

ETHNOBOTANICAL STUDIES ON USEFUL TREES AND SHRUBS OF HARAMOSH AND BUGROTE VALLEYS, IN GILGIT NORTHERN AREAS OF PAKISTAN

SHER WALI KHAN AND SURAYYA KHATOON

*Department of Botany,
University of Karachi, Karachi Pakistan.*

Abstract

This paper deals with the ethnobotany of Haramosh and Bugrote valleys in Gilgit of the Northern Areas of Pakistan where 48 species of trees and shrubs are used in every day life such as for medicine, shelter, agricultural tools and fuel. These species dealt with in the paper have seventy such uses. The population of the region primarily depends upon plant resources for their domestic needs. However, some plants are cultivated for these purposes.

Introduction

Haramosh and Bugrote are most beautiful valleys of the district Gilgit, that lie in the north-eastern side of the capital city Gilgit between 35.50°N latitude and 74.54° E longitude, covering an area of 2340sq.km (Fig. 1). The area has several mountains, glaciers, peaks, forests, shrub lands, alpine meadows at different elevations. Both valleys comprise about 25 villages and each village has its own forest and pastures for their livestock grazing with demarcated boundary line to other village.

The three mountain ranges i.e., the Himalayas, the Karakoram and the Hindukush Ranges are meeting together in this area (Fig. 2A). The Rakaposhi Haramosh Mountains are a sub range of the Karakoram Range. They are bordered on the north by Barpu and Chogo Lungma Glaciers; on the east and south by the Indus River and on the west by the Hunza-Nagir River. The River Gilgit is a tributary of the River Indus on the southern side of the area near Juglot (Fig. 2B) at the same point where there the three great ranges meet together. The two peaks, Rakaposhi (7788m) and Haramosh (7409m) are among the highest in the world in terms of rise above local terrain, due to their positions near very low valleys. Rakaposhi rises dramatically above a bend in the Hunza River, forming the western anchor of the range, while Haramosh stands on the north side of the Indus River, in the south central position of the range. There is a rich diversity of habitats e.g., lakes, springs, small rivers and streams, sub alpine and alpine meadows, steep mountain slopes, cultivated fields, road sides and permanent glaciers etc., which support a rich and equally diverse floristic wealth. The local people largely depend upon their natural flora for various needs. The present paper is in continuation with an earlier paper (Khan & Khatoon, 2004) on ethnobotany of Haramosh range. In this paper ethnobotanical uses of another 48 woody species are documented.

Material and Methods

Plant specimens were collected during the springs of 2001-2006 from the project area and identified with the help of Flora of Pakistan (Ali, 1977; 2001; Grohmann, 1974; Hedge, 1990; Jafri, 973; 1975; Nasir, 1971; 1972; 1975; 1975; 1983; Nasir & Nasir, 1987; Riedl, 1991; Akhter, 1986; Siddiqi, 1977.). The identification was also done by

Fig. 1. Map of Gilgit and Baltistan.

Fig. 2A. The three great Ranges meeting together.
Fig. 2B. The River Gilgit merging into the River Indus near Juglot.

comparing the specimens available in the Karachi University Herbarium. After identification voucher specimens were housed in the Karachi University Herbarium (KUH). During this period more than 30 people including both males and females, preferably of old ages were interviewed. Data recorded from the local peoples of both valleys were checked against the available literature (Bhargava, 1983; Bown, 1995; Sala, 1995; Pullaiah, 2006; Basu, 1991; Robert & Henry, 2002).

Results

Ethnobotanical uses are enumerated for 48 woody species (8 Gymnosperms, 40 Angiosperms) belonging to 32 genera (4 Gymnosperms, 28 Angiosperms) and 21 families (3 Gymnosperms, 18 Angiosperms) in which 24 are shrubs (3 Gymnosperms, 21 Angiosperms). Of these 24 are trees (5 Gymnosperms, 19 Angiosperms). The data collected through interviews with local people indicate that these species are used for medicinal purposes, agricultural tools, timber, fuel and making domestic items. Out of 48 species, 10 are cultivated and 40 are wild. The listed plants are grouped under Gymnosperms, Angiosperms, families, genera, species, local names and their uses are described in alphabetical order.

Gymnosperms

Family Cupressaceae

1. *Juniperus communis* L.

Local name: Mitthary

Berries are used against kidney stone, urine problems, leucorrhoea and tuberculosis and wood is used for fuel.

