



RESEARCH ARTICLE

# Ethnomedicinal value of shrub flora of Dachigam National Park traditionally used for health care practices by the inhabitants of Kashmir

AIJAZ ITOO, JUNAID MALIK, P.N. SHRIVASTAVA AND K. ASHOK

## ABSTRACT

Primitive human societies have always relied on plants and plant products for various remedies. In certain areas, these folk medical prescriptions are endemic and have survived through ages from one generation to the next through word of mouth. They do not exist as written knowledge. The present study was undertaken with an objective of documenting the ethnobotanical information of medicinal plants of Dachigam National Park taking the help of local herbalists, elderly and knowledgeable people. A total of 26 medicinal shrub species belonging to 19 genera and 16 families were recorded in the study area.

**Key words :** Western Himalayas, Dachigam National Park, Shrubs, Ethnomedicinal value

**How to cite this paper :** Itoo, Aijaz, Malik, Junaid, Shrivastava, P.N. and Ashok, K. (2016). Ethnomedicinal value of shrub flora of Dachigam National Park traditionally used for health care practices by the inhabitants of Kashmir. *Ann. Pharm. & Pharm. Sci.*, 7 (1) : 5-13.

**Article chronicle :** Received : 10.02.2015; Revised : 04.03.2016; Accepted : 18.03.2016

## INTRODUCTION

The term ethnobotany was coined by John W. Harsberger in 1896 and was considered as the art of collection of useful plants by a group of people and the description of the uses of plants. Over the last century, ethnobotany has evolved into a scientific discipline that focuses on the people-plant relationship in a

multidisciplinary manner, incorporating not only collection and documentation of indigenous uses but also ecology, economy, pharmacology, public health and other disciplines (Gomez-Beloz, 2002). Ethnomedicine, a branch of ethnobotany, is a set of empirical local practices embedded in the indigenous knowledge of a social group often transmitted orally from generation to generation with intent to understand social, cultural, and economic factors influencing health problems and to overcome such problems (Rainer and Douglas, 2006). The use of plants and plant products as medicine can be traced as far back as the beginning of human civilization. The earliest record of medicinal plant use in the Himalayas is found in the Rigveda. This work was written between 4500 BC and 1600 BC, is supposed to be the oldest repository of human knowledge and describes 67 plants (Rahul *et al.*, 2010).

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Total 60 per cent of the population of world and 80 per cent of the population in developing countries rely on traditional medicine, mostly plant drugs, for their primary health care needs (Shrestha and Dhillion, 2003). An account of 70 per cent of the population of India is dependent on traditional plant based medicines (Singh *et al.*, 2013). The dependence on herbal resources to cure different types of diseases is well known. It has been estimated that there are between 3,500 and 70,000 plant species that have been used around the world, at one time or another, for medicinal purpose. At least 65,000 species are used in Asia alone as home remedies for various ailments (Karki and Willians, 1999).

In India, the importance of plants as medicine has not diminished in any way in recent times and traditional medicines are still the most important health care source for the vast majority of the population living in remote and rural areas. India has the ancient indigenous knowledge of medicinal and herbal medicines accumulated through many centuries. This knowledge of curing human illness is based on different Indian systems of medicine, practiced by various communities such as Ayurveda, Unani and Siddha (Gadgil and Rao, 1998). It is estimated that in India, traditional healers use around 2500 plant species in the preparation of traditional medicine (Pei, 2001).

Western Himalaya occupies an important place in Indian subcontinent and has a peculiar topography, vegetation, people and traditions. About 80 per cent of the total population is rural and the inhabitants are called the tribals. Due to limited means of communication, poverty, and unavailability of modern health facilities, many people, especially in rural areas, still relies on traditional medicines to treat common ailments (Tiwari *et al.*, 2010). However, this traditional knowledge about the use of medicinal plants is vanishing day by day and young generations do not pay any attention towards this vanishing knowledge. Ethnomedicinal studies that explore and help to preserve knowledge are therefore urgently needed before traditional folklores are lost forever.

During the recent time, there has been an increasing interest in the study of medicinal plants and their traditional use in different parts of the world. The documentation of traditional knowledge aids in the preservation of indigenous culture identifies threatened species and contributes to the conservation and management of plant diversity. The precious indigenous knowledge when supplemented and validated by the latest scientific incites can offer new holistic models of sustainable development that are

economically viable, environmentally benign and socially acceptable (Shinwari and Gilani, 2003). Keeping the aforesaid facts in view, the present ethnomedicinal study was carried out in a part of Dachigam National park to document the indigenous knowledge about the use of medicinal plants used by local inhabitants for curing various ailments.

