

Ethnomedicinal study of wild plants used by fringe communities of outer Seraj region of Kullu district of Himachal Pradesh, northwestern Himalaya

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ABSTRACT

This survey investigated about 52 medicinal plant species belonging to 37 different families representing herbs (33), trees (9), shrubs (8) and ferns (2) that were being used by fringe communities of outer Seraj of Kullu district, Himachal Pradesh to treat different ailments. The most widely used plant parts included leaves, roots, fruits, seeds, flowers, bark, rhizomes, tubers and twigs. The local people preferred these plants for treating various ailments like cough, fever, wounds, joint pain, dysentery, jaundice, paralysis, toothache, diabetes, piles, leprosy, bronchitis, asthma etc. This study is definitely going to serve as a future reference material for researchers in the field of systematic, biochemical and pharmacological studies.

Keywords: Medicinal plants; ailments; plant parts; fringe communities

INTRODUCTION

Western Himalayan region is home to a wide variety of plants that have been used as herbal medications by the local communities for centuries for treating various ailments. These herbal medications contain phytochemicals like vitamins, proteins, carbohydrates, dietary fibers, amino acids, minerals, steroids, alkaloids, glycosides, tannin, phenolics and flavonoids (Debnath et al 2021). The past studies on medicinal and aromatic plants reported that about 90 per cent medicinal plants were extracted from wild and 70 per cent collected through destructive harvesting. Various anthropogenic activities, particularly unsustainable harvesting, grazing, over-exploitation, invasive plants, forest fires, diseases etc affect floristic diversity. Such conditions lead to changes in the vegetation patterns and decline in the populations of medicinal and aromatic plants. In addition, the traditional practices and rich indigenous knowledge of medicinal plants possessed by local villagers have been diminishing fast due to modernization. Keeping this in view, the present study was carried out in the outer Seraj area of Kullu, Himachal Pradesh to know the status of ethnomedicinal plants.

In the developing world, majority of the rural communities possess important knowledge of plants which they have inherited from their forefathers (Yusuf et al 2007). About 75-80 per cent of the world population, mainly in the developing countries, still depend upon the herbal medicines for primary healthcare services due to their better compatibility with the human body and lesser known side effects (Kamraj 2000).

Various studies have been carried out on the documentation of medicinal plants diversity in the Indian Himalayan region (Jain 1991, Maikhuri et al 1998, Samant et al 1998, Chauhan 1999, Joshi et al 1999, Sood et al 2001, Dhar et al 2002, Samant and Pal 2003, Seth and Jaswal 2004, Rawat 2005, Rawat and Garg 2005, Kala 2006, Samant and Pant 2006, Uniyal et al 2006, Samant et al 2007, Rawat et al 2009, Singh et al 2009, Semwal et al 2010). In general, studies on medicinal plants in the Kullu district, Himachal Pradesh have been carried out on diversity, distribution pattern and indigenous uses (Singh 2004, Boktapa and Sharma 2010, Rana and Samant 2011a), conventional propagation (Butola and Badola 2004, 2006, Butola and Samant 2006, Butola et al 2010), threatened plants

(Butola and Badola 2008, Pant and Samant 2008, Rana and Samant 2011b) and agro-techniques (Samant et al 2008).

Outer Seraj, where the current study was focussed on, is encircled by lofty mountains and deep gorges supporting diverse vegetation. This region holds great diversity of medicinal and other useful plants due to diverse climatic conditions (Singh and Rawat 1999). The majority of these plants hold traditional medicinal, folk and industrial uses in Himachal Pradesh (Kumar et al 2013). Indigenous people of outer Seraj have been using medicinal herbs for treating various ailments in their daily life since time immemorial (Kaur et al 2011). The preservation of indigenous knowledge has become an urgent need for the society. Therefore, there is an urgent need to document various ethnomedicinally important plant resources of this area. This study is definitely going to serve as a future reference material for science in the field of systematic, biochemical and pharmacological studies. Further studies on developing farming techniques of commercially viable medicinal species, conservation of natural habitats, frequent monitoring of populations and habitat modeling and preservation of traditional knowledge are also recommended.