2. *J. excelsa* M.Bieb.

Local name: Cheleh

Berries are given in urine problems, kidney stone, weakness of urinary bladder; ash of wood and leaves are applied in certain skin inflection. The wood is chief source of fuel as well as for timber.

3. *J. turkestanica* Komarov

Local name: Cheleh

Medicinal uses are same as *J. excelsa*. Wood is chief source of fuel and making houses. Some people use its branches for making handles of agricultural tools.

Family Ephedraceae

4. *Ephedra gerardiana* Wall.ex Stapf

Local name: Soom

The decoction of branches and roots is used against rheumatism, asthma, cough and other respiratory problems.

5. *E. intermedia* Schrenk & Meyer
Local name: Shaay Soom

Stem and root extract is used in wounds, gouts, rheumatism, asthma and cough. Locally both plants are known by same name and uses are also same. According to some people the extract of stem of both species is used externally against swellings.

Family **Pinaceae**

6. *Picea smithiana* (Wall.) Boiss.
Local name: Kachul

Resin is used for joining different things as well as used for heart problems. Wood is a chief source of timber and fuel.

7. *Pinus gerardiana* Wall.ex Lamb.
Local name: Cheenh

8. *Pinus wallichiana* A.B. Jackson
Local name: Cheenh

Both species are known by the same local name and their uses are same but Chilghoza seeds are obtained from *Pinus gerardiana*.

Resin is used (externally) against wounds. "Kaalo" which is obtained after burning of wood is used as antiseptic. Wood is chief source of timber for making houses and different tools as well as chief source of fuel. Dry leaves are used as fertilizers.

Angiosperms

Family **Anacardiaceae**

9. *Pistacia khinjuk* Stocks
Local name: Kakavown

Galls are used for dysentery, diarrhoea, fever, inflammations and leucorrhoea. It is also used at the time of teething in children. The resin of this plant is known as "Gulgul" mostly used in eye redness and inflammations. The resin is burned as incense and also widely used in Taveez. Wood is used as fuel and leaves are the best fodder for goats.

Family **Betulaceae**

10. *Betula utilis* D.Don
Local name: Jowzee

Periderum from bark was used in former days as writing material and also used as packing paper/wrapping. The bark paper is extensively used for packing Ghee and making binding ropes and also used in roofs for wood protection from soil. The wood is used for making different agricultural tools such as plough and making local spoons and it is chief source of fuel. The extract of bark paper is used in ear pains and its related problems. Some people used the bark paper in rheumatism.

Family **Berberidaceae**

11. *Berberis brandisiana* Ahrendt

Local name: Ishkeen

Roots and stem bark are used for internal and external wounds, infections, piles, jaundice, liver problems, kidney stone, diabetes, sore throat, leucorrhoea, bleeding, uterine tumors, swellings, and its related problems.

12. *Berberis orthobotrys* Bien ex Aitch.

Local name: Ishkeen

13. *Berberis pseudumbellata* Parker

Local name: Ishkeen

The medicinal uses of these two species are similar to *Berberis brandisiana* and all the species of this genus are known by the same local name (Ishkeen). The extract of roots and stem bark is also used in stomach problems and ulcers. The extract of these plants also used in the same problems of their livestock. It is interesting to note that the local people prefer plants for medicinal purposes growing in dry places.

Family **Capparidaceae**

14. *Capparis spinosa* L.

Local name: Kavir

Root bark is used in joints pains, paralysis, diabetes, asthma, nerves disorders and brain problems. Fruits are internally used in jaundice, rheumatism, gouts. Seed oil is used for massaging painful joints.

Family **Caprifoliaceae**

15. *Lonicera microphylla* Willd. ex Roem.

Local name: Pushkar

Stem and branches are used for making handles and sticks of agricultural tools. Fruits are used in skin problems in place of glycerin.

Family **Celastraceae**

16. *Euonymus hamiltonianus* Wall.

Local name: Wattel

Wood is used for making different types of domestic spoons and handles of agricultural tools and also a chief source of fuel.

Family Elaeagnaceae

17. *Elaeagnus angustifolia* L.

Local name: Ghonair

Fruits are edible and medicinally used in liver problems and dysentery. Roots are very useful for jaundice and hepatitis A, B and C. Leaves are chief source for fodder and wood is used as fuel. Fruits are also used for the dysenteric problems of the cattles.

18. *Hippophae rhamnoides* L.