## MATERIAL AND METHODS

### Study area :

Dachigam National Park located amidst the Western Himalayas is rich in biodiversity. As someone said ‘when Dachigam is in full bloom with all its wild fruit trees and beautiful animals, it makes us feel that this is the closest we get abode of “Gods” Try and picture a place beautiful beyond our imagination, and then to our image add wild cherry, Salix, Poplar, Pear etc. all grow wild. Dachigam National Park covering an area of 141 Sq/kms., is located 22 kms from the city Srinagar (J&K) varying in altitude 5500 ft. to 14000 ft. above sea level. Due to this variation

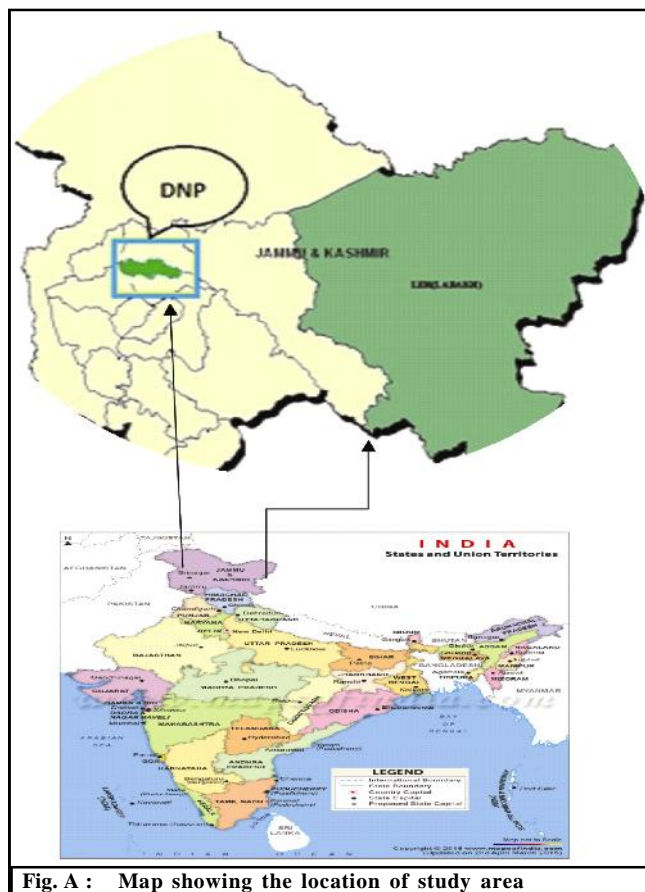


Fig. A : Map showing the location of study area

Dachigam National Park is clearly demarcated into an upper and lower region with altitudes of 1700 and 4300 meters, respectively (Fig. A).

The Park has been protected area since 1910 first under the care of Maharaja of Jammu and Kashmir and later under the observation of the concerned Govt. Authorities. It was initially created to ensure clean drinking water supply to the city Srinagar. It was finally upgraded and declared as National Park in the year 1981. There are over fifty species of trees, besides the various trees (wild cherry, poplar, willow, pear etc.) Dachigam National Park is also flourished with diverse species of medicinal flora which are very important for their medicinal value. There are about twenty of shrubs and five hundred species of herbs.

The methods employed during the study were designed with the sole purpose of eliciting the precious wealth of information on ethnomedicinal uses of plants practised by the people residing around the study area. Field surveys and structured interview schedules were used to elicit secret knowledge from the traditional communities inhabiting in accessible hinterland of that region.

#### Field surveys :

Field surveys were conducted in various study sites of the study area. Usually, the survey in each locality started with the interview of elderly and experienced members, locally known as *Hakims*. They helped for the identification of plant species used and authentication of plant specimens collected from their wild habitats. Besides this, the common people of the surveyed localities who themselves have used these plant based medicines for health treatments were interviewed to prove veracity of the curative features of the plants.

In total, about 115 people were interviewed from these localities. Out of these, about 50-70 per cent of the interviewees varying from locality to locality were unaware of the ethnomedicinal usage of these plant species. Amongst the interviewees, about these ethnomedicinal usage; majority of them were the elders (> 40yrs). In all, total number of localities surveyed in the study region was 10. All the gathered information, in particularly the parts used, mode of preparation, method of use and dosage of each medicinal plant species was recorded in detail. To bring an element of accuracy, the information obtained from one locality was cross checked with that of others. Besides, Botanical features, medicinal

uses of the species were studied. Photography of the respective plant parts like stem, flower etc. has been made from different angles. The plant specimens of some collected species were processed at the 'Pest Control and Ayurvedic Drug Research laboratory Vidisha (M.P.), identified with help of available literature, authenticated by Dr. P.N Shrivastava; Professor and Head of Botany Department S.S.L Jain P.G College Vidisha (M.P.).