METHODOLOGY

Outer Seraj, one of the most beautiful regions of the middle Himalayas, is characterized by its unique ecosystem with a wide range of climates and habitat types which support diverse vegetation. It is situated between 31°39'32" N latitude and 77°23'12" E longitude, covering an area of 906.41 ha and elevation range from 700 m to 5,500 m amsl. The map of the outer Seraj is shown in Fig 1. Surveys were conducted in 30 villages each from Anni and Nirmand blocks of Kullu district.

The present study included ethnomedicinal survey based on semi-structured questionnaires which was conducted in the year 2022 and 2023. During the survey, villagers were surveyed at household level where 20-25 per cent households from each village were covered. Data were collected on local names, part(s) used and indigenous uses of the plants. The informants included men, women, youths and elders between the age of 28 and 80 years. The information was documented and analyzed for various parameters. Collection of fresh samples was done and identified with the help of sources on local flora (Collett 1902,

Aswal and Mehrotra 1994, Dhaliwal and Sharma 1999, Singh and Rawat 2000).

RESULTS and DISCUSSION

The current study witnessed the use of 52 species for medicinal purposes in outer Seraj area of Kullu district, Himachal Pradesh. The detailed information regarding ethnomedicinal uses of plant species is presented in Table.1. Different plant part(s) such as leaves, roots, tubers, seeds, fruits, flowers, bark, tubers, rhizomes and twigs were used by the native communities for the treatment of different ailments. A total of 52 plant species belonging to 37 plant families and 50 genera were recorded and identified which were being utilised by the indigenous people (Table 1).

The most dominant families of plants that were utilised by the local people included Asteraceae (3), Lamiaceae (3), Poaceae (3), Rutaceae (3), Amaranthaceae (2), Sapindaceae (2), Apiaceae (2), Berberidaceae (2), Rosaceae (2) and Polygonaceae (2) (Fig 2). The species diversity comprised 33 herbs, 8 shrubs, 9 trees and 2 ferns (Fig 3). Some important medicinal plants of the region are depicted in Plate 1.

Among parts used, leaves (23), roots (15), fruits (8) seeds (5), flowers (3), whole plant (2), bark (2), rhizomes (1), tubers (1), twigs (1) and fronds (1) were used ethnomedicinally (Fig 4).

The common diseases treated were cold, cough, fever, sore throat, wounds, joint pain, dysentery, jaundice, toothache, piles, diabetes etc. During current study, some plants were found to be used for the treatment of a single disease while many other wildy growing plants had multiple therapeutic uses. However, information on the indigenous usage of plants was mostly confined to elder people (>50 years of age). The younger generations were ignorant about various indigenous usages of plants. Therefore, transfer of traditional knowledge to them has been declining, thus substantiating the need for its documentation, before it is lost forever.

CONCLUSION

Ethnomedicinal studies play an important role in the modern drug development programmes from utilizing plant resources. In the present study, efforts were made to provide baseline information of plants

Table 1. Ethnomedicinal plants used by fringe communities of outer Seraj, Kullu district, Himachal Pradesh

