

# **An Ethnobotanical Study of Medicinal Plants used by the Locals in Kishtwar, Jammu and Kashmir, India**

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## **Abstract**

This study represents a systematic attempt to explore the knowledge of the native people about plants, which they use to cure diseases. And it is an attempt towards conserving the local knowledge of people to plants. This paper presents a list and uses of some medicinal plants distributed in the high altitude district Kishtwar in Jammu and Kashmir. The list was prepared during an ethno-botanical survey of the region from December 2007 to January, 2009. This paper provides information about 71 ethno-medicinally useful plants grown in this region. In this paper, family, botanical name, local name, ethnomedicinal uses are given for each plant.

## **Introduction**

It is documented that 80% of the world population has faith in traditional medicines, particularly plant drugs for their primary healthcare (Kala et al., 2006). The use of plants for medicinal purposes and human sustenance has been in practice in India since the Vedic age. The earliest mention of the medicinal use of the plants is found in the Rigveda, 1500-400 BC, Athurveda 1500 BC, Upanishada 1000-600 BC (Chauhan, 1999). In India about 17000 species of higher plants out of which 7500 are known for medicinal uses (Shiva, 1996). India is one of the major contributors to the world in terms of herbal drugs and its raw materials (Grunwald, 2000). In India Janaki Ammal (1956) initiated the work on ethnobotany while working in botanical survey of India.

Kishtwar popularly known as “Land of Sapphire and Saffron” is also very rich in forest products. District Kishtwar in the past used to be an independent hill principality and was merged with the state of Jammu and Kashmir in 1821 A D. Kishtwar lies 216km in Northeast of Jammu (the winter capital of state) and

284km Southeast of Srinagar (summer capital of state). Most of its area is hilly terrain.

Kishtwar lies in the lap of Himalaya. It ranges from Middle Himalaya to Greater Himalaya. Himalayan peaks like Sickle moon (6574m), Charcha (6065m), Eiger (6001m), Namtse (6000m) and Durang glacier lies in this district. The climate of Kishtwar ranges from temperate to alpine. Kishtwar district consists of 8 blocks: Kishtwar, Inderwal, Paddar, Marwah, Warwan, Dacchan, Nagsani and Drabshalla. Its total population was 219560 in the year 2001. Its area covers 7734km<sup>2</sup>. Snow may cover the most parts of the district from December to March. About 90% area of district is backward and the main occupation of the people (80%) is farming, cattle and sheep rearing. Due to geographical remoteness of the area and socioeconomic condition of the local populace folk medicine is still commonly used in Kishtwar. These factors also explain the preservation of ethanopharmacological practices in this region. Although a lot of work has been done on the ethnobotany and ethnomedicines in Jammu and Kashmir state but as for as Kishtwar district is concerned it is totally unexplored except for few stray references (Kumar and Hamal, 2009; Kumar et al., 2009a, 2009b).

## **Methods**

The study was carried out during December 2007 to January 2009 to determine the wild and native cultivated plants used as medicinal purpose by villagers of Kishtwar. All villages of Kishtwar were screened. During study, information was obtained from middle aged and older people, most of whom were Hakims (old persons in villages who have vast knowledge about the medicinal plants). In authors, one author is the native of this region, so he has some practical and theoretical knowledge too. For each plant at least 20-30 people were interviewed. It asked for his or her knowledge concerning the common names of plants, their usage and preparation. During field trips, the digital photographs and herbarium specimens were collected. The specimens were pressed and dried according to herbarium techniques and identified using relevant standard literature i.e., “Flora of British India” by Hooker (1872-97), “Flora of West Pakistan” by Nasir and Ali (1970), “Forest flora of Srinagar” by Singh and Kachroo (1976), “Flora of Jammu and plants of neighborhood” by Sharma and Kachroo (1983), “Flowers of Himalaya” by Polunin and Stainton (1984), “Flora of Pir Panjal range (North-West Himalaya)” by Singh and Kachroo (1994) and with the help of herbarium curator (Dr. Krishna Anand), Department of Botany, University of Jammu, Jammu.

## **Systematic Descriptions**

### **Family: Apiaceae**

*Angelica glauca* Edgew.

Local name: Chora

Ethnomedicinal uses: The roots are grinded and eaten with 'gud' (sugar) against stomach problem. The roots are burnt to remove the snakes when they enter the house.