## RESULTS AND DISCUSSION

A total of 26 medicinally important shrub species belonging to 19 genera and 16 families were recorded in the study area (Fig. 1 and 2). The complete list of the recorded plant species with ethnomedicinal properties is given in Table 1. The most privileged family used for the curing of disease was the Rosaceae (23.07%) followed by Rutaceae (11.53%), Berberidaceae and leguminaceae (7.69% each) etc. (Fig. 2).

Although all plant parts were used in various remedies (Fig. 4) however, the leaves were used more frequently (38.46%) as compared to fruits (26.92%), Bark (19.23%), flowers and roots (15.38% each) (Fig. 4).

The plant species were used by local inhabitants for treating various ailments like Constipation, Ophthalmic, fever, Rheumatism, Bronchitis Gastric problems, dysentery, cancerous growth, diabetes, cardiac epitaxis, anaemia, abdominal pain, typhoid, whooping cough, skin infections, blood purifier, general body pain etc. (Fig. 3). It was observed that a particular disease (e.g. constipation) was cured by many different plant species and, further, many plant species were reported to cure more than one ailment (Table 1). The disease that was cured by maximum number of plants (7) was "cuts and wounds", followed by ophthalmic and fever (3 each), rheumatism/bronchitis and digestive disorders (by 2 plants each) and so on Table (1).

The present study documented 26 medicinal plants traditionally used in health care practices by inhabitants of *Kashmir region of Dachigam National Park* located amidst western Himalaya. It reveals that the tribals and *Hakims* of the area prefer using herbal drugs for primary health care, even the health facilities are available nearby. The study has confirmed the fact that ethnomedicine presents an alternative source of healthcare for most rural dwellers. The local people have good knowledge of medicinal plants. Since such knowledge is still mostly

**Table 1 : Shrubs of Dachigam National Park**

Scientific Name/Family	Local name	Botanical features	Part used	Ethnomedicinal use
<i>Artemisia maritime</i> Linn/ Asteraceae	Tethwen	It is a perennial, woody, branched and hairy. Accessory roots borne at the basal stem nodes are frequently observed.	Leaves	One palmful bud/leaves mixed in one litre water and the decoction is given to cure indigestion.
<i>Adhatota vasica</i> Nees in wall./ Acanthaceae	Vasa	It is a small evergreen, sub-herbaceous bush. It has long and broad leaves, light green in colour having characteristic odour and bitter taste.	leaves	The leaves are used in cough, chronic, Bronchitis rheumatism. The decoction of the flower improves the circulation of blood.
<i>Berberis lyceum</i> Royle/ Berberidaceae.	Kawdach	Perennial shrub, Stem branched 3-4m. Leaves with or without spiny teeth. Flowers yellow born in auxiliary clusters. Fruit black at maturity, succulent. Root yellow.	Root, fruit	The fruit is eaten fresh and is given to children as a laxative. The roots are washed, dried and powdered, locally called as 'Danlider', and boiled in water and used as a tonic and for the treatment of joint pains. The root is rubbed with small quantity of water on a slate and the extract is applied to eye sores and bleeding piles externally. It is believed to possess cooling effect and is also antiseptic.
<i>Berberis aristata</i> / Berberidaceae	Dand leder	Characterized by an erect spiny shrub, ranging between 2 and 3 meters in height. It is a woody plant, with bark that appears yellow to brown from the outside and deep yellow from the inside. The bark is covered with three-branched thorns, which are modified leaves, and can be removed by hand in longitudinal strips. The leaves are arranged in tufts of 5-8 and are approximately 4.9 centimetres long and 1.8 centimetres broad. The leaves are deep green on the dorsal surface and light green on the ventral surface. The leaves are simple with pinnate venation. The leaves are leathery in texture and are toothed, with several too many small indentations along the margin of the leaf.	Root, bark	The bark of the root is dried and crushed to make powder. The powder is taken orally.
<i>Desmodium tiliaefolium</i> G. Don./ Leguminosae		Leaves ovate with large stem and white flowers.	Stem, leaf	Stem-leaf powder used in Kashmir for medical treatment of asthma. (Daily dosage is 1 to 2 table spoons of dry powder given in warm water).
<i>Daphne mucronata</i> Royle/ Thymeleaceae	Ganda leun	Branchlets thin, red, leafy. Leaves linear lanceolate, glabrous, sessile acute, flowers 5-7, shortly pedicellate, in capitates corymb, berry orange 30-70cm.	Roots, bark and leaves	Roots purgative, bark and leaves used cutaneously.
<i>Parrotiopsis jaequemontiana</i> (Decne.) Rehdher/Hamamelidaceae	Poh/Hatab /Posh	It is a deciduous shrub growing upto 6 m by 4 m wide with bisexual flowers.	Stem	Its utility in 'Kangri' making makes this shrub important for Kashmir economy. The stem is pressed by hot iron & the oil is extracted from it which is used for general body pain, Skin infection and eruptions.
<i>Indigofera heterantha</i> Wall/Fabaceae	Kats	It is a large shrub, growing upto 2.5 m tall. Branches are covered with bristly white hairs. Showy purple or pale pink flowers are borne in erect spike-like clusters, 2.5-5 cm long. Flowers are generally 6-10 mm across, shaped like pea flowers. Leaves are compound and the leaflets are very variable.	Bark	Bark and leaves are used for internal wounds, throat infection, diabetes, toothache and jaw swelling.
<i>Rosa webbiana</i> Wall. ex Royle/ Rosaceae	Arwal	<i>Rosa webbiana</i> is a deciduous Shrub growing to 2 m (6ft 7in). It is in flower in June, and the seeds ripen from August to October. The flowers are hermaphrodite (have both male and female organs) and are pollinated by Bees.	Leaf flowers	Leaves of the plant are stimulant and juice of the flowers is used as remedy for eye trouble.

