**Fragaria nubicola** (Rosaceae): A review of medicinal uses, phytochemistry and pharmacology

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**Abstract**

*Fragaria nubicola* (Hoof.f) Linn. (Rosaceae) is a medicinally important plant commonly called Wild strawberry. Traditionally it has been used to treat different diseases. The study was carried out to compile all the previous data in review form on the basis of its distribution, traditional medicinal uses, pharmacology and phytochemistry.

**Keywords:** *Fragaria nubicola*, medicinal plant, herbal medicine, phytochemistry, pharmacology

**Introduction**

*Fragaria nubicola* (Hoof. f) Linn. belongs to family Rosaceae and is commonly called Wild strawberry [1]. It grows in wooded valleys, forest margins and meadows on mountain slopes of 1500-3600 m height and distributed in Afghanistan, Bhutan, China, Myanmar, Nepal, Pakistan and Sikkim. Plants are stoloniferous, 4–25 cm tall. Its flowering season is May to August. Although *Fragaria nubicola* is closely related to *Fragaria vesca*, it is generally recognized to be a distinct species characterised by appressed persistent sepals in fruit (this may be difficult to see in herbarium material) [2]. *Fragaria nubicola* is diploid specie having 14 number of chromosomes while all other have 7 chromosomes. Fruits are very aromatic having good aroma [3].

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**Fig 1:** *Fragaria nubicola* (Hoof.f) Linn.
The fruit is edible, laxative, digestive, purgative, astringent, antiseptic 

The berries are of great benefit for rheumatic nerves and lungs [15]. Juice of it is considered as anti diarrheal, anti dysenteric. Also used in diabetes and sexual diseases [18]. Fruits are used for liver disorders and anemia, fruit juice is given to small children for hastening recovery from weakness after illness or high fever [1].

Leaves
In indigenous use the leaves are mixed with the leaves of Berberis lyceum and used in cure of stomach ulcers, also used as antiseptic [16]. The aqueous extract of leaves is used as laxative, diuretic and astringent and decoction of leaves are used to stop diarrhea and dysentery [17]. Leaves are used for boils, ulcers inside mouth and leaf juice is dropped in ear for relieving earache [1].

Rhizome
Rhizome is used to cure tonsillitis, fresh rhizome ground to a fine powder and mixed with sugar (2-5mg) for a month [9]. In Nepal, root paste is used in controlling bleeding, cough and cold [6]. Decoction of leaves and roots are used to stop diarrhea and dysentery [17]. For tonsillitis rhizome is crushed into powder and mixed with honey and taken twice for 20-25 days. For rheumatism root is dried and cut into pieces and used in cure of stomach ulcers, also used as antiseptic [16].

Pharmacology
Fragaria nubicola is rich in ellagic acid and phenolic compounds. The earlier reports supports that the strawberry has potent antioxidant activity. The phytoconstituents present in Fragaria nubicola are ellagic acid and phenolic.
compounds, which have been already proved to be potent antioxidant. The biochemical investigations reveals that *Fragaria nubicola* significantly increased the catalase and superoxide dismutase enzyme activities, which indicates that *Fragaria nubicola* may decrease the formation of free radicals. Also *Fragaria nubicola* reduced the total nitrite and malondialdehyde which is the marker of lipid peroxidation, suggesting that the antioxidant potential of *Fragaria nubicola* may have decreased the formation of oxygen radicals and further prevented the vicious chain reaction. Hence, in this study the neuroprotective effects of *Fragaria nubicola* fruit were observed. Fresh juice of *Fragaria nubicola* fruit have neuroprotective effect on ischemia reperfused brain injury and is beneficial in stroke and it accelerate the activities of various enzymes such as catalase and super oxide dismutase and decrease nitrite and malondialdehyde, indicating *Fragaria nubicola* have power to decrease the free radical formation and have antioxidant properties. Antimicrobial activity of dried powder of *Fragaria nubicola* acetone extract, against *E. coli*, *S. aureus*, *Aspergillus* and *Penicillium* sp have been found. Benzyl derivatives isolated from ethyl acetate fraction of Whole plant have shown dose dependent antidepressant effect.

**Phytochemistry**

Two new benzyl derivatives have been isolated from ethyl acetate fraction of wild strawberry, *Fragaria vesca var. nubicola* Lindl. ex Hook. f. The structures of these compounds were elucidated to be 5-(4-hydroxy-3-methoxyphenethyl)-7-methoxy-2H-chromen-3-ol and 5-(4-hydroxy-3-methoxyphenethyl)-4,7-dimethoxy-2H-chromen-3-ol. Phenolic compounds have been reported from this plant.

**Structures of compounds isolated from *Fragaria nubicola* [22].**

![Fig 2: 5-(4-hydroxy-3-methoxyphenethyl)-7-methoxy-2H-chromen-3-ol](image1)

![Fig 3: 5-(4-hydroxy-3-methoxyphenethyl)-4,7-dimethoxy-2H-chromen-3-ol](image2)

**References**