Local name: Buroh

Fruits are very useful for heart problems, cancers, stomach and brain problems. Root ash is useful for toothache and wood is used as fuel. This spiny shrub is used as barbed fences around field and along paths to fend off cattle.

Family Grossulariaceae

19. *Ribes alpestre* Decne.

Local name: Shumlooh

Roots are used for backache and joints pain and fruits are used for jaundice and liver problems. This spiny shrub is used as barbed fences.

20. *Ribes himalensis* Royle

Local name: Murshatooh

Fruits are used for jaundice, pneumonia and typhoid fever.

21. *Ribes orientale* Desf.

Local name: Ghonashatooh

Roots are useful for headache, joints pain, rheumatism and fever also.

Family Juglandaceae

22. *Juglans regia* L.

Local name: Ashooh

Roots are mostly used as tooth brush and unripe fruit rind is used for blackening hairs. Seed oil is used for brain problems and considered as general tonic. Wood is also a source of fuel and also used for making domestic items and handles.

The internationally known Walnut plant is very useful for edible nuts and for timber which is hard and heavy and much valued for furniture and gun- stocks.

Family Labiatae

23. *Isodon rugosus* (Wall.ex Benth.) Codd

Local name: Phaypush

Leaves of this plant are used for blood pressure, body temperature, rheumatism and toothache. Branches are used for making dusters.

Family Moraceae

24. *Ficus carica* L.

Local name: Faag

Fruits are used as tonic and also used in cardiac troubles, abdominal problems, constipation and stem latex is used for skin problems.

25. *Morus alba* L.

Local name: Marooch

Leaves were used for washing hairs and clothes. These are also best fodder for livestock. Stem and branches are used for making handles of agricultural tools. Roots are used for diabetes and fruits are used as general tonic and sore throat.

Family Oleaceae

26. *Fraxinus hookeri* Wenzing

27. *Fraxinus xanthoxyloides* (Wall.ex G. Don) DC.

Local name: Kasunar

Both the plants are known by the same local name because the local people do not differentiate them. Stem bark of both plants is used for typhoid fever and pneumonia. Wood is used for making handles of agricultural tools and it is also a chief source of fuel.

28. *Olea ferruginea* Royle

Local name: Kawoo

Wood is mostly used for making handles of agricultural tools and walking sticks and it is best source of fuel. Some people use its stem bark for fever.

Leaves are best fodder of goats.

Family Papilionaceae

29. *Caragana brevifolia* Komarov

30. *C. tragacanthoides* var. *himalaica* Komarov

Local name: Hapoocho

Both plants are known by the same local name and the roots of both plants are used for lowering the blood cholesterol and also used as tooth brush.

31. *Colutea nepalensis* Sims
Local name: Bizhee

Branches are used for making baskets and domestic plates.

32. *Robinia pseudoacacia* L.
Local name: Kekar

The legumes and resin are used for backache and as aphrodisiacs and wood is used as fuel.

Family **Punicaceae**

33. *Punica granatum* L.
Local name: Danoh

Fruits are used for liver problems, fever, cough, and increasing blood formation. Fruit rind is used in swellings, inflammations, uterus problems; seminal leakage as well as bone fractures and some people used the decoction of rind for sore throat. Roots decoction used for ring worm and diarrhoea.

Family **Ranunculaceae**

34. *Clematis orientalis* L.
Local name: Murghushi

Plant paste externally applied for joint problems and as antiseptic. Leaf extract is used for killing insects.

Family **Rosaceae**

35. *Cotoneaster integerrima* Medik.
Local name: Chimardanoy

Stem and branches are very useful for making sticks and handles of agricultural tools.

36. *Prunus amygdalus* Baill.
Local name: Badum

Seed oil and seeds are useful for increasing memory and eye sight. These are also used in constipation and as tonic.

37. *Prunus armeniaca* L.
Local name: Jaroty

Fruits are useful for increasing blood formation and in liver problems. Seed oil is used for hairs and cardiac problems. Wood is chief source of fuel and also used for making different tools.

38. *Rosa webbiana* Wall. ex Royle
Local name: Shighaye

Stem bark is used for making tea, which is useful for fever, cough and sore throat. Wood is used for making handles of different agricultural tools.

39. *Rubus irritans* Focke
Local name: Icheejeh

Fruits are very useful for blood purification, increase blood formation, liver problems and indigestion.

40. *Spiraea canescens* D. Don
Local name: Darah

Stem is used for making handles of agricultural tools and walking stick. The oil of wood (obtained after burning) is used for skin problems and flowers are used for abortions.

