

Allium sativum L.**Garlic Bulb***Bulbus Allii sativi*

Pinyin: Da suan

Sanskrit: Lasuna

Liliaceae

Garlic is one of the most ancient of medicinal foods and one of the most researched botanicals in the world. Because of its widespread recognition and cultivation, there is little chance of adulteration with other species. However, garlic that is to be used in dietary supplement products is typically more carefully handled than garlic used in commodity spices. This is to preserve alliinase activity and subsequent allicin yield because alliinase is sensitive to heat and decomposition upon bruising. The mesophyll makes up 95% of the clove volume and mass. Powdered material may contain the entire bulb, including the basal disc (rhizome) and white protective scale leaves.

A. Bulb

Outer scale leaf, surface view: Thin- and straight-walled epidermal cells of scale leaf are slightly elongated, two to four times longer than wide, and arranged at right angles to the hypodermal cells; infrequent stomatal complexes; trichomes are absent; hypodermal cells are elongated to ovoid, with thick, pitted walls, each containing a calcium oxalate prism crystal up to 30 μm long; occasional twin crystals in the shape of a cross.

Basal disk (rhizome) of the bulb: Contains pitted sclereids and numerous irregularly arranged vascular bundles embedded in thin-walled parenchyma.

B. Clove

Outer scale leaves, surface view: Elongated, acute, fiber-like epidermal cells; lignified vessels may be embedded; hypodermis is present; calcium oxalate prism crystals in the hypodermal cells are smaller and not as frequent as in the outer scale leaf of the bulb.

Epidermis, surface view: Thin-walled, elongated cells with occasional anomocytic stomata.

Mesophyll, transverse section: Storage parenchyma of thin-walled cells; vascular bundles scattered throughout are composed mostly of phloem, with approximately half of them devoid of xylem.

Mesophyll, longitudinal section: Polygonal or rectangular parenchyma cells; bundles are composed mostly of phloem, with approximately half of them devoid of xylem; lignified vessels, mostly with annular or helical thickenings.

Dormant foliage leaves in the center of the clove, transverse section: Unifacial; parenchyma cells are circular and vascular bundles are present.

Powder: Fragments of parenchyma from the clove mesophyll; occasional anomocytic stomata are embedded in thin-walled cells of clove epidermis; hypodermis of scale leaves with conspicuous calcium oxalate prismatic crystals, partly associated with parenchyma, partly with thickened yellow fibers; infrequent annular or spirally thickened vessels.