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<i>Rosa macrophylla</i> Lindl./Rosaceae	Gangli Gulab	<i>Rosa macrophylla</i> is a deciduous Shrub growing to 4 m (13ft) by 3 m (9ft) at a fast rate. It is in flower from Jun to July, and the seeds ripen from August to September. The flowers are hermaphrodite (have both male and female organs) and are pollinated by Bees, insects, self. The plant is self-fertile.	Fruits, flowers	The ripen fruits are eaten and contain plenty of vitamins. Decoction of fruits and flowers is aromatic, alternative and useful in ophthalmic and flatulence.
<i>Rosa brunonii</i> Lindl./ Rosaceae	Mushk zamun	White or white blend. Pale yellow buds open to white. Mild, musk fragrance. 5 petals. Single (4-8 petals), cluster-flowered, in large clusters bloom form. Tall, armed with thorns climbing. Large, medium green foliage. 5 to 9 leaflets.	flowers	Extract of the flowers is carminative, aromatic used in gastric problems and dysentery.
<i>Rosa indica</i> Linn./ Rosaceae	Gulab	Bushy large, glossy, light green foliage. 5 to 7 leaflets. Height of 2' (60 cm). Light pink to deep pink flowers.	Flowers	Attar of flowers is useful in eye diseases. Petal mixed with sugar in a pot 'Khamber' is prepared which is given in fever, stomach-ache and pneumonia.
<i>Rubus fruticosus</i> Linn/ Rosaceae	Aakhra/	Sprawling shrubs producing herbaceous canes, aerial branches biennial or perennial; canes often arching or prostrate and rooting at the tips, generally armed with prickles. Leaves mostly palmate or compound, sometimes pinnate, rarely simple. Flowers solitary.	Fruits, root	Fruit is edible, laxative, purgative and blood purifier. Powder of the roots is useful in flow of urine.
<i>Skimmia laureola</i> Sieb. and Zucc. ex. Walp Syn / Rutaceae	Butputer	It is an evergreen shrub, leaf medium size, light to medium green; flowers red.	Leaves	The leaves are used to prepare extract which is used as wormicide and in abdominal pain. Leaves are also used in curing small pox. It is locally believed that smoke of burning leaves is effective to repel evils.
<i>Skimmia anquetilia</i> / N.P.Taylor Rutaceae	Wan pater	A densely covered shrub to 1.2 m tall in gardens with thick textured strongly aromatic oblanceolate bright to dark green leaves. With the male plants bearing large congested inflorescences of yellow-green fragrant flowers April-June, while the female inflorescences are smaller.	Leaves	Leaves aromatic, yielding skimmianine.
<i>Taxus wallichiana</i> (Zucc.) Pilger/ Taxaceae	Poshtul	Shrubs to 30 m tall; bark variably colour, greyish brownish, reddish, or purplish, peeling off in strips or cracking and falling off as thin scales; winter bud scales early deciduous or some persistent at base of branch lets, triangular-ovate.	Bark/ Shoot	Barks/Shoots yield taxol, used in treating cancerous growths.
<i>Astragalus grahamianus</i> Royle/Leguminosae	Gojar kond	Short-flat-hairy perennial with long rootstocks from a buried crown. Stems numerous, slender, creeping to erect, 10-30 cm tall, alternate, 4-10 cm long, the 11-19 leaflets linear-about 7-20 in head-like clusters, 1.5-2.5cm broad and as long, from leaf axils. Pods, stalk less, erect, about 1 cm long, greyish to blackish-stiff-hairy, ovoid.	Leaves	Decoction of leaves is used to cure intermittent fever having cooling effects and applied for internal mouth infection.
<i>Punica granatum</i> Linn./ Punicaceae	Daen	Deciduous shrub to small tree upto 6 m high, with thin smooth grey bark. Leaves are mostly opposite, short-petiolate, blades oblong-elliptical, upto 8 cm long. Flowers showy and upto 6 cm broad, bisexual, 5-8 petals, reddish and upto 2.5 cm long, numerous stamens surrounding a conspicuous hypanthia tube, the flowers usually occurring terminally or in axils. Fruit a red spherical berry up to 13 cm broad, with a leathery ring enclosing numerous seeds surrounded by edible juicy.	Fruits, seeds bark.	Fresh juice of fruit is known as cooling, refringent and energetic. The seeds are used as stomach-ache, pulp is used as cardiac. The flowers are useful in epistaxis. The bark extract is useful in epistaxis. The bark extract is useful for expelling round worm from alimentary canal.