*Foeniculum vulgare* Mill.

Local name: Sow

Ethnomedicinal uses: Seeds mixed with sugar are used against constipation

**Family: Araceae**

*Acorus calamus* L.

Local name: Nag Russ

Ethnomedicinal uses: Rhizomes are emetic in large doses; stomachic and carminative in smaller doses; useful in bronchitis and remittent fever. Fresh rhizome is inhaled in common cold as anti-allergic.

*Arisaema flavum* (Forsskal) Schott.

Local name: Sapp googli

Ethnomedicinal uses: The tubers are crushed and a paste is made which is applied against foot and mouth diseases in cattle. The paste is also applied on snake bite.

**Family: Asteraceae**

*Artemisia maritima* L.

Local name: Mooin

Ethnomedicinal uses: The leaves are used in stomach problems. The leaves are also useful in expelling worms from the intestine.

*Calendula officinalis* L.

Local name: Hamesh-Bahar

Ethnomedicinal uses: The flower and leaves are crushed and the paste is applied on skin diseases and burns.

*Cirsium arvense* (L.) Scop.

Local name: Jhashkantu

Ethnomedicinal uses: The young inflorescence crushed in water is used for inducing vomiting.

*Gnaphalium hypoleucum* DC.

Local name: Chhar

Ethnomedicinal uses: The flowers are crushed in water and the resulted paste is applied on throat problems.

*Inula royleana* C. B. Clarke

Local name: Mulain

Ethnomedicinal uses: The oil of roots is mixed with kuth oil-root oil of *Saussurea lappa*. It produces fall in blood pressure and stimulates peristaltic movements of intestine.

*Jurinea dolomiaea* Boiss.

Local name: Guggal

Ethnomedicinal uses: The crushed roots are applied on skin eruptions. Aromatic oil from the roots is useful in gout and rheumatism.

*Saussurea lappa* (Decne.) Sch. Bip.

Local name: Kuth

Ethnomedicinal uses: The root oil is used to cure joint pains through external massages. The root is also used in cough and asthma.

*Senecio chrysanthemoides* D.C.

Local name: Jarjam

Ethnomedicinal uses: Flowers are crushed and applied on wounds as antiseptic. Root powder is used against rheumatic pain.

*Tanacetum dolichophyllum* (Kitam.) Kitam.

Local name: Amritdhara-ghas

Ethnomedicinal uses: The leaves are made into a round pill of the size of almond nut and swallowed with water in stomach pain and indigestion.

*Taraxacum officinale* Wigg.

Local name: Handh

Ethnomedicinal uses: Root is diuretic, tonic, laxative, anti-rheumatic and aperiant. Tea from the leaves is used as tonic.

### **Family: Balsaminaceae**

*Impatiens glandulifera* Royle

Local name: Hillu

Ethnomedicinal uses: The roots and leaves are crushed and applied on forehead, hands and foot to provide cooling effect. Leaves decoction is used in stress and mental tension. Flowers used against snake bite.

**Family: Berberidaceae**

*Berberis aristata* D.C.

Local name: Kareel kaimbal

Ethnomedicinal uses: Ripe fruits are edible and given as a mild laxative to children.

*Berberis lyceum* Royle

Local name: Kaimal

Ethnomedicinal uses: The fruits are eaten against constipation and acidity. The extract of the bark is used as a cooling agent.

*Podophyllum hexandrum* Royle.

Local name: Bankakdi

Ethnomedicinal uses: The crushed leaves and roots are applied on skin diseases. Fruit is eaten in gastric problems.

**Family: Betulaceae**

*Betula utilis* D. Don.---

Local name: Bhuz

Ethnomedicinal uses: The decoction of the bark is antiseptic carminative given in anaemia, cough, obesity, urinogenital diseases and various infections.

**Family: Boraginaceae**

*Arnebia benthami* (Wall. Ex. G. Don) Johnston.

Local name: Kazuban

Ethnomedicinal uses: Root powder is given in fever, cough and cold along with honey. The roots are added to tea and that tea is given to persons having pneumonia.

**Family: Cannabinaceae**

*Cannabis sativa* L.

Local name: Bhang

Ethnomedicinal uses: This plant yield 'charas' and 'ganza' which in action are sedative, appetizer, narcotic and toxic. Leaf juice removes lice and dandruff.

