



# Traditional uses of medicinal plants in Neelkanth region for wound healing

**Pooja, D.C Singh, Suresh chaubey, R. C. Tiwari**

P.G Scholar, P.G Dep. Of Dravyaguna, Uttarakhand Ayurved university Rishikul Campus, Haridwar-249401, Uttarakhand, India.

Professor, & H.O.D, Dept. of Dravyaguna U.A.U, Rishikul Campus, Haridwar-249401, Uttarakhand, India.

Professor, Dept. of Dravyaguna, U.A.U, Rishikul Campus, Haridwar-249401, Uttarakhand, India

Professor, & H.O.D, Dept. of Agadtantra, U.A.U, Rishikul Campus, Haridwar-249401, Uttarakhand, India.

## Abstract

The Neelkanth Hill region located in Pauri district of Uttarakhand is rich in floral and faunal diversity as well as rich in Medicinal plants species. However, during the detailed survey of medicinal plants in Neelkanth region and Ethnomedicine. There was several villagers depend on medicinal plants for their primary healthcare needs. They used plants to treat ailments like headache, cold, cough, fever, diarrhea, skin diseases, cut/ wounds and insect bites. In this survey there were recorded total 55 plants out of them 17 plants were used by local peoples as a wound healing. It was found all the plants parts used in wound healing were applied locally, most of the fresh herbs and found good healing properties. Wound healing plants used by Neelkanth region have been listed their botanical name, family name and also local name of the plant and part used.

Keyword: Ethnomedicine, Survey, Wound healing, Neelkanth region, Pauri district.

## Introduction

India has one of the richest traditions of herbal medicines systems in the world<sup>1</sup>. The use of medicinal plants for healing ailments is a practice dating since at the origin of humanity.<sup>2</sup> Human has always been eager to deal with the mysteries of nature.<sup>3</sup> The term of medicinal plants include a various types of plants used in herbalism and some of these plants have medicinal properties.<sup>4</sup> These medicinal plants consider as a rich resources of ingredients which can be used in drug development and synthesis besides that these plants play a critical role in the development of human cultures around the whole world.<sup>5-6</sup>

Wound are physical injuries. It may arise due to physical, chemical or microbial agent. That cause disturbance in the normal skin anatomy and function.<sup>7</sup> they result the loss of continuity of epithelial with or without loss of underlying connective tissue. Wound healing is the process in which skin repairs itself.<sup>8-9</sup> it is a survival mechanism and maintain normal anatomical structure and function. Wound healing can be divided into 4 phases Hemostasis, inflammation and proliferation and remodeling. Deregulation in any phase of the wound healing or delayed healing may cause various skin pathologies including non-healing or chronic ulceration.<sup>10</sup> Therefore Method for healing of wounds is essential for the restoration of disrupted anatomical continuity and disturbed functional status of the skin.<sup>11</sup> In rural area most of the villagers or traditional healers still used in the herbal medicine for their primary health care system. During the survey it was observed most of the medicine having potential wounds healing properties. Many part of the herbs used as a wound healing but leaves are most commonly used for wound healing.<sup>12-13</sup>

## **Study area**

The study was carried out in, Neelkanth-Hill region located in Garhwal Himalayas of Pauri district of Uttarakhand. The topography of the area is hilly with gradual slopes.. The average summer temperature in the study area range from 29 °C (85 °F) during summer and winter temperature 16°C (61 °F). Geographically, it has rich vegetation and mostly covered by forest areas. The half area of Neelkanth Hill region declared as Rajaji national park by the Uttarakhand government. Which is located between Latitude 29° 56 ' 40" N to 30° 20' N and Longitude 79 0 80' E to 78 0 01' 15" E.

## **Field Survey Method:**

Field visits were undertaken in and around the proposed study area covering various elevations, aspects, slopes and vegetation types. First approach was to survey the area along with the resource persons having knowledge of medicinal plant and collect the specimens and the second approach was to interview the local people using open ended questionnaire. The questionnaire was prepared to get maximum information about the plant *viz.*, local name, medicinal uses, mode of administration and parts used by the local communities of Neelkanth area.

