

***Rhododendron anthopogon:* The Incense Shrub of the High Himalaya**

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INTRODUCTION

Above 4,000 m in Yumesamdong, North Sikkim, snow lingers into May and the slopes look bare until you step onto them. Then the smell finds you before the plant does: resinous, sweet and faintly medicinal, rising from a low dark-green mat underfoot. The source is *Rhododendron anthopogon* D. Don, a dwarf evergreen shrub that local Bhutia communities call *Palu* and Nepali speakers call *Sunpati*. It looks nothing like the tree rhododendrons most people picture. Its reputation rests on its scent.

A dwarf with a loud personality

J. D. Hooker met the species in Sikkim in the 1840s. He found it abundant on open, gravelly ground at roughly 12,000 to 16,000 feet and noted its heavy odour (Hooker, 1849). It belongs to the aromatic dwarf group of rhododendrons, section *Pogonanthum*.

The shrub is prostrate or spreading, with small, leathery, dark-green leaves. The underside is covered in overlapping, brownish scales that hold the aromatic glands. In summer it carries tight terminal clusters of four to six pink or pale-yellow flowers. These open between April and June in Nepal, with fruit following in July and August (Cornara et al., 2025).

The species ranges from Pakistan through India, Nepal and Bhutan to south-eastern Tibet and China, usually between 3,000 and 5,100 m (Cornara et al., 2025). In Yumesamdong we see it most often between 4,000 and 4,500 m, growing among mosses, alpine grasses and rock rather than in forest (Fig. 1). Flowering there follows the snowmelt, from late May into July.



Fig. 1. *Rhododendron anthopogon* growing as a low mat among alpine grasses at Yumesamdong, North Sikkim in October. Note the leathery, scaly leaves and the rounded terminal buds that overwinter under snow.

Photo: P. C. Gyani.

Living at the edge

Alpine shrubs have little to spare. Soils are thin, nutrients are scarce, and winter means months under snow. Studies on this species show that its physiology shifts along the slope. Seasonal and elevational changes alter its leaf traits and biogeochemical profile (Rathore et al., 2018), and soil properties and eco-physiology change together along altitudinal gradients (Mangral et al., 2023). Cornara et al. (2025) summarise the pattern: leaf area shrinks while nitrogen and chlorophyll content rise with elevation. Some authors read this plasticity as encouraging for the species under a warming climate. We are more cautious. A mat-forming shrub that already sits near the top of the mountain has nowhere higher to go.

What is in the smoke

Steam distillation of the aerial parts yields Anthopogon, or Sunpati, oil (Innocenti et al., 2010). Its dominant constituents are monoterpenes, mainly α -pinene, β -pinene and limonene, along with the sesquiterpene δ -cadinene (Innocenti et al., 2010). The exact proportions vary a good deal with origin. Leaf oil from Dhankuta, Nepal, contained about 21.5% α -pinene and 13.8% δ -cadinene (Dosoky

et al., 2016). Oil distilled on site in Ramechhap gave 23.1% α -pinene, 11.4% β -pinene and 11.3% δ -cadinene (Cornara et al., 2025). A Langtang sample was led instead by E-caryophyllene (Pradhan et al., 2023). Altitude seems to matter too. Work from the Kashmir Himalaya reports oil yields of 0.31–0.43% that rise with elevation between 3,200 and 3,900 m, along with a more varied chemical profile (Mangral et al., 2026).

The laboratory evidence for bioactivity is real but mixed. In one study the oil had weak topical anti-inflammatory action. It killed several Gram-positive bacteria, a *Mycobacterium tuberculosis* reference strain and a *Candida* isolate at concentrations as low as 0.04% (v/v), and it slowed the growth of cancer cells in culture (Innocenti et al., 2010). A later Nepalese study found only marginal to moderate antibacterial effects and no antifungal activity (Dosoky et al., 2016). The two studies do not fully agree. The claim most often linked to incense use is calming. A 2025 study found that the oil moderately inhibits acetylcholinesterase and butyrylcholinesterase, and that α -pinene was the most active single component (Cornara et al., 2025). The authors present this as partial support for the traditional

anxiolytic use. It is not proof. The oil's potency was far below the reference drug galantamine, and the tests were done *in vitro*, not in people.

Sacred smoke and folk medicine

In Tantric Buddhist households across the Himalaya, branches of *Rhododendron* and juniper are burned each morning. One lama in Nepal carries a censer through every room of his home to purify it, finishing at the household shrine (Cornara et al., 2025). In Sikkim the whole plant is burned and the leaves are made into incense sticks (Cornara et al., 2025). Its medicinal uses are mostly respiratory. Leaves are boiled for inhalation or taken as a decoction. Young flowers are infused for colds, and the species is also used as a digestive and a tonic (Cornara et al., 2025; Joshi et al., 2016). These are traditional uses, and most are untested clinically.

Keeping the hillside fragrant

Demand is rising. Distillers now supply aromatherapy and cosmetic markets in Europe and the USA (Cornara et al., 2025), and income of that kind could benefit mountain communities. The same pressure can harm the plant. Cornara et al. (2025) describe how harvesting once took place at flowering. In recent years it has been moved to October so that pollination and seed set can finish first. They also report cut branches being illegally supplied to the Sagarmatha base camp, and firewood collection by tourists and porters. The genus has toxicity issues of its own, so careless use is not harmless either (Popescu & Kopp, 2013).

For Sikkim, we think the practical path is community-managed collection after seed set, with fixed quotas and regular monitoring of the plots. Protected areas such as the Shingba *Rhododendron* Sanctuary near Yumthang already shelter much of the habitat, but harvest rules also have to work outside sanctuary boundaries.

The shrub has long been burned in prayer, and the demand now reaching these slopes is new. If the harvest is managed with the same patience as the ritual, the smell of Sunpati should still be there on the high passes for a long time to come.

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