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<i>Cotoneaster nummularia</i> Fisch. and Mey./ Rosaceae		This species of shrubs is 0.5–5 metres (1.6–16 ft) tall, varying from ground-hugging prostrate plants to erect shrubs.	fruits	The fruits are eaten to cure anaemia.
<i>Skimmia arborescens</i> NP Taylor/ Rutaceae	Naer	Species of evergreen shrubs. The leaves are clustered at the ends of the shoots, simple, lanceolate, 6-21 cm long and 2-5 cm broad, with a smooth margin. The flowers are in dense panicle clusters, each flower small, 6-15 mm diameter, with 4-7 petals. The fruit is red to black, 6-12 mm diameter, fleshy drupe containing a single seed	Leaves	Leaves used as incense. Wood used for hoes and axe handles. Fresh leaves are crushed to produce an extract which is taken along with milk to obtain relief from urinary infections. The smoke from the dried leaves is also used as insect repellent.
<i>Rhicinus communis</i> L/ Euphorbiaceae	Harahanda	An annual 1–3 m tall; stems succulent, herbaceous, very variable in all aspects; leaves alternate, orbicular, palmately compound, 1–6 dm broad, with 6–11 toothed lobes, glabrous; flowers numerous in long inflorescences, with male flowers at the base and female flowers at the tips; petals absent in both sexes, sepals 3–5, greenish; stamens numerous, 5–10 mm.	Whole shrub	Oil is purgative while seeds are sedative. An infusion prepared from the plant is utilized for skin especially for inflammation.
<i>Vitis vinefera</i> L./ Vitaceae	Daech	Perennial, woody climbing vine; stems up to 35 m long, leaves thin, circular to circular-ovate, 5–23 cm broad, margins dentate or jagged, basal sinus deep and lobes often overlapping, 5–7-lobed, pale green, sweet-scented; fruit a soft, pulpy berry, skin adhering to pulp, oval. Skin green, yellow, red or purplish-black, in large, long clusters.	Fruits, leaves	Fruits are edible and laxative. Fresh leaves are tightly tied with muslin cloth on the skin rashes, sores, eruptions.
<i>Syringia emodi</i> Wall. ex G. Don./ Oleaceae		<i>Syringia emodi</i> is a large deciduous shrub, growing up to 5 m tall. Leaves are elliptic-oblong, 6-10cm long, with entire margins, carried on 2.5cm long stalks. Flowers are borne in dense branched clusters of white fragrant flowers, at the end of branches. Petals are oblong, hooded at the tip, spreading outwards. Seed capsule is cylindrical upto 1.5 cm long.		
<i>Viburnum grandiflorum</i> Wall. ex DC/ Adoxaceae.	Kulmach	Large deciduous precocious shrub, 2-3 m tall with stiff stout branches; winter buds protected by scales. Leaves elliptic, oblong, and acute.	Seeds	Seed juice is given to treat typhoid and whooping cough.
<i>Zanthoxylum armanatum</i> DC. Rutaceae		It is a large spiny shrub. Leaves are distinctively trifoliate with the leaf stalk winged. Leaflets are stalk less. Minute yellow flowers arise in axils. Flowers have 6-8 sepals. Petals are absent. Seeds are round 3mm in diameter shining black.	Fruits, Seeds, leaves	Fruits are powdered and eaten with boiled egg for chest infection. Fruits are also used as stomach ache, toothache, and as a carminative. Seeds are tonic, aromatic and used for fever. Leave decoction is recommended in malarial fever.
<i>Ziziphys mauritiana</i> lam./ Rhamnaceae	Brag Kund	<i>Ziziphys mauritiana</i> is a spiny, evergreen shrub upto 15 m high, with trunk 40 cm or more in diameter; spreading crown; stipular spines and many drooping branches. Bark dark grey or dull black, irregularly fissured.	Leaves	Leaves are boiled in water for about half an hour and then water bath is used to wash whole body to cure skin rashes.