## ***Adhatoda vasica* Nees.**

Botanical name *Adhatoda vasica* Nees.  
 Family *Acanthaceae*  
 Hindi *Vasa, Adusa*  
 Local name *vasa*

**Morphological characteristics:** Perennial under shrub, up to 1.2-2.4m high; stem bark herbaceous above woody below, Leaves simple, opposite-lanceolate. Flowers in axillary pedunculate spikes, Corolla white. Fruit capsules clavate, subacute, shortly and bluntly pointed. Seeds orbicular-oblong.

**Ethnomedicinal uses:** Paste of leaves is used locally for wound healing. Whole plant hot water infusion cure Fever.

**Part used:** Leaf, whole plant

### ***Adina cordifolia* Benth & Hook.**

Botanical name: *Adina cordifolia* Benth & Hook.  
 Family: *Rubiaceae*  
 Hindi: *Haldu, Karam*  
 Local name: *Haldu*

**Morphological characteristics:** *A. cordifolia* is a deciduous tree that can grow well over 20 meters high. Oppositely arranged leaves are broadly oval in shape, heart-shaped at the base and pointed at the tip. The flowers are yellow in color often tinged with a shade of pink.

**Ethnomedicinal uses:** Decoction of Stem bark of *A. cordifolia* is used in fever. Paste is prepared from the leaves and applied for the wound.

**Part used:** Stem bark, Leaves

### ***Ageratum conyzoides* Linn**

- Botanical name *Ageratum conyzoides* Linn.
- Family *Asteraceae*
- Hindi *Jangli pudina*
- Local name *Basya*

**Morphological characteristics:** It is annual herbaceous weed. Which is grow up to height of 2.5 feet. Leaves 4-8 × 1.5- 2.5cm. Opposite, ovate shape. Flowers pale blue or white, Flower bloom most of the year. Seed have scales and ends in a needle like shape.

**Medicinal uses:** Make the paste of leaf and applied on cut which check bleeding. Crushed the leaves of *A. conyzoides* and apply over the ringworm.

**Part used:** Leaves

### ***Berberis lycium* Royle**

- Botanical name *Berberis lycium* Royle.
- Family *Berberidaceae*
- Hindi *Daruhalidi*
- Local name *kilmoda*

**Morphological characteristics:** Deciduous shrub, 2 to 3 m tall; twigs yellowish, glabrous or minutely pubescent; leaves 2.5 to 7.5 by 8.18 mm, sessile lanceolate or narrowly obovate racemes shortly stalked, drooping, longer than leaves, often with a few long Flow stalked, flowers at the base. Berries are globose ovoid, 8 mm long. Flowering & Fruiting time April -June

**Ethnomedicinal uses:-** Grind the root with water and applied on the wound for promote healing. Decoction of root is used to wash eyes in conjunctivitis. Stem paste is used to treat Abscess.

**Part used:** Root, Stem

***Barleria crista L.***

Botanical name *Barleria cristata L.*  
 Family *Acanthaceae*  
 Hindi *Nil jinti*  
 Local name *Chuska kanta*

**Morphological characteristics:** It is erect or diffuse undershrub; branched clothed with appressed yellowish hairs. Leaves elliptic – oblong, 5- 12.1- 1.4 cm; Flowers blue-purple in axillary and terminal shorts spikes. Outer sepals spinous. Corolla tube funnel- shape in upper side. Flowering & Fruiting Time October- March.

**Medicinal uses:-** Juice extracted from leaves and applied on site of cut and wound. Leaves are chewed for relief in toothache. Decoction of the root is used to treatment of in cough

**Part used:** Root, whole plant

***Commelina benghalensis Linn.***

Botanical name *Commelina benghalensis Linn.*  
 Family *Commelinaceae*  
 Hindi *Kanna*  
 Local name *Lagdudya*

**Morphological characteristics:** It is small annual herbs. Leaves are oval - oblong and elliptic, dark-bright green in color and almost about 4-7 cm in length. The spates are, funnel-shaped, green, compressed and about 1.5 cm long. Seeds are ovoid. Flowering & Fruiting Time August to November.

