

**Arnica montana L.****Arnica Flower****Flos Arnicae****Asteraceae**

The flowers of *Arnica montana* have a long history of use both internally and externally—though, today, the most prevalent use of the botanical is for external purposes. Internally, it was historically used to allay angina pains and for a weakened heart. Due to the relative toxicity of arnica, internal use, except for homeopathic dilutions, is rare. Externally, arnica is used in ointments and compresses for the treatment of bruising. Arnica is sometimes substituted with another species of plant known as false arnica (*Heterotheca inuloides*).

**Capitulum:** Radiate, with both ray and disk florets; convex receptacle with dense uniseriate covering trichomes up to 800  $\mu\text{m}$  long.

**Phyllary:** Epidermal cells with wavy anticlinal walls and abundant anomocytic stomata; uniseriate covering trichomes are occasionally biseriata in basal region, ~700  $\mu\text{m}$  long, and may reach up to 2,000  $\mu\text{m}$  along the main vein; glandular trichomes of two types occur: short biseriata (up to 100  $\mu\text{m}$  long; glandular, narrow, elliptical head) and long biseriata with a biseriata or irregular multicellular spheroidal head, total length up to 1,500  $\mu\text{m}$ ; glandular trichomes are frequently colored violet.

**Ray floret:** Pistillate; yellow; densely hairy floral tube on the outside; abaxial epidermis of the ligule is less so; uniseriate covering trichomes and basal cells of stalk are usually shorter than terminal cells; glandular trichomes are similar to short biseriata type on the phyllaries; pappus of multiseriate acute hairs in a single row at the base of the floral tube; two-lobed stigma, with narrow, long, recurved lobes, and papillose apices.

**Disk floret:** Hermaphroditic; five corolla lobes, triangular, densely papillose on the inside, with few short, biseriata, glandular trichomes on the outside; indumentum of floral tube is similar to that of ray florets; anthers ~3.5 mm long; tricolporate, spheroidal pollen, with a spiny exine, 34–39  $\mu\text{m}$  in diameter including spines; pappus and stigma are similar to those of ray florets.

**Cypselae:** Epidermis of elongated cells with numerous short, biseriata, glandular trichomes similar to those on the phyllaries and numerous biseriata covering trichomes up to 350  $\mu\text{m}$  long, consisting of two slightly thickened elongated cells aligned parallel to each other with pits at their common wall but free and acute at their apices; trichomes are usually appressed upward; beneath the epidermis, black phytomelanin masses are deposited in varying amounts; crystals are absent; sclereids in up to five rows at the base of the cypselae.

**Powder:** Fragments of pappus; phyllaries; ray and disk florets with covering trichomes and biseriata glandular trichomes; cypselae with phytomelanin and trichomes having split apices; spiny tricolporate pollen grains.

