

**Description:** Deciduous tree, to 25 m. high. Bark grayish, warty; twigs thick, with large, conspicuous leaf scars and resinous winter buds. Leaves palmately compound; leaflets 5–7, 10–25 cm long, obovate, toothed, apiculate, with parallel secondary venation from midrib. Inflorescences paniculate, to 30 cm long, many-flowered. Flowers white; calyx fused, 5-lobed; corolla bilaterally symmetrical, ca. 10 mm long, of (4–)5 clawed petals; claws and veins of petals yellow, turning dark red at flowering; stamens 8–10, protruding from corolla; ovary compound. Fruit a capsule, green, leathery, spiny, with 1(–3) seeds. Seeds 2–4 cm in diameter, shiny, dark brown.

**Parts in Commerce:** Seed (“nut”)

## **Identification:**

- Subglobose, somewhat flattened and irregularly shaped
- (2–)2.5–3.5(–4) cm in diameter
- Surface uneven, smooth, glossy dark reddish-brown
- Hilum large (diameter usually more than half that of the seed), pale brownish or yellowish gray, with small bump in the center
- Narrow ridge and U-shaped depression over radicle of embryo
- Inner portion of seed (mostly cotyledons, endosperm absent) yellowish-white and starchy
- Taste of outer layer astringent; taste of embryo first sweetish, then bitter

**Adulterants:** No adulteration has been reported. No other species is found wild in eastern Europe, where *A. hippocastanum* is native and most often produced, so substitution is unlikely. The seeds of other species of *Aesculus* may differ in size or color. According to Wellendorf, the starch granules in the embryo of *A. hippocastanum* differ from those of most species in being larger (up to 30  $\mu\text{m}$  in diameter, whereas  $<10 \mu\text{m}$  is more common) and including some compound granules. Starch can be stained with an aquatic solution of iodine and potassium iodide; the use of a light microscope is necessary to observe and measure individual starch grains.

## **References:**

Ball PW. *Aesculus*. In: Tutin TG, Heywood VH, Burges NA, et al., eds. *Flora Europaea*. Vol. 2. Cambridge: Cambridge University Press; 1968:240.

Wellendorf M. Starch granules in seeds of *Aesculus*-species. *Bot Tidsskr*. 1979;74:27–29.

Wichtl M, ed. *Herbal Drugs and Phytopharmaceuticals*, 3<sup>rd</sup> English ed. Stuttgart: medpharm Scientific Publishers and Boca Raton, FL: CRC Press; 2004:300–304.