**Ethnomedicinal uses:-** Paste of whole plant used for wound healing. Leaf paste is applied on in case of burn. The Leaves are cooked by local people as a vegetable.

**Part used:** whole plant

***Eupatorium adenophora spreng.***

Botanical name *Eupatorium adenophora spreng*  
 Family *Asteraceae*  
 Hindi Not mention  
 Local name *kala Basya*

**Morphological characteristics:** Shrubs, 1-2m high. Leaves broadly ovate, 2.5-8.5x2-6cm, acuminate, crenate-serrate, glandular. Heads discoid, 5-7mm across, several in pedunculate, terminal, viscid-hairy corymbs. Involucre bracts 3-seriate, linear lanceolate, hairy. Floret white or dull-white, 2-3mm long. Flowering & Fruiting time February to August

**Ethnomedicinal uses:** Leaf paste is applied in wound and cuts. Leaf paste is used in to check the bleeding.

**Part used:** Leaves

## *Leucas lanata* Benth

- Botanical name- *Leucas lanata* Benth.
- Family- *Lamiaceae*
- Hindi *Dhurlu ghaas*
- Local name Bis- kapuru

**Morphological characteristics:** It is perennial herbs; Leaves 1.5-4 x 0.6-1.7 ovate-lanceolate or oblong, acute or obtuse, crenate-serrate, rounded or slightly narrowed at base. Flower-whorls axillary, many-flowered, hairy. Calyx-long, tubular, pubescent. Flowering & Fruiting time April to November.

**Ethnomedicinal uses:-** Leaves are made into a paste and applied externally for cuts and wounds. A poultice of leaves is placed on affected area to promote exudation of pus from boils. The plant juice is used orally for treatment of stomach-ache.

**Part used:** Leaves, whole plant



## *Mimosa pudica* Linn.

- Botanical name *Mimosa pudica* Linn.
- Family *Fabaceae*
- Hindi *Lajwanti*
- Local name *Chui- mui*

**Morphological characteristics:** Undershrub, Stem is reddish-brown, slender and growing to a length of 1.5 m (5 ft). Leaves bipinnately compound, Flowers purplish colored and globose heads. Flowers are pollinated by the wind and insects. Fruit is of straw colored consists of clusters of 2-8 pods of 1-2cm long. Pods flat, 2.5mm long. Flowering & Fruiting time August to December.

**Ethnomedicinal uses:-** Make paste with water and applied for treating the wound. Juice of plant to give the treatment of bleeding piles.

**Part used:** whole plant

## *Ocimum americanum* L.

- Botanical name *Ocimum americanum* L.
- Family *Lamiaceae*
- Hindi *Van-tulsi*
- Local name *Van tulsi, Barbari*

**Morphological characteristics:** Herbaceous, 15-60 cm. high, much-branched. Leaves 2.5-3.8 by 1-1.3 cm; acute at both ends, entire or shallowly serrate. Petioles 1.3-2.5 cm. long, slender, hairy. Flowers in rather close whorls, bracts elliptic-lanceolate, with long white hairs; Nutlets 1.25 mm. long, ellipsoid, black.

**Ethnomedicinal uses:-** Leaf paste mixed with honey it promote the wound healing. Leaf Juice with Rock salt is given in Stomach ache.

**Part used:** Leaves

### ***Oxalis corniculata* Linn.**

- Botanical name: *Oxalis corniculata* Linn.
- Family *Oxalidaceae*
- Hindi *Amboti*
- Local name *Ghilmodi*

**Morphological characteristics:** Leaves slender, hairy on long petiole, divided into three segment, each orbiculate and finely fringed with white hair or ciliated at the margin; upper surface glabrous, lower hairy, flowers yellow, capsules very hairy. Seed many transversely ribbed. Flowering & Fruiting time to February-October.

