

**Part used:** Herb

**Traditional Uses:** The taste is bitter and the potency is cool and blunt. It is used for the following: as a diuretic, treating inflammation, liver cirrhosis, and ulcers, healing wounds, and for degeneration of liver and bile, ascites tumors [4–6].

**Microscopic characteristics:**

**Leaf:** Leaf is isolateral. Palisade 5–7 layered. Near the vascular bundle shows thin walled rounded parenchyma cells. Upper and lower epidermal cells angular walled. Anomocytic stomata occur both surface of epidermis. Vascular bundle is collateral [7].

**Stem:** The transverse section is round in shape. Epidermis single-layered. Cortex is composed of 5–6 layers parenchyma. Vascular bundle is collateral. Centre of the stem are present large, thin-walled parenchyma containing water [7].

**Chemical constituents:** Triterpenoid saponins: 3-O- $[\beta$ -D-2-sulphonylglucopyranosyl]-quinovic acid-28-O- $[\beta$ -D-2-glucopyranosyl] (zygophyloside G), 3-O- $[\alpha$ -L-arabinopyranosyl]-(1 $\rightarrow$ 2)- $\beta$ -D-inovoglucopyranosyl]-quinovic acid-28-O- $[\beta$ -D-glucoglucopyranosyl] (zygophyloside H), flavonoids: kaempferol-3-O-neohesperidoside, kaempferol-3-O-rutinoside, kaempferol-3-O-glucoside, kaempferol-3-O-rutinoside-3-O- $\beta$ -D-quinovopyranosyl, quercetin-3-O-rutinoside, phenylalanine, steroids:  $\beta$ -sitosterol, hendriacktan [8].

**Qualitative and quantitative assays:** Flavonoids in the plant are identified by TLC. Suitable procedure for TLC: silica gel, ethyl acetate-methanol-water (10:2:1) solvent system. The spot with the same  $R_f$  as reference kaempferol is observed under UV lamp. Total flavonoid content is determined by spectrophotometry at 269 nm and calculated as kaempferol [7].

**Qualitative and quantitative standards:** Loss on drying,  $6.9 \pm 0.67\%$ . Total ash,  $35.2 \pm 1.194\%$ . Acid-insoluble ash,  $15.5 \pm 1.06\%$ . Water-soluble extractive,  $60.4 \pm 0.47\%$ . Total flavonoid content calculated as kaempferol,  $1.38 \pm 0.113\%$  [7].

**Bioactivities:** Antioxidant and immunodepresant [9].