taught orally without written records, there is need to conduct a similar survey in as many rural areas as possible. Due to the changing perception of local people and the ever-increasing influence of global commercialization and socio-economic transformation, indigenous knowledge of plant resource use is constantly diminishing. The younger generation does not seem much interested in keeping this traditional knowledge alive. With the passage of time, knowledge about these valuable medicinal plant resources will vanish. In the future, the

information will be completely lost, thereby greatly weakening traditional medical practices. Therefore, this valuable information needs to be systematically collected and documented, so that it can serve mankind for generations to come and may also conserve the precious plant resources of high economic utility. Further, phytochemical and pharmacological investigations about the medicinal use of plants, along with the precious traditional knowledge may be a step ahead towards the new drug development.

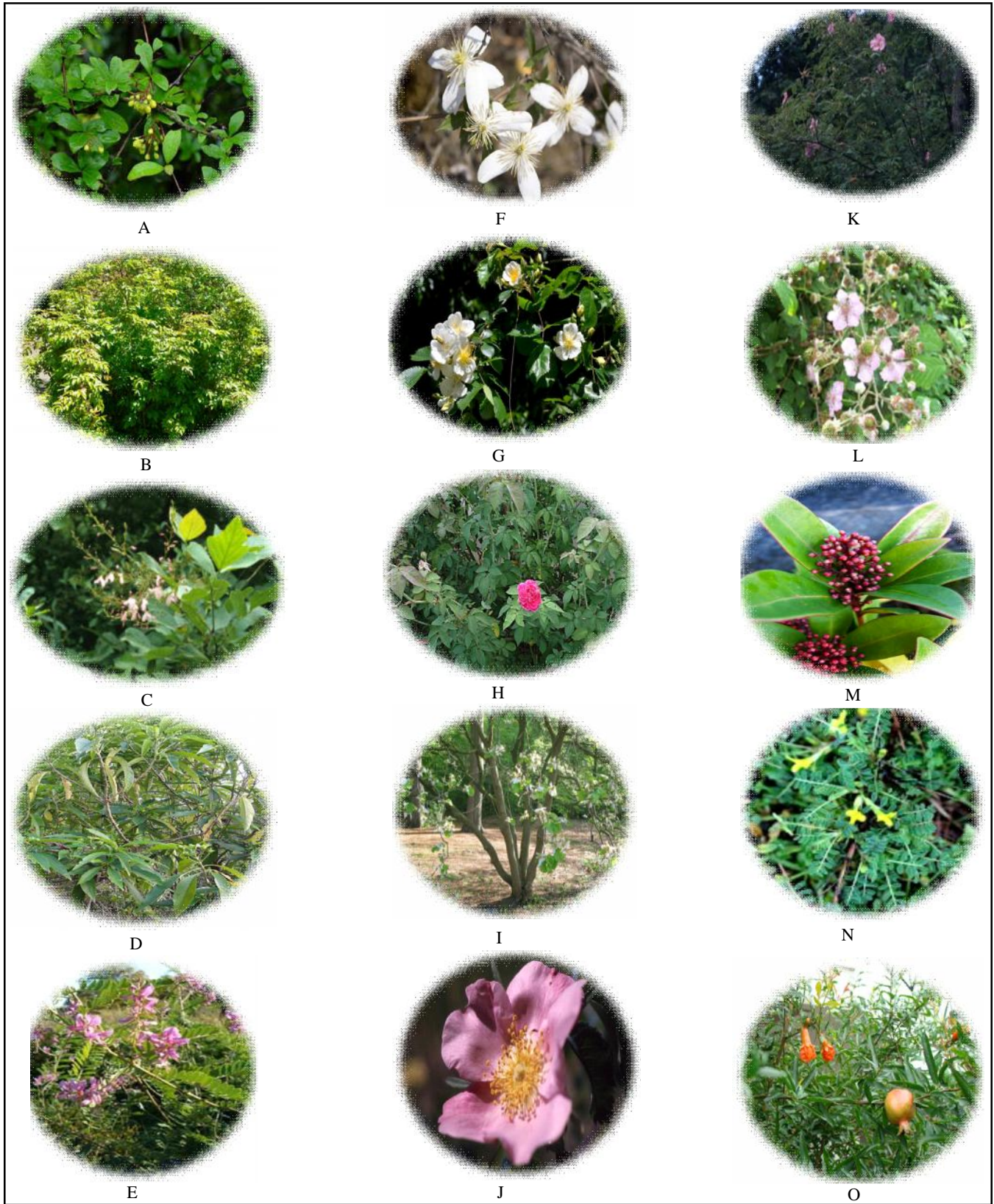


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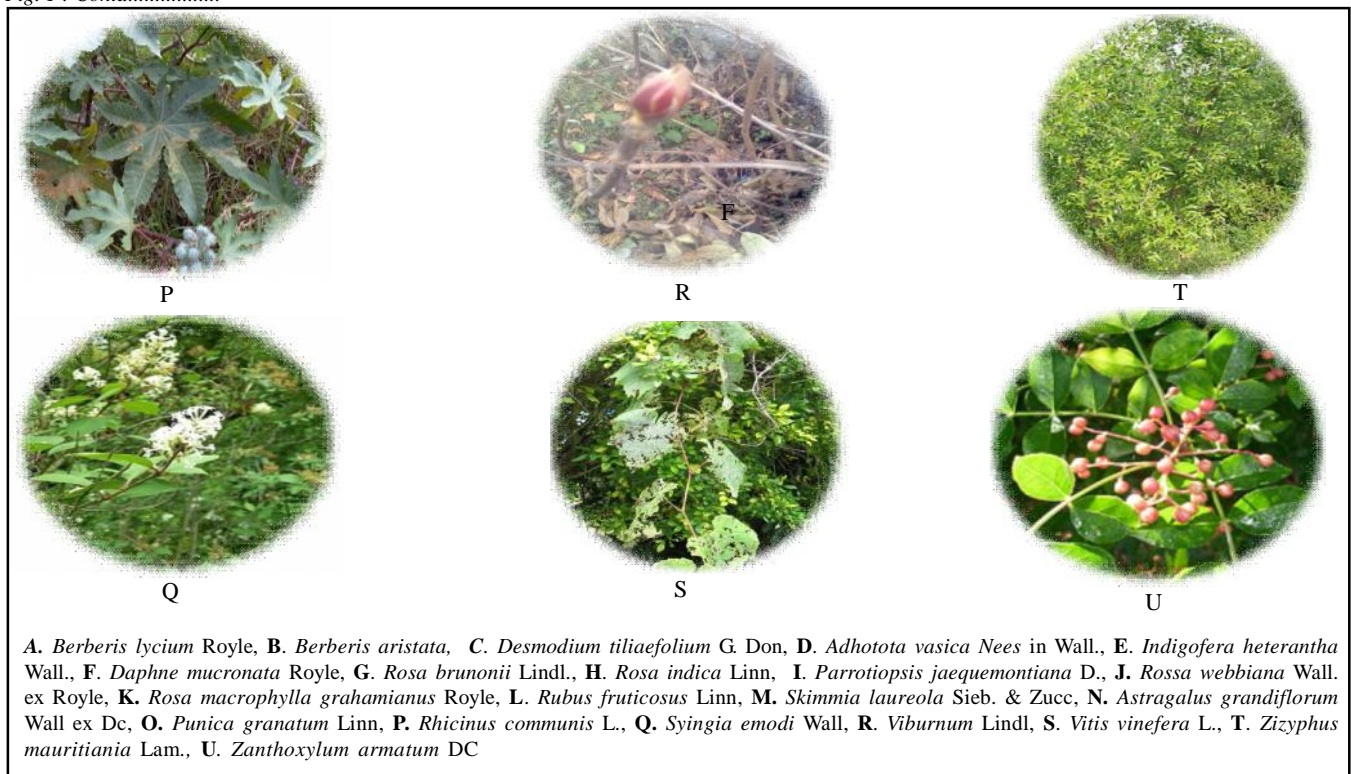