**Ethnomedicinal uses:-** Its paste applied for the treatment on the boils and wound. Fresh leaves of *Changeri* are crushed and are used to stop bleeding from wound.

**Part used:** Whole plant, Leaves

### ***Pogostemon benghalensis***

- Botanical name *Pogostemon benghalensis*
- Family *Lamiaceae*
- Hindi *Ishwar jata*
- Local name *Ludjadu*

**Morphological characteristics:** large herb with angular stem. Leaves are Oppositely arranged, broadly ovate leaves are 7-12 cm long, with coarsely double-toothed margins. Flowers occur in dense spikes forming a large pyramid-like panicle. Purple flowers are 2-lipped, 5-6 mm, with 4 protruding stamens. Flowering: December.

**Ethnomedicinal uses:-** Fresh leaves paste are used to clean wounds and promote their healing. Decoction of root used two times in day for fever

**Part used:** Leaf, Root

### ***Solanum erianthum* D.Don.**

- Botanical name- *Solanum erianthum* D.Don.
- Family- *Solanaceae*
- Hindi *Ban tambaku*
- Local name



**Morphological characteristics:** It is Large, densely shrubs up to 3-6 m. height. Leaves 16-19 x 5-6 cm, ovate- oblong, elliptic, densely hairy below, petioles 4 cm long. Cymes terminal or sub terminal. Flowers white, densely arranged many, pedicels 1 cm long. Barriers globose tomentose, orang-yellow when ripe.

**Ethnomedicinal uses:-** Decoction of leaves is used for wound cleaning and paste of leaves is used to wound healing. Decoction of leaves is helpful to treat dysentery.

**Part used:** Leaves

### ***Sigesbeckia orientalis* L.**

- Botanical name: *Sigesbeckia orientalis* L.
- Family: *Asteraceae*
- Hindi: *Gobaria*
- Local name *Lichkura*

**Morphological characteristics:** It is a small annual herb. Oppositely arranged leaves, 5-10 cm long, are triangular-ovate, with toothed margin. The flower heads are yellow, small, somewhat rounded, and 5-6 mm in diameter. The ray flowers are red beneath, very short, curved back, and 3-toothed. Flowering and Fruiting time October – November

**Ethnomedicinal uses:** The juice of the fresh herb is used as a dressing for wounds.

**Part used:** whole plant

### ***Stellaria media* L. Vill.**

- Botanical name: *Stellaria media* L. Vill.
- Family: *Caryophyllaceae*
- Hindi: *Buch- Bucha*
- Local name: *Badyalu*

**Morphological characteristics:** It is evergreen and perennial with weak slender stems, up to 40 cm height. The leaves are oval and opposite, the lower ones with stalks. Flowers are white and small with five very deeply lobed petals. Some plants have no petals. Flowering & Fruiting Time: May – October

**Ethnomedicinal uses:-** Decoction of *stellaria media* is used to wounds cleaning, stop bleeding. The plant decoction used in dysmenorrhea.

**Part used:** whole plant, Leaf

### ***Tridax procumbens* Linn.**

- Botanical name *Tridax procumbens* Linn.
- Family *Asteraceae*
- Hindi *kanphuli*
- Local name *Bugunu*

**Morphological characteristics:** Erect or straggling hispid herbs. Leaves opposite, 3-4 x 1 cm, ovate or lanceolate, dentate or pinnatisect. Heads cream colored, long peduncled. Involucres bracts few, broadly ovate. Achenes brown. Pappus of feathery bristles. Flowering & Fruiting time throughout the year.

**Ethnomedicinal uses:-** The leaf juice is used for healing cuts and wounds.

Leaf paste fry with oil and applied on joint in rheumatism.