**Family: Crassulaceae**

*Rhodiola himalensis* (D. Don) S.H. Fu

Local name: Dand jari

Ethnomedicinal uses: Stem bark is used to clean teeth to avoid the infection of teeth.

*Sedum ewersii* Ledeb.

Local name: Kupadd jari

Ethnomedicinal uses: The plant is crushed and applied on forehead to provide cooling and soothing effect.

This plant is given to milch cattle to increase milk production.

**Family: Curpessaceae**

*Juniperus communis* L.

Local name: Bithur

Ethnomedicinal uses: The oil extracted from the juniper is applied against rheumatism.

*Juniperus recurva* Busch.-Ham. ex. D. Don.

Local name: Bithar

Ethnomedicinal uses: Leaves and twigs are burnt in houses to produce the smoke which is considered as insecticide. The oil extracted from seeds is applied against rheumatism.

**Family: Dioscoreaceae**

*Disocorea deltoidea* Wall. Ex. Kunth.

Local name: Kinns

Ethnomedicinal uses: The rhizomes yield a steroid, 'cortisone', which has proved of great value in the treatment of a large variety of diseases, particularly in rheumatic diseases; certain ophthalmic disorders and allergic states.

**Family: Dipsacaceae**

*Morina longifolia* Wallich ex D.C.

Local name: Kim

Ethnomedicinal uses: Roots are collected and kept in garments to avoid insect damage.

**Family: Ericaceae**

*Rhododendron anthopogon* D. Don.

Local name: Shutenger

Ethnomedicinal uses: Leaves and flowers are used against skin problems, cough and cold. Dried flowers are powdered and mixed with oil and massaged over entire body in post delivery complications like fever,

cough and cold.

*Rhododendron campanulatum* D. Don

Local name: Nichni, shutengar

Ethnomedicinal uses: Leaves are mixed with tobacco and used as snuff to cure cold. Leaves are used to remove undigested material from stomach by inducing vomiting.

**Family: Geraniaceae**

*Geranium wallichianum* D. Don. ex Sweet.

Local name: Gul-e-Sanobar

Ethnomedicinal uses: The herb is crushed and the paste is used against toothache. The herbal tea is used against rheumatic pain. Root extract is used in chronic diarrhoea and dysentery.

**Family: Hippocastanaceae**

*Aesculus indica* (Colebr. Ex. Cambess.) Hook.

Local name: Gugu

Ethnomedicinal uses: Oil from the seeds is externally applied against rheumatism. Seeds are given to horses in colic pain.

**Family: Iridaceae**

*Crocus sativus* L.

Local name: Kesar

Ethnomedicinal uses: It is used as a nerve sedative, stimulant and aphrodisiac. It is also used as a general tonic to increase immunity.

**Family: Juglandaceae**

*Juglans regia* L.

Local name: Khor

Ethnomedicinal uses: The leaves are given in scrofula, rickets and leucorrhoea. The leathery pericarp of unripe fruit is grinded and applied on skin diseases.

**Family: Lamiaceae**

*Ajuga bracteosa* Wallich ex Benth.

Local name: Neel Kanth

Ethnomedicinal uses: Water extract of fresh leaves is generally administered orally with sugar to children against gastric problems. Luke warm leaf extract is also given against malarial fever and jaundice. Leaf

juice is used to cure the mouth ulcers.

*Mentha longifolia* (L) Huds.

Local name: Jangli pudina

Ethnomedicinal uses: The leaves are soaked in water to give an infusion which is drunk as a cooling medicine.

*Phlomis bracteosa* Royle ex Benth.

Local name: Neel Trath

Ethnomedicinal uses: Powdered leaves are mixed in tea and used against cough and cold. Flowers are crushed and used against toothache. Flowers are used as laxative.

*Rabdosia rugosa* Wallich ex. Benth.

Local name: Sheshak

Ethnomedicinal uses: The leaves are grinded and eaten to relieve stomach pain. Extract of leaves is used as vermicide especially in children. Whole plant is used as insecticide.

*Salvia moorcroftiana* Wallich Ex. Benth.

Local name: Gaddo

Ethnomedicinal uses: Roots are used in cold and cough. Roots are also used in stomach pains. Seeds are emetic and used against dysentery.

**Family: Leguminosae**

*Desmodium elegans* D.C.