Taxa	Family	Common name	Habit	Part(s) used	Disease/ailment	Mode of application
<i>Achyranthes aspera</i> L	Amaranthaceae	Puthkanda, Apmarga	H	Wp	Bronchial infection, wounds, boils, joint pain, toothache	Dried roots powdered and paste applied on wounds twice a day; fresh stems chewed to cure toothache; leaf decoction used for bronchial infection
<i>Aconitum heterophyllum</i> Wall ex Royle	Ranunculaceae	Patish	H	Rt	Cough, diarrhoea, digestive problem, dysentery	Dried roots powdered, mixed with sugar and taken orally with lukewarm water twice a day for 3-4 days
<i>Acorus calamus</i> L	Araceae	Buch	H	Rt	Stomach complaints, cuts, wounds	Dried root powder decoction taken orally with lukewarm water once a day for treating stomach problems; dried root paste applied on cuts and wounds
<i>Adiantum venustum</i> D Don	Adiantaceae	Raj	Frn	Lf	Cuts, wounds	Leaf paste applied on cuts for relieving pain and has wound healing property
<i>Aesculus indica</i> (Wall ex Cambess) Hook	Sapindaceae	Khanor	T	Sl	Reproductive problems	Dried seeds grounded into flour and used as tonic for ladies to treat reproductive problems
<i>Anislaea aptera</i> DC	Asteraceae	Karubooth	H	Rt	Acute gastric pains, diarrhoea, stomach ache, cold	Powdered dried roots given with milk or lukewarm water twice a day for 4-5 days
<i>Ajuga bracteosa</i> Wall ex Benth	Lamiaceae	Neelkanthi	H	Lf, Rt	Hypertension, rheumatism, gout, blood purifier, stimulant	Dried roots grinded and taken in powder form with warm water act as blood purifier and stimulant; leaf decoction taken to cure hypertension; leaf paste applied for rheumatism and gout
<i>Aloe vera</i> (L) Burm f	Liliaceae	Ghrikumari	H	Lf	Skin diseases	Leaf pulp applied on face for skin care
<i>Angelica glauca</i> Edgew	Apiaceae	Chora	H	Rt	Dyspepsia, diarrhoea, gastric problems, stomach ache, vomiting	Dried root powder taken orally with lukewarm water twice a day for one week
<i>Arnebai benthami</i> (Wall ex G Don) IM Johnst	Boraginaceae	Ratanjot	H	Rt	Hair problems	Dried roots in powder form soaked in mustard oil and applied on hair directly
<i>Artemisia annua</i> L	Asteraceae	Malaria butti	H	Lf	Anti-malarial, antibacterial	Leaf decoction used twice a day
<i>Artemisia roxburghiana</i> Besser	Asteraceae	Bichubooti	H	Lf	Cuts, wounds	Leaf paste applied on cuts and wounds to stop bleeding
<i>Berberis aristata</i> DC	Berberidaceae	Kashmal	Sh	Fl	Acidity, jaundice, piles	Flowers boiled in water and filtered; extract taken once a day orally to treat acidity, jaundice and piles
<i>Berberis lycium</i> Royle	Berberidaceae	Kashmal	Sh	Rt	Jaundice, cough, malaria, cold	Powdered root decoction mixed with honey taken orally
<i>Bergenia ciliata</i> (Haw) Stemb	Saxifragaceae	Pashanved	H	Rt	Kidney/bladder stones	Dried root powder taken orally with lukewarm water
<i>Bryophyllum pinnatum</i> (Lam) Oken	Crassulaceae	Goodluck leaf	H	Lf	Wounds	Leaf paste applied on wounds
<i>Cannabis sativa</i> L	Cannabaceae	Bhang	H	Lf	Swelling (insect-bite)	Leaves rubbed on body to negate the effect of insect bite particularly against swelling developed by the sting of honeybee and Bichu-Butti
<i>Centella asiatica</i> (L) Urb	Apiaceae	Brahmi	H	Lf	Memory loss	Leaves crushed, decoction taken with black pepper, one teaspoon twice a day to treat the patients suffering from loss of memory
<i>Chenopodium album</i> L	Amaranthaceae	Bathu	H	Sl	Skin diseases, headache	Roasted seeds eaten to revive taste; cure skin diseases and headache
<i>Cyanodon dactylon</i> (L) Pers	Poaceae	Doob	H	Lf	Bleeding	Leaf juice of leaves applied on nose to stop bleeding
<i>Cymbopogon citratus</i> (DC) Stapf	Poaceae	Lemon grass	H	Lf	Digestive complaints	Leaves used for flavouring tea which helps in improving digestion
<i>Dactylorhiza hatagirea</i> (D Don) So6	Orchidaceae	Salam panja	H	Rt	Weakness, diabetes, weakness, dysentery, diabetes, loose motions	Powdered root decoction filtered through cotton cloth and given to the person suffering from general

