Habitat: Larch and birch forests in forest-steppe belt [2–5].

Part used: Herb

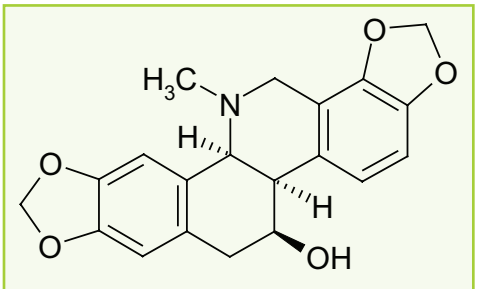
Traditional Uses: The taste is bitter and the potency is cool. It is used for the following: treating typhoid fever, xerostomia, bile disorder, burn wounds, alleviating fever, soothing pain, dermatitis, and papilloma. It is an ingredient of the following traditional prescriptions: Bashaga-7, Davichujin, Donroiselva-7, Yutigdumshitan, Lkhamobuntig, Chuchin-25 [5–8].

Microscopic characteristics:

Leaf: Leaf is dorsiventral. Palysade single-layered, large, scattered; spongy parenchyma 2–3 layered. Epidermal cells thin, wavy walled. Anomocytic stomata occur only on the lower surface of the leaf. Stoma relatively large. Vascular bundles are visible centre of the spongy parenchyma [9].

Stem: The transverse section is rounded. Epidermis two-layered, relatively thick. Lower epidermis has parenchyma with thick-walled of cortex. Near the vascular bundle appearing thick-walled, large parenchyma. Collateral vascular bundle surrounded by stem. Upper vascular bundle occurs with high developed sclerenchyma [9].

Chemical constituents: 1.4–4.32% organic acids, 0.01% essential oil [10], saponins [11,12], flavonoids [10], phenol carboxylic acid [13], alkaloids: chelerythrine, sanguinarine [14], chelidonine, berberine, coptisine [13], chelidimerine [15], chelirubine [16,17]. The main alkaloids are chelidonine, chelerythrine, sanguinarine, berberine [13].



Chelidonine

Qualitive and quantitative assays: Alkaloids in the plant are identified by a precipitation reaction, and total alkaloid content is determined by titration using perchloric acid as the titrant and crystal violet as the indicator [9].

Qualitive and quantitative standards: Loss on drying, not more than 7.0%. Ash, not more than 8.0%. Organic matter, not more than 1.0% and mineral matter, not more than 0.5%. 70% ethanol-soluble extractive, not less than 25.0%. Total alkaloid content, not less than 0.2% [9].

Bioactivities: Sedative, anesthetic [10], spasmolytic [10,18], antifungal [19], antiviral [13,20], antibacterial [10], hypotensive, analgesic [10,18], cytostatic, cytotoxic [14], antitumor, antimicrobial [13], stimulation of the dopaminergic system and inhibition of the serotonergic system [21].