Local name: Shemar

Ethnomedicinal uses: The leaves are crushed and applied on cuts and wounds to avoid infection and to stimulate healing. The bark is used to clean teeth.

**Family: Loranthaceae (Viscaceae)**

*Viscum album* L.

Local name: Parontha

Ethnomedicinal uses: The leaves are given to the cattle to keep them healthy and also to increase the milk production.

**Family: Malvaceae**

*Malva neglecta* Wallr.

Local name: Suchhal

Ethnomedicinal uses: The decoction of leaves is used as a laxative. The crushed root in water is given to cows and buffaloes to facilitate detachment and expulsion of placenta after delivery.

**Family: Moraceae**

*Ficus palmata* Forsskal.

Local name: Feku

Ethnomedicinal uses: The latex is applied on skin diseases. The fruit is used against constipation.

**Family: Oxalidaceae**

*Oxalis corniculata* L.

Local name: Chhuku

Ethnomedicinal uses: A fine paste of the aerial parts of the herb along with a few seeds of black pepper is applied on boils, abscesses, wounds and weeping eczema. This application results in drying and healing of the wounds.

**Family: Papaveraceae**

*Corydalis govaniiana* Wall.

Local name: Bhutyata

Ethnomedicinal uses: Flower juice is applied externally on forehead against headache. Decoction of leaves is used as vermicide. Roots are given to cattle as dicentric and dietary.

**Family: Phytolaccaceae**

*Phytolacca acinosa* Roxb.

Local name: Brand

Ethnomedicinal uses: The leaves and twigs have narcotic effect and thus used as sedative to induce sleep. Root oil used for pain in joints.

**Family: Pinaceae**

*Abies pindrow* Royle.

Local name: Sal

Ethnomedicinal uses: Bark is added to tea and used against rheumatism. The resin is used for quick healing of cuts and wounds.

*Cedrus deodara* (Roxb. Ex. D. Don) G. Don.

Local name: Diyar

Ethnomedicinal uses: The oil (known as kilo in local) extracted from stem and bark is used to treat skin rashes and external ulcers. The oil is also used to massage the body to get relief from rheumatic pain and headache. The oil is also applied against the foot and mouth diseases in cattles and also used as repellent of lice and ticks.

*Pinus wallichiana* A. B. Jackson

Local name: Chew

Ethnomedicinal uses: The resin from the young sapling is used for healing of the cuts and wounds.

**Family: Polygoniaceae**

*Rheum australe* D. Don.

Local name: Chukri

Ethnomedicinal uses: Root is used in stomach problems, cuts, wounds and muscular swellings, tonsillitis and mumps. Root powder mixed with mustard oil is applied on joints to get relief from joint pain.

*Rumex nepalensis* Sprengel.

Local name: Herbel

Ethnomedicinal uses: Leaves are warmed and applied on erupting skin. Crushed leaves and stem are applied on cuts and wounds.

**Family: Punicaceae**

*Punica granatum* L.

Local name: Deru

Ethnomedicinal uses: Seed juice is highly nutritious and taken in jaundice and anaemia. Seeds are eaten by locals in general weakness. The juice also acts as a cooling agent and appetizer.

**Family: Ranunculaceae**

*Aconitum violaceum* Jacquem. ex Stapf.

Local name: Patrishi

Ethnomedicinal uses: The root powder is given along with 'gud' against fever. The root powder also act as an appetizer.

*Caltha palustris* L.

Local name: Tatnu

Ethnomedicinal uses: Aqueous extract of root and shoot is diuretic and also used in cough. Roots are used in urinary infections. Flower syrup is used against inflammation.

*Delphinium roylei* Munz.

Local name: Mori

Ethnomedicinal uses: Seeds are used as insecticide and treatment of skin eruptions.

**Family: Rosaceae**

*Crataegus songarica* G. Koch.

Local name: Dakh

Ethnomedicinal uses: The fruits are eaten to keep the heart healthy. The fruits are also eaten against constipation

*Sorbaria tomentosa* (Lindley) Rehder.

Local name: Kaanhaji

Ethnomedicinal uses: The flowers are grinded in milk and the resulted paste is applied on burns and wounds.

*Prunus aremeniaca* L.

Local name: Haadi

Ethnomedicinal uses: Kernel is heated and then pressed to obtain oil, which is applied on skin diseases and against rheumatism.