Taxa	Family	Common name	Habit	Part(s) used	Disease/ailment	Mode of application
<i>Diplazium esculentum</i> (Retz) Sw	Athyriaceae	Lingad	Frn	Lf, Frd	Indigestion	Fronds and leaves cooked as vegetable to improve digestion
<i>Eleusine coracana</i> (L) Gaertn	Poaceae	Koda, Kodra, Mandua	H	Sd	Whooping cough, common cold	Dried seeds ground and mixed with wheat flour
<i>Gentiana kurroo</i> Royle	Gentianaceae	Karu	H	Rt	Fever	One tea spoon of powdered root taken with honey during fever
<i>Juglans regia</i> L	Juglandaceae	Akhrot, Khod	T	Lf, Fr, Bk	Toothache	Leaves and fruits used to cure tooth decay; bark used to clean teeth
<i>Justicia adhatoda</i> L	Acanthaceae	Basuti	Sh	Lf	Asthma, fever, cough, cold	Leaves ground with flowers of <i>Hibiscus rosa-sinensis</i> and taken orally to treat asthma, reducing fever, cough and cold
<i>Mentha longifolia</i> (L) Huds	Lamiaceae	Jungli pudina	H	Lf	Indigestion, vomiting, headache	Leaves commonly used to make chutney
<i>Murraya koenigii</i> (L) Spreng	Rutaceae	Cury patta	Sh	Lf	Indigestion	2-3 leaves chewed directly to improve digestion
<i>Oxalis corniculata</i> L	Oxalidaceae	Malori	H	Lf	Dysentery	Leaves used as chutney and given for the treatment of dysentery
<i>Phyllanthus emblica</i> L	Phyllanthaceae	Aonla	T	Fr	Stomachache, eye complaints, fever, arthritis	Fruits eaten directly or in powder form
<i>Picrorhiza kurroa</i> Royle ex Benth	Plantaginaceae	Kutki	H	Lf, Rt	Fever, stomachache	Chewing of 2-3 leaves acts as antipyretic; roots boiled in water and taken to cure stomachic problem
<i>Polygonatum verticillatum</i> (L) All	Asparagaceae	Salam Misri	H	Tb, Rh	Kidney stone	Powdered roots with lukewarm water taken orally
<i>Prunus cornuta</i> (Wall ex Royle) Steud	Rosaceae	Bird cherry	T	Fr, Sd	Diabetes	Fruits edible; seeds crushed and taken internally
<i>Punica granatum</i> L	Punicaceae	Daru	T	Fr	Sore throat	Fruit powder taken with honey
<i>Rheum moorcroftianum</i> Royle	Polygonaceae	Chukhri	H	Rt	Cuts, wounds	Root paste applied on cuts and wounds
<i>Rhododendron arboreum</i> Sm	Ericaceae	Buras	T	Fl	Dysentery, diarrhoea	Flower juice taken for one week
<i>Rubia cordifolia</i> L	Rubiaceae	Majishtha	H	Rt	Irregular menstruation	Root decoction with sugar given to women
<i>Rubus ellipticus</i> Sm	Rosaceae	Hinsar	Sh	Fr	Cough, fever	Ripen fruits eaten directly
<i>Rumex nepalensis</i> Spreng	Polygonaceae	Malora	H	Lf	Constipation, acidity, skin problems	Leaves consumed as vegetable
<i>Sapindus mukorossi</i> Gaertn	Sapindaceae	Reetha	T	Fr	Hair problems	Dried fruit powder used as a foaming agent and acts as hair cleanser
<i>Skimmia laureola</i> (DC) Deene	Rutaceae	Nair	Sh	Lf	Headache	Leaf infusion taken to cure headache
<i>Solanum nigrum</i> L	Solanaceae	Makoi	H	Lf, Fr	Dysentery, leucoderma	Tender leaves eaten to treat dysentery; green fruit paste applied on leucoderma
<i>Syzygium cumini</i> (L) Skeels	Myrtaceae	Jamun	T	Fr	Diabetes	Fruits consumed directly
<i>Taxus wallichiana</i> Zucc	Taxaceae	Rakhal	T	Bk	Cancer	Bark very often used in tea
<i>Thymus serpyllum</i> L	Lamiaceae	Ban ajwain	H	Wp	Cough, cold and fever	Decoction of whole plant is taken twice a day
<i>Trillium govanianum</i> Wall ex D Don	Trilliaceae	Nagchatri	H	Rt	Diarrhoea	Roots boiled in milk and consumed
<i>Urtica dioica</i> L	Urticaceae	Bichu-Butti	H	Lf	Blood purification	Leaves boiled in water and cooked as vegetable
<i>Valeriana jatamansi</i> Jones ex Roxb	Valerianaceae	Mushkbala	H	Lf	Stomachache	Leaf decoction taken twice a day
<i>Viola canescens</i> Wall	Violaceae	Vanfsha	H	Fl, Lf	Cough, cold, sore throat	Flower and leaf decoction taken for 3-4 days
<i>Withania somnifera</i> (L) Dunal	Solanaceae	Ashwagandha	Sh	Rt	Mental disorder	Root powder given for physical and mental strength
<i>Zanthoxylum armatum</i> DC	Rutaceae	Timir	Sh	Tw, Sd	Toothache	Young twigs and seeds chewed to relieve toothache