**Part used:** Leaf

### ***Woodfordia fruticosa* (L.) Kurz**

- Botanical name *Woodfordia fruticosa* (L.) Kurz
- Family *Lytheraceae*
- Hindi Dhwala, Dhataki
- Local name Dhaul

**Morphological characteristics:** Deciduous shrubs to 3 m tall. Leaves subsessile, 4-11 x 2-4 cm, ovate-lanceolate or lanceolate, Flowers crimson, slightly zygomorphic, in 2-16-flowered axillary cymes; pedicels to 1 cm long. Flowering & Fruiting Time: January- April.<sup>14-15</sup>

**Ethnomedicinal uses:-**Leaf Paste used in the cuts and wounds. Flowers powder used in hemorrhoids. Flower juice applied on forehead for headache.

**Part used:** Flower, Leaves

Table: 1 Traditional uses of plants species in local health of Neelkanth region for wound healing.

Latin name	Family	Local name	Ethnomedicinal uses
<i>Adhatoda vasica</i> <i>Nees.</i>	<i>Acanthaceae</i>	Vasa	Paste of leaves is used locally in wound.
<i>Adina cordifolia</i> <i>Benth &amp; Hook.</i>	<i>Rubiaceae</i>	Haldu	Paste is prepared from the leaves and applied for the wound
<i>Ageratum conyzoides</i> <i>Linn.</i>	<i>Asteraceae</i>	Basya	Make the juice of leaves and applied on cut which check bleeding.
<i>Berberis lyceum</i> <i>Royle.</i>	<i>Berberidaceae</i>	Kilmoda	Grind the root with water and applied on the wound for wound healing.
<i>Barleria crista</i> L.	<i>Acanthaceae</i>	Chuska- kanta	Juice extracted from leaves and applied on site of cut and wound.
	<i>Commelinaceae</i>	<i>Lugdudya</i>	Paste of whole plant used for wound healing.
<i>Eupatorium adenophora</i> spreng	<i>Asteraceae</i>	<i>Kala Basya</i>	Leaf paste is applied in wound and cuts. Leaf paste is used in to check the bleeding.
<i>Leucas lanata</i> Benth.	<i>Lemiaceae</i>	<i>Bis- kapru</i>	Leaves are made into a paste and applied externally for cuts and



			wounds.
<i>Mimosa pudica</i> Linn.	<i>Fabaceae</i>	Chui- Mui	Make paste with water and applied for treating the wound.
<i>Ocimum americanum</i> L.	<i>Lamiaceae</i>	Van tulsi, Barbari	Leaf paste mixed with honey it promote the wound healing.
<i>Oxalis corniculata</i> Linn.	<i>Oxalidaceae</i>	<i>Ghilmodi</i>	Its paste applied for the treatment on the boils and wound.
<i>Pogostemon benghalensi</i>	<i>Lamiaceae</i>	<i>Ludjadu</i>	Fresh leaves paste are used to clean wounds and promote their healing
<i>Solanum erianthum</i> D.Don.	<i>Solanaceae</i>	Ashadu	Decoction of leaves is used for wound cleaning and paste of leaves is used to wound healing.
<i>Sigesbeckia orientalis</i> L.	<i>Asteraceae</i>	Lichkura	The juice of the fresh herb is used as a dressing for wounds.
<i>Stellaria media</i> L. Vill.	<i>Caryophyllaceae</i>	<i>Badyalu</i>	Decoction of <i>stellaria medica</i> is used to wounds cleaning, stop bleeding.
<i>Tridax procumbens</i> Linn.	<i>Asteraceae</i>	Bugnu	The leaf juice is used for healing cuts and wounds.
<i>Woodfordia fruticosa</i> (L.) Kurz	<i>Lytheraceae</i>	Dhaul	Leaf Paste of <i>Dhataki</i> used in the cuts and wounds.

**Conclusion:** India has got the traditional background in the field of ethno-medicine. Nature have provides huge number of plants that show significant wound healing activities. This article exposed reported medicinal plants with wound healing potential which could be beneficial in therapeutic practice and development of new wound healing drugs for mankind. But in the process of urbanization this knowledge is vanishing very rapidly and is in danger of extinction. So there is urgent need to support for protection and promotion of the traditional medicine.

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