*Rosa macrophylla* Lindley

Local name: Wan Gulab

Ethnomedicinal uses: Root decoction is used in eye troubles and in burns.

*Rubus hoffmeisterianus* Kunth. and Bouche.

Local name: Aassaa

Ethnomedicinal uses: The leaves and fruits are grinded in water and the resulted paste is applied on skin diseases.

**Family: Salicaceae**

*Salix alba* L.

Local name: Uri

Ethnomedicinal uses: Bark has antiseptic properties and is used to clean teeth. Bark is put in the water and that water is used to bathe the newly born babies to avoid any infection.

**Family: Sambucaceae**

*Sambucus wightiana* Wallich ex Wight and Arn.

Local name: Kown.

Ethnomedicinal uses: The roots, leaves and berries are reported to be used for purgative properties. The decoction of root and inner bark is an effective diuretic.

*Viburnum grandiflorum* Wallich ex DC

Local name: Chalandar

Ethnomedicinal uses: Colloidal solution of powdered leaves is taken to relieve abdominal pain. Fruits are used in constipation. Sap of leaves is used in eye infections.

**Family: Saxifragaceae**

*Bergenia stracheyi* (Hook. f. and Thoms.) Engl.

Local name: Dhad kopdi

Ethnomedicinal uses: Rhizome paste is applied to swollen joints. Bark is antiseptic and is used to heal up cuts and wounds.

*Saxifraga jacquemontiana* Decne.

Local name: Agg jari

Ethnomedicinal uses: The leaves are crushed and applied on ruptured wounds as an antiseptic and these crushed leaves also accelerate healing.

**Family: Scrophulariaceae**

*Picrorhiza kurroa* Royle ex Benth.

Local name: Kour

Ethnomedicinal uses: The root powder mixed with honey is given against fever. The root powder mixed with honey also act as a cooling agent and an appetizer.

*Verbascum thapsus* L.

Local name: Ban Tambaku

Ethnomedicinal uses: Leaves are dried and smoked for mental relaxation. A paste of leaves is also applied on the wounds. The smoke (dhuni) of the plant is utilized to drive away the ghostly instincts from the

children. Tea of leaves is used in cold and dysentery.

**Family: Solanaceae**

*Datura stramonium* L.

Local name: Dhaturu

Ethnomedicinal uses: Oil medicated with dhatura is

applied

to head in headache; to boils and skin diseases.

**Family: Thymelaeaceae**

*Daphne oleoides* Schrub.

Local name: Kalishadi

Ethnomedicinal uses: The leaf is grinded in water and the resulted paste is applied on skin diseases.

**Family: Urticaceae**

*Urtica dioica* L.

Local name: Soyi

Ethnomedicinal uses: Crushed root is applied on cuts and wounds. The plant is used to treat the paralyzed parts of the body by putting them on affected parts.

**Family: Valerianaceae**

*Valeriana dubia*

Local name: Murma

Ethnomedicinal uses: The roots and dried rhizomes are grinded and mixed in water to wash the hair to get rid of dandruff.

**Family: Violaceae**

*Viola serpens* Wallich Ex. Ging.

Local name: Banafsha

Ethnomedicinal uses: The flowers are grinded in milk and applied on throat problems. The tea containing the flowers of this plant is used against cough and cold.

**Results and Discussion**

At the end of field study, we determined that the number of plants considered as medicinal plants in the research field is 71 species. These 71 species belong to 68 genera and 39 families. Among these 10 species (10 genera) belong to Asteraceae, 5 species (5 genera) belong to Lamiaceae and Rosaceae each, 3 species

(3 genera) belong to Pinaceae and Ranunculaceae, 3 species (2 genera) belong to Berberidaceae, 2 species (2 genera) belong to Apiaceae, Araceae, Crassulaceae, Saxifragaceae, Sambucaceae, Scrophulariaceae each, 2 species (1 genera) belong to Polygoniaceae, Ericaceae, Cupressaceae each, and 1 species belong to the Balsaminaceae, Betulaceae, Boraginaceae, Cannabinaceae, Dioscoreaceae, Dipsacaceae, Geraniaceae, Hippocastanaceae, Iridaceae, Juglandaceae, Loranthaceae, Leguminosae, Moraceae, Malvaceae Papaveraceae, Phytolaccaceae, Punicaceae, Solanaceae, Salicaceae, Thymelaeaceae, Violaceae, Valerianaceae and Urticaceae.