WP = Whole plant, Rt = Root, Lf = Leaf, Sd = Seed, Fl = Flower, Frd = Frond, Bk = Bark, Fr = Fruit, Tw = twigs, Rh = Rhizome, Tb = Tuber

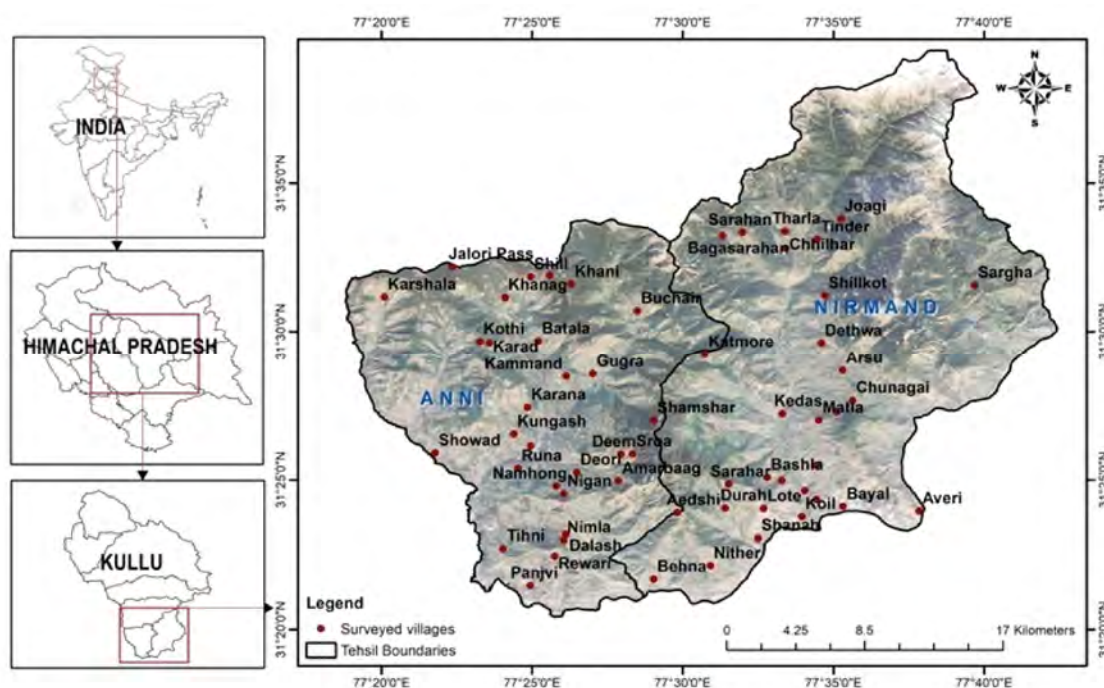


Fig 1. Map of the study area

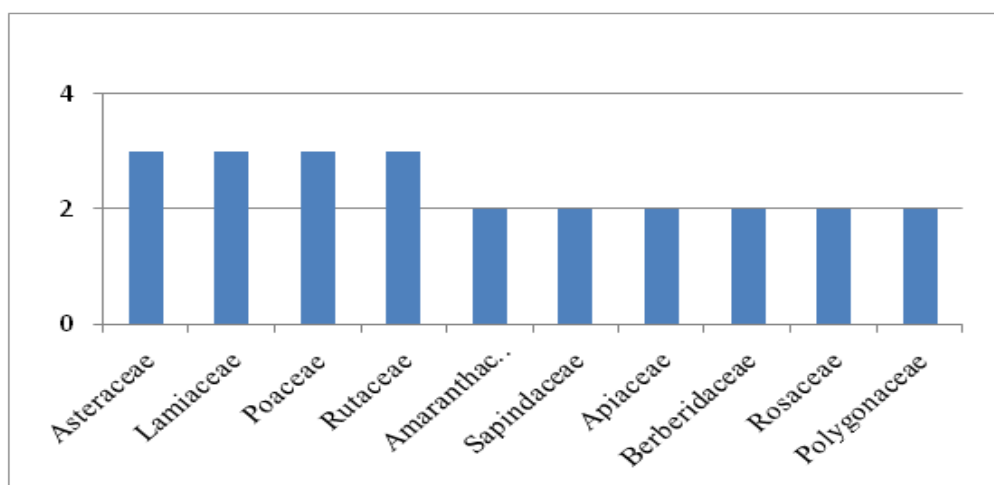