Family **Salicaceae**

41. *Populus alba* L.
Local name: Fulsoo

42. *Populus nigra* L.
Local name: Fulsoo

Both species are known by same local name. Wood of these plants is used as timber for making houses and other domestic items as well as fuel.

- 43. *Salix acmophylla* Boiss.
- 44. *Salix denticulata* Andersson
- 45. *Salix iliensis* Regel
- 46. *Salix sericocarpa* Andersson
- 47. *Salix turanica* Nasarov

Local name: Brawoon

All the species of *Salix* are known by the same local name and their uses are also same. Branches are used for making baskets and tooth brushes. Stem is used for making handles of agricultural tools and wood is chief source of fuel. Stem bark is boiled in water and used in fever, headache and paralysis. Leaves and branches are externally used for itching and allergy.

Family Thymelaeaceae

48. *Daphne mucronata* Royle

Local name: Nirko

Leaves are used as insect repellent and paste is used for muscular pains and nerve problems. Fruits are internally used for eye problems. Wood is used as fuel

Discussion

The 48 woody species of mostly native plants have 70 uses by the residents of both valleys, predominantly as medicines, timber, shelter, domestic items and fuel. Most of the medicinal plants are seldom used today, and knowledge about their preparation is scarce. The knowledge about medicinal plants and their preparation is now confined mostly to old people. The younger generations are rapidly adopting the allopathic medicines and traditional medicinal plants are now seldom used. The rich treasure of indigenous knowledge about local medicinal plants is therefore under threat; likely to gradually disappear with the death of older people. However some medicinal plants are still widely used, such as *Berberis* spp (Fig. 3-C) locally known as Ishkeen which is extensively used by the local people in every village.

The branches and stem wood of *Betula utilis* is mostly used for making the domestic items shown in (Fig. 3D-F) while the wood of *Pinus wallichiana* is mostly used for making bridges, houses, winnowing fans (Fig. 3-G) and as timber wood for commercial purposes (Fig. 3-H). The wood of *Picea smithiana* and *Fraxinus hookeri* is mostly used as fuel and for medicinal purposes (Fig. 3-A, B). Our results reveal that the residents of this area use the maximum number of plant species for curing fever, body pains, cough, cuts and wounds, headache and gynaecological disorders.

There are 25 villages in both valleys; each of them has its own area divided by the local rules. The peoples of both valleys mostly live in forest, hills, plateau and naturally isolated regions. Though the people are dependent on forests for their survivals, to say that they are lovers of forests is not true. They readily destroy forests for small gains and they are also involved in collection of firewood for sale. This removal of firewood mostly from young trees is resulting in gradual disappearances of forests. The forest preservation is essential for the survival of the local communities. The local people extensively exploit these plants for valuable timber and other requirements; on the other hand, these plant species are dwindling day by day due to merciless deforestation by traders for commercial interest. Over-exploitation of the forest is not only causing depletion of the plant resources but also disgracing the natural beauty of the region.

A number of trees and shrubs have been over-exploited by local people for fuel and commercial purposes. Three species in these valleys such as *Fraxinus hookeri*, *Olea ferruginea* and *Pistacia khinjuk* have become threatened due to over-exploitation.

Field surveys which were conducted from 2001- 2006, indicated that 99% of the people used firewood as fuel for domestic purposes. It is estimated that in the last 10 years about 30,000 trees of *Pinus wallichiana* and *Picea smithiana* from Haramosh valley and more than 15000 trees from Bugrote valley have been exported to the local market of Gilgit city. The forests in both valleys are confronted by a wide variety of threats and pressures. Direct cause of forest degradation and loss include excessive exploitation of forest resources for commercial and subsistence purposes. Indirect causes include such

Fig. 3. Some ethnobotanically important species and some locally prepared products: A. *Picea smithiana*; B. *Fraxinus hookeri*; C. *Berberis pseudumbellata*. D-F, Various items made from *Betula utilis* wood: D. Glass, E. Spoons, F. Plates, G. Winnowing fan made from *Pinus wallichiana* wood, H. Timber wood of *Pinus wallichiana*

factors as population growth, inequity, poverty and insecure land tenure. Securing a sustainable future for the forest of the area will require action on many different fronts and at many different levels. There is also a particularly important need to enhance forest monitoring and assessment.