Fig. 1 : Medicinal plants in the study area

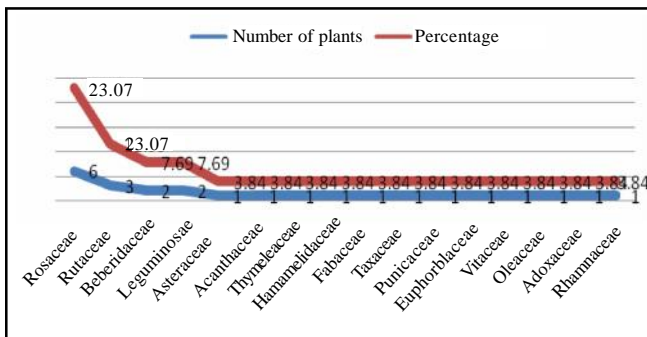


Fig. 2 : Major families used for ethnomedicinal purpose

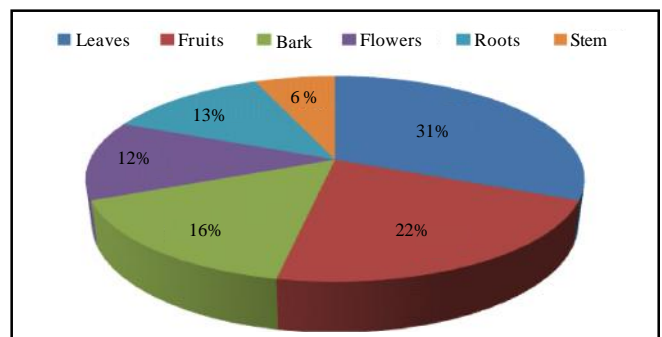


Fig. 4 : Percentage of parts used

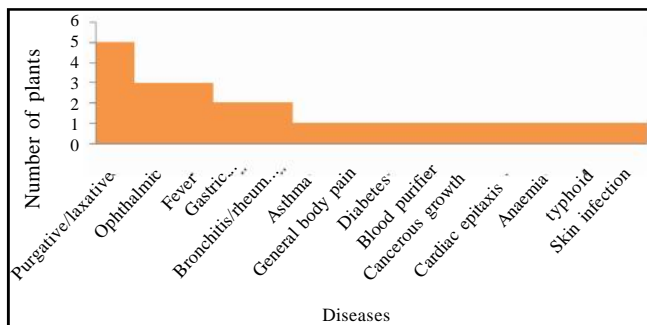


Fig. 3 : Number of plants used for treating various diseases

The most commonly used parts of ethnomedicinal plants in the present study comprised of leaves (37%), roots (24%), whole plants (23%), seeds (8%), fruit (6%) and flowers (2%). (Keter and Mutiso, 2012) reported that leaves were the most frequently used plant parts (48%) followed by stem bark (16%), roots and root bark (10%), while the fruits, whole plant, and aerial parts accounted for less than 10% for each. (Akhtar *et al.*, 2013) also reported from Pakistan that the most frequently used plant parts in the preparation of herbal remedies were



leaves (29%), followed by fruit (18%), roots and rhizomes (17%) and whole plants (7%) (Tantray *et al.*, 2009). have mentioned the need of survey of Kashmir Valley which is still not explored out fully. They have reported 30 plants of 14 different families which are used in herbal remedies of human and domestic cattle. Owing to great heterogeneity in the topography, altitude and climatic conditions; Kashmir valley harbours diverse habitat which support a rich floristic wealth. (Khoshoo, 1997 and Gomez-Beloz, 2002) have rightly called the Valley as “Biomass state.” Dar and Naqshi (2002) have also reported the floristic studies of the region. Similar detailed study of about 30 plant species belonging to 30 genera and 22 families in the Kashmir Himalaya have been reported earlier by (Malik *et al.*, 2011)

The state of Jammu and Kashmir is a hub of medicinal plant species due to biodiversity. The state has tremendous potential for medicinal plants cultivation and it can become one to the important options for sustainable livelihood for the hilly area. New approaches of biotechnology and conservation strategy can help preserve and utilize the indigenous knowledge of medicinal plants for humankind

### Conclusion :

The study provides comprehensive information about the degrading indigenous and traditional knowledge of medicinal plants used by local inhabitants in a part of Western Himalaya, India. Indigenous knowledge systems are culturally valued and scientifically important. The identification of the active ingredients of the plants used by the local people may provide some useful leads for the development of new drugs.

### Acknowledgment :

The authors thankful to the residents of study area for sharing their knowledge and co-operation during the field surveys and interviews.

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