

***Tanacetum parthenium* (L.) Sch. Bip.**

Feverfew Aerial Parts

Folium Tanacetii parthenii

Asteraceae

Feverfew is one of the most commonly used botanicals in Western herbal medicine for the prevention and treatment of migraine headaches. Evidence-based reviews suggest it is clinically valuable as a migraine prophylactic, but not as effective for treatment. Historical accounts suggest it is good for treatment. Feverfew is also used as a diaphoretic and for arthritis. Various varieties of *Tanacetum* are used. The only variety known to be effective is the parthenolide-yielding type.

A. Leaf

Surface view: Upper and lower epidermis is similar, consisting of cells with sinuous anticlinal walls; cuticular striations are found particularly around stomata and the basal cell of covering trichomes; anomocytic stomata ~30–35 µm long occur more frequently on the lower surface; uniseriate covering trichomes (up to 350 µm long) and stalk three to seven cells long, consisting of a large conical basal cell followed by several small rectangular cells, and elongated, thin-walled, plane, slightly convex terminal cell; biserial punctate glandular trichomes typical of the *Asteraceae* can be found on both surfaces; these have a characteristically large, bicellular head, with the cuticle forming a bladder-like covering around the secretory cells.

Transverse section: Bifacial; palisade cells in one layer; spongy mesophyll is loosely packed; collenchyma are found near thick veins.

B. Stem

Surface view: Epidermis has anomocytic stomata and covering trichomes similar to those found on the leaves.

Transverse section: Stem is more or less round or ridged; epidermis of small polygonal cells; collenchyma interior to the epidermis; narrow cortex; endodermis is apparent; collateral vascular bundles, with fiber caps over

the phloem, forming a ring around a very large pith of large, polygonal, thin-walled cells; cells between bundles are thickened and pitted.

Longitudinal section: Vessels show helical, annular, or scalariform wall thickenings.

C. Flower

Phyllary: Epidermis of wavy, thin-walled, elongated cells with a striated cuticle; margin is usually one cell thick and irregularly incised; cells in the center are lignified and pitted; anomocytic stomata; glandular and covering trichomes are similar to those found on the leaves.

Ray floret: Pistillate, white; upper epidermis of the ligule is papillose; lower epidermal cells have sinuous anticlinal walls and a striated cuticle; epidermal cells of the floral tube are rectangular, and cells in the basal portion of the tube thicken during floral development; biserial glandular trichomes are abundant; small calcium oxalate cluster crystals are present, especially on the tube and style, up to 10 µm diameter; bilobed, papillose stigma.

Disk floret: Hermaphroditic, yellow, anatomy similar to that of disk florets; adaxial epidermis of the corolla lobes papillose; outer epidermis with biserial glandular trichomes; anther endothecium has reticulately thickened cells; tricolporate pollen grains, with a spiny exine, ~25 µm diameter.

Cypsel: ~1.5 mm long, with a corona of bracts; biserial glandular trichomes occur in furrows between conspicuous ridges; exocarp cells are covered by a very thick cuticle, appearing in surface view to have a very fine parallel or reticulate texture; mesocarp with abundant small calcium oxalate cluster crystals; at base, sclereids are arranged in a ring.

Powder: Fragments of papillose epidermis and sclereids from the florets; cells from the ovary wall with characteristic parallel or reticulate texture; helical, annular, and scalariform vessels; fibers from the stem; leaf epidermis; glandular and covering trichomes; tricolporate pollen grains.