

***Teucrium chamaedrys* L.**

Germander Aerial Parts

Herba Teucrii

Lamiaceae

In the United Kingdom, various species of germander were historically used as a tonic, diuretic, and sleep aid, among other purposes. These species have not been widely used in the United States, though *T. canadense* and *T. chamaedrys* have been traded as an adulterant to skullcap (*Scutellaria lateriflora*). Hepatotoxicity has been reported with germander use. The situations in which germander may be hepatotoxic versus medicinal are not known. However, the more pertinent issue is to ensure that it does not adulterate the skullcap market. For a differentiation of these two species, see entry for *Scutellaria lateriflora*.

A. Leaves

Surface view: Upper epidermal cells have sinuous anticlinal walls; stomata are absent; uniseriate, straight, acute covering trichomes, up to 400 μm long, thick walled with a warty or striated cuticle and with small calcium oxalate needles aggregated primarily toward the distal ends of the trichome cells; glandular trichomes of two types occur: (1) unicellular stalk with a bicellular spheroidal head 25–30 μm diameter; (2) glandular scale consisting of a unicellular short stalk and a large glandular head of four cells with detached cuticle, ~50 μm diameter. Lower epidermal cells are smaller than those of upper epidermis; numerous diacytic and anomocytic stomata, 25–30 μm long; covering trichomes as on upper surface, but mostly bent; glandular trichomes as on upper epidermis.

Transverse section: Bifacial; palisade cells in two rows; spongy mesophyll with large air spaces.

B. Flowers

Calyx: Five teeth; epidermal cells of wavy-walled, elongated cells; stomata on outer surface only, mainly diacytic with some anomocytic; covering trichomes of two types occur: (1) as on leaf, up to 1,500 μm long; (2) short uniseriate, one to five cells, 50–150 μm long, on the tip of the calyx teeth; these are polymorphic with most cells convex

in outline, terminal cell acute, rounded or mucronate, and warty or horizontally striated cuticle. Glandular trichomes of three types occur: types (1) and (2) as on leaf; (3) uniseriate stalk of two to five cells, ~300 μm long, with a very short unicellular head; inner surface with a ring of uniseriate, curled covering trichomes up to 1 mm long.

Corolla: Covering trichomes of two types occur: (1) as on leaf, up to 1,000 μm long, predominantly on the lower lip; (2) uniseriate with short cells, wide lumen, and a rounded tip. Glandular trichomes of three types occur: types (1) and (2) as on leaf; (3) uniseriate stalk of two to three cells, up to 150 μm long, basal cell usually wider than upper cells and the cell below the unicellular head usually very short.

Stamens: Filaments with glandular scales as on leaf and two additional glandular trichome types: (1) uniseriate stalk and unicellular head, up to 200 μm long; (2) two-celled stalk and two-celled head, up to 30 μm long; covering trichomes of two types occur: (1) uniseriate, up to seven cells, ~600 μm long, slender, with acute terminal cell and a warty cuticle; (2) uniseriate, one to three cells, up to 180 μm long, broad lumen, warty cuticle, particularly on the cells toward the apex. Glandular scales occur at the base of the anthers, and covering trichomes are absent; tricolpate, smooth, spherical pollen grains, 25 μm diameter.

C. Stems

Surface view: Epidermis of elongated cells with glandular and covering trichomes is similar to those on the leaf.

Transverse section: Quadrangular, with collenchyma in the corners; secondary xylem in a continuous ring of vessels and heavily thickened fibers; vessels up to 15 μm diameter; pith cavity usually absent.

Powder: Fragments of leaf showing epidermal cells with wavy walls; diacytic and anomocytic stomata from the leaf lower surface; numerous covering trichomes are often found broken or detached; glandular trichomes are as described before; corolla and other floral pieces are present but less abundant; smooth and spherical tricolpate pollen grains; fragments of fibers and vessels from the stem.