Fig 2. Contribution of dominating families in species distribution

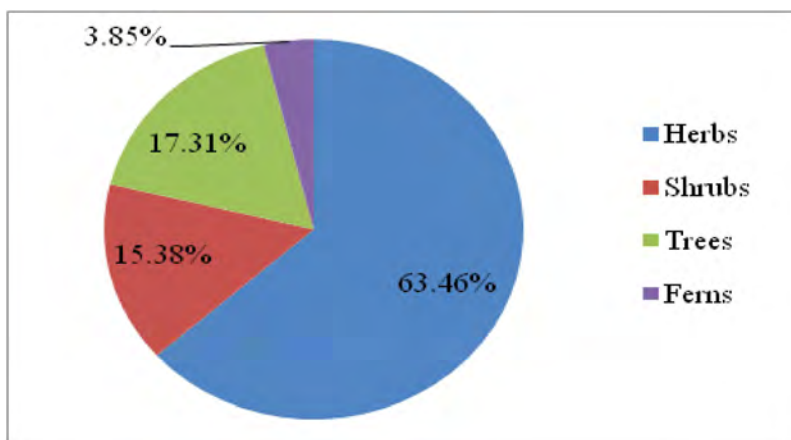


Fig 3. Habit-wise distribution of wild medicinal plants



Plate 1. Some important medicinal plants of Seraj region, Kullu district, Himachal Pradesh

