

Distribution: Khovs., Khent., Mong-Dag., Khyang., Khovd.

Habitat: Larch, cedar and mixed forests, birch forest in forest-steppe and alpine belts [1–5].

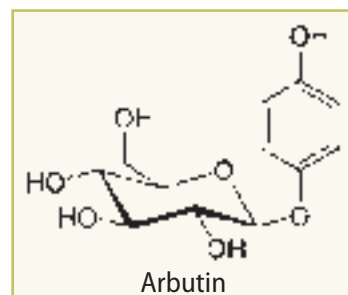
Parts used: Herb and fruits

Traditional Uses: The taste is sweet and sour and the potency is cool. It is used for the following: enhancing longevity, develops body power and heals coughs. It is an ingredient of the following traditional prescription: Oddan-25 [5–8].

Microscopic characteristics:

Leaf: Upper and lower epidermis covered with thick cuticles; both epidermis wavy-walled. Stomata is surrounded by two subsidiary cells and appears only in lower epidermis. Near the upper epidermis and along midrib covered by thick-walled hairs. Hairs with cuticle. Multicellular, glandular trichomes occur in lower surface of epidermis [9].

Chemical constituents: Leaves contain aldehydes, triterpenoids, ascorbic acid [10], phenol glycosides: arbutin [10–13], methylarbutin [10], phenol carboxylic acids, their derivatives: chlorogenic, caffeic, isochlorogenic, neochlorogenic, ferulic acids [14], catechin: (+)-catechin, (–)-epicatechin, (+)-gallocatechin [14–16], tannins, flavonoids: kaempferol, quercitrin [13], isoquercitrin, rutin, quercetin 3-*O*- β -D-glucosyl-L-rhamnoside, kaempferol 3-*O*-L-rhamnoside, avicularin, hyperin [13,17], luteolin 3-*O*- β -D-glucopyranoside, luteolin 3-*O*- β -D-galactopyranoside [12]. Fruit contains sugar, ascorbic acid, organic acids: citric, benzoic, salicylic acids [13], terpenoids: α -pinene, β -pinene, 1,8-cineol, camphor, borneol, myrcene, γ -terpinene, and others, aromatic compounds (benzene, toluene, phenol, anisaldehyde, benzaldehyde, acetophenol, and others) [18].



Qualitative and quantitative assays: Tannins in leaves are identified by the reaction with ammonium iron (III) sulphate. Arbutin is identified by the reaction with iron (II) sulphate. Arbutin is determined by titration using iodine as the titrant and starch as the indicator [19].

Qualitative and quantitative standards: For leaves: Loss on drying, not more than 12.0%. Organic matter, not more than 2.0% and mineral matter, not more than 1.0%. Water-soluble extractive, not more than 20.0%. Tannins, not less than 5.0%. Arbutin, not less than 4.0% [19].

For fruit: Loss on drying, 10–12.0%. Ash, 9–10.0%. Matter, not more than 3.0%. Ascorbic acid, 7–17 mg% [20].

Bioactivities: Sedative, antioxidant [11], and diuretic [21].