It was observed that the preparation methods and usage of the plants were not the same for all studied areas. In general, plants used for different diseases:

Plants useful for skin problems:

Out of 70 plants, 27 plants were used for skin problems. These were *Oxalis corniculata*, *Juglans regia*, *Sorbaria tomentosa*, *Prunus armeniaca*, *Pinus wallichiana*, *Cedrus deodara*, *Jurinea dolomiaea*, *Betula utilis*, *Rubus hoffmeisterianus*, *Daphne oleoides*, *Verbascum thapsus*, *Urtica dioica*, *Desmodium elegans*, *Rumex nepalensis*, *Ficus palmata*, *Abies pindrow*, *Podophyllum hexandrum*, *Rheum australe*, *Rhododendron anthopogon*, *Valeriana dubia*, *Senecio chrysanthemoides*, *Bergenia stracheyi*, *Salix alba*, *Delphinium roylei*, *Calendula officinalis*, *Saxifraga jacquemontiana*, *Datura stramonium*.

Plants useful in stomach problems:-

19 species were used for different stomach problems. These species were *Artemisia maritima*, *Taraxacum officinale*, *Viburnum grandiflorum*, *Rabdosia rugosa*, *Acorus calamus*, *Salvia moorcroftiana*, *Verbascum thapsus*, *Ficus palmata*, *Podophyllum hexandrum*, *Carydalis govaniiana*, *Geranium wallichianum*, *Phlomis bracteosa*, *Rheum australe*, *Ajuga bracteosa*, *Foeniculum vulgare*, *Angelica glauca*, *Tanacetum dolichophyllum*, *Berberis aristata*, *Rhododendron campanulatum*.

Plants useful in cough, cold and fever:-

14 species were used for cough cold and fever. These plants were *Acorus calamus*, *Salvia moorcroftiana*, *Betula utilis*, *Viola serpens*, *Verbascum thapsus*, *Aconitum violaceum*, *Picrorhiza kurrooa*, *Arnebia benthami*, *Caltha palustris*, *Phlomis bracteosa*, *Rhododendron anthopogon*, *Saussurea lappa*, *Ajuga bracteosa* and *Rhododendron campanulatum*.

Plants used against Rheumatism:-

*Taraxacum officinale*, *Aesculus indica*, *Phytolacca acinosa*, *Dioscorea deltoidea*, *Prunus armeniaca*, *Cedrus deodara*, *Juniperus communis*, *Juniperus recurva*, *Abies pindrow*, *Geranium wallichianum* and *Senecio chrysanthemoides*.

Plants used as tonic, appetizer and cooling agents:-

*Crocus sativus*, *Taraxacum officinale*, *Picrorhiza kurrooa*, *Impatiens glandulifera*, *Punica granatum*, *Sedum ewersii*, *Mentha longifolia*.

*Viburnum grandiflorum*, *Dioscorea deltoidea*, *Jurinea dolomiaea*, *Rosa macrophylla* were used for eye infection. *Phytolacca acinosa*, *Verbascum thapsus*, *Impatiens glandulifera*, *Cannabis sativa* used as narcotic and for mental relaxation. *Inula royleana* and *Crataegus songarica* useful for heart problems. *Betula utilis* and *Caltha palustris* used to cure the urinogential diseases. *Urtica dioica* used for paralysis. *Arisaema flavum* and *Impatiens glandulifera* used against snake bite. *Arnebia benthami* used for pneumonia.

*Cedrus deodara*, *Berberis lycium*, *Juniperus recurva*, *Delphinium roylei*, *Morina longifolia* were used for insect repellent and insecticides.

## Conclusion

Wild plants were found to be an important source of medicine in Kishtwar. This information was collected mostly from the knowledgeable informants over 70 years old that had been handed down through the ages. These medicines have less side effects as compared to the allopathic medicines and are also eco-friendly. So there would be a need to conserve this knowledge and distribute it.

## Cautionary Note

*Warnings:* This research was performed for scientific purposes. In the above mentioned plants, some plants are toxic, thus the author does not recommend ingesting or otherwise using any plant, plant extract, or plant product and cannot be responsible for the effects on anyone. In some plants, the part used was first given specific treatment and then used.

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