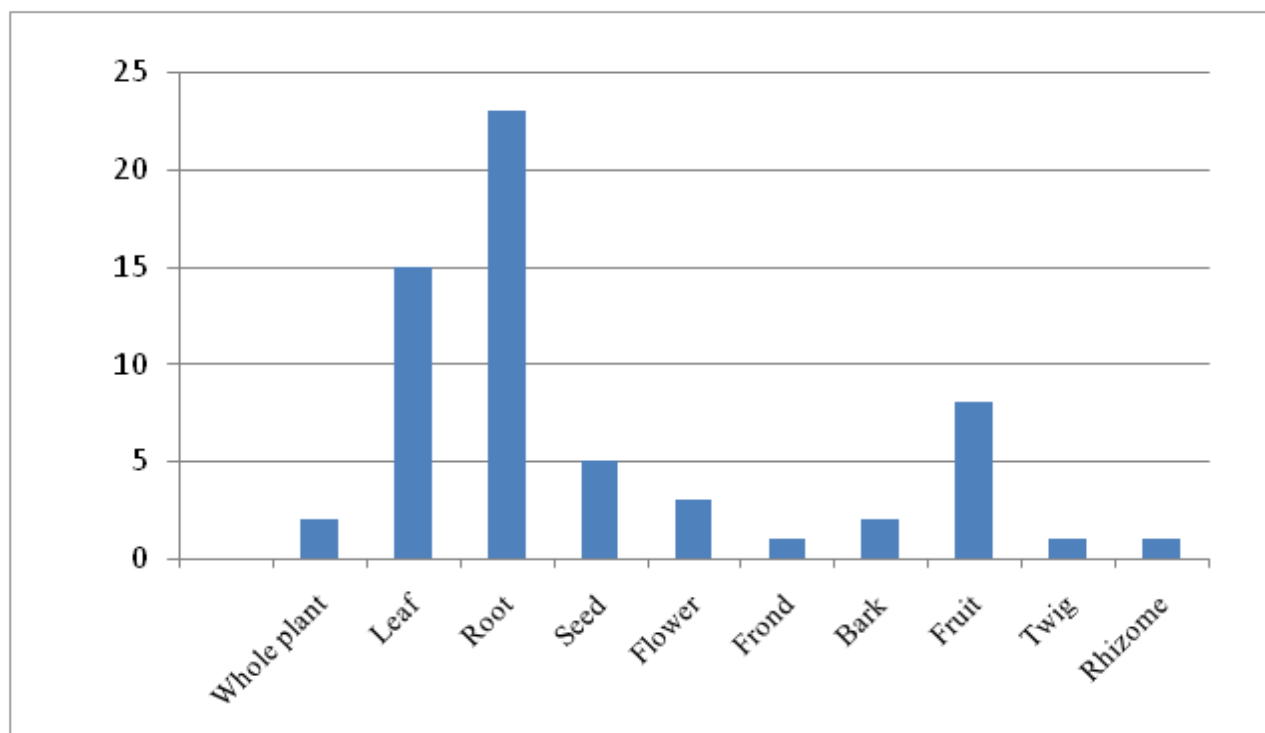


Fig 4. Usage of different plant parts

used to treat different diseases and traditional knowledge of the fringe communities of outer Seraj area of Kullu district, Himachal Pradesh. This research work will not only provide recognition to plant wealth but also help in the conservation of these medicinal plants for further researchers worldwide.

The plant biodiversity, traditional knowledge and cultural practices of the rural people are facing threat due to the construction of highways and the development of the area as a major tourist attraction. Moreover, unscientific and ruthless exploitation coupled with habitat degradation of these species has been resulting in imminent danger of extinction of these species. The present study revealed that traditional knowledge of medicinal plants was confined to old and elderly people and young generation was almost unaware of the vast medicinal plant wealth. It will result in diminishing of the traditional knowledge. This information was being passed from generation to generation vocally due to the lack of proper documentation. Therefore, there is an urgent need to document the precious knowledge of indigenous practices to reflect the restoration of interest in the traditional medicines. The scientific validation of these remedies may help in discovering new drugs from these plant species. The information on therapeutic uses of plants may provide a great potential for discovering new drugs and promoting awareness among the tribal people to use them as remedy in healthcare system with supreme accuracy and knowledge.

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