

Curcuma longa L.**Turmeric Rhizome***Rhizoma Curcumae longae*

Pinyin: Jiang huang

Sanskrit: Haridra

Zingiberaceae

Turmeric is native to India, where it was originally used to preserve foods and as a culinary spice. It is also widely used to promote digestive health and is applied externally for the prevention and treatment of skin diseases. In the last few decades, turmeric has emerged as one of the most scientifically researched of all botanicals for a wide range of indications from antioxidant and antihepatotoxic activity to anticancer effects. Traditionally, the rhizome was cured by boiling after harvest, then dried, milled, and extracted or made into a paste. Although growers in the United States do not have a demand for boiled rhizomes and sell their material uncured, some manufacturers may use imported boiled material. Boiling gives a yellowish brown, yellow, or grayish brown and speckled color to the external surface of the rhizome and gelatinizes the starch content. There are many species of *Curcuma* in trade.

Surface view: Polygonal epidermal cells; uni- or bicellular, thick-walled covering trichomes, tapering, up to 400 μm long.

Transverse section: Rectangular epidermal cells; sub-epidermal cork layer may contain small calcium oxalate prisms; cortical parenchyma of large spheroidal cells, including some secretory cells filled with orangish yellow secretions; small sclereids are found occasionally in the parenchyma and cork; collateral vascular bundles are

scattered in the cortical parenchyma, each consisting of few vessels and a narrow phloem; vessels up to 50 μm diameter; distinct endodermis consists of rectangular, tangentially elongated cells; numerous vascular bundles occur in a ring directly inside the endodermis; parenchymatous stele with scattered secretory cells and vascular bundles similar to those in the cortex.

Longitudinal section: Scalariform vessels.

Starch (uncured rhizomes): Occasional; simple granules; oblong, elliptic, ovate, or sack shaped, some with a papillary protuberance at the hilum, up to 60 μm in length; eccentric hilum is situated at the narrower end of the granule very close to the margin; striations run across the grains at right angles to the long axis.

Starch (cured rhizomes): All starch will have been gelatinized in boiled material.

Powder (cured rhizomes): Intensely yellow in chloral hydrate suspension; primarily, fragments of parenchyma with only few cells intact showing the clumps of gelatinized starch; few fragments with secretory cells; few fragments of cork and vessels; occasional trichomes.