References

Akhter, R. 1986. Caprifoliaceae. In: *Flora of Pakistan* No.174. (Eds.): E. Nasir and S.I. Ali. Department of Botany University of Karachi, and Pakistan Agricultural Research Council, Islamabad. pp.1-33.

Ali, S.I. 1977. Papilionaceae. In: *Flora of Pakistan* No. 100. (Eds.): E. Nasir and S.I.Ali. Department of Botany University of Karachi. pp.1-388.

Ali, S.I. 2001. Salicaceae. In: *Flora of Pakistan* No.203. (Eds.): S.I. Ali and M. Qaiser. Department of Botany University of Karachi and Missouri Botanical Press, Missouri Botanical Garden, St, Louis, Missouri, U.S.A. pp.1-60.

Basu, B.D. 1991. *Indian Medicinal Plants* Vol.1-4. Periodical Experts Book Agency Delhi.

Bhargava, N. 1983. Ethnobotanical studies of the tribe of Andaman & Nicobar Island India. *Economic Botany*, 37(1): 110.

Bown, D. 1995. *Encyclopedia of herbs and their uses*. The Royal Horticultural Society, Dorling Kindersley Limited, London. pp. 1-424.

Grohmann, F. 1974. Oleaceae. In: *Flora of Pakistan* No. 59. (Eds.): E. Nasir and S.I Ali. Department of Botany Gordon College Rawalpindi. pp.1-27.

Hedge, I.C. 1990. Labiateae. In: *Flora of Pakistan* No.192. (Eds.): S.I. Ali and Y.J. Nasir. Department of Botany University of Karachi and National Herbarium, Pakistan Agricultural Research Council, Islamabad

Jafri, S.M.H. 1973. Capparidaceae. In: *Flora of Pakistan* No.34. (Eds.): S.I. Ali and Y.J. Nasir. Department of Botany University of Karachi. pp.1-40.

Jafri, S.M.H. 1975. Berberidaceae. In: *Flora of Pakistan* No.87. (Eds.): E. Nasir and S.I. Ali. Department of Botany University of Karachi. pp.1-40.

Khan, S.W. and S. Khatoon. 2004. Ethnobotanical Studies of Haramosh and Bugrote Valleys (Gilgit) *Int. J.Biol. & Biotech*, 1(4): 585-589.

Nasir, E. and Y.J. Nasir. 1987. Gymnospermae. In: *Flora of Pakistan* No.178-186. (Eds.): E. Nasir and S.I. Ali. Department of Botany University of Karachi. pp.1-36.

Nasir, Y.J. 1971. Thymelaeaceae. In: *Flora of Pakistan* No.12. (Eds.): E. Nasir and S.I. Ali. Stewart Herbarium Gordon College Rawalpindi. pp.1-10.

Nasir, Y.J. 1972. Juglandaceae. In: *Flora of Pakistan* No. 14. (Eds.): E. Nasir and S.I. Ali. Department of Botany Gordon College, Rawalpindi. pp. 1-5.

Nasir, Y.J. 1975. Betulaceae. In: *Flora of Pakistan* No.95. (Eds.): E. Nasir and S.I.Ali. Department of Botany Gordon College, Rawalpindi. pp. 1-5.

Nasir, Y.J. 1975. Elaeagnaceae. In: *Flora of Pakistan* No.85. (Eds.): E. Nasir and S.I.Ali. Department of Botany Gordon College, Rawalpindi. pp. 1-6.

Nasir, Y.J. 1983. Anacardiaceae. In: *Flora of Pakistan* No.152. (Eds.): E. Nasir and S.I. Ali. Department of Botany University of Karachi, and Pakistan Agricultural Research Council, Islamabad. pp. 1-22.

Pullaiah, T. 2006. *Encyclopedia of World Medicinal Plants* vol. 1-5. Regency Publications New Delhi (India).

Riedl, H. 1991. Ranunculaceae. In: *Flora of Pakistan* No.193. (Eds.): S.I. Ali and Y.J. Nasir. Department of Botany, University of Karachi. pp. 1-164.

Robert, B. and T. Henry. 2002. *Medicinal Plants* Vol. 1-4. Omsons Publications New Delhi India.

Sala, A.V. 1995. *Indian Medicinal Plants* vol. 1-5. Orient Longman Pvt. Ltd.

Siddiqi, M.A. 1977. Celastraceae. In: *Flora of Pakistan* No.109. (Eds.): E. Nasir and S. I. Ali. Department of Botany, University of Karachi. pp. 1-15.