

Ethno botanical studies on plant resources of Razmak, North Waziristan, Pakistan

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ABSTRACT

An ethno-botanical survey was carried out to collect information on traditional uses of plant resources of Razmak, North Waziristan, Pakistan. About 189 vascular plant species, belonging to 69 families were utilized by the local people for various indigenous uses. Out of these 189 plants, 123 were used as medicinal, 87 as fuel wood species, 156 as fodder plants species, 30 as edible fruit, 30 species utilized in agricultural tools, 40 species as timber, 24 species used for thatching and sheltering, 30 species as vegetable and pot herb, 6 species were reported poisonous, 4 species important for veterinary medicines and 4 plant species had miscellaneous uses such as making of ropes, wooden spoons, kites, fans and brooms. Plant remedies are mainly prepared through infusion, decoction and concoction and administered through oral route or applied to skin. Data analyses indicated that the remedies were used to treat gastro-intestinal disorders, respiratory diseases, skeleto-muscular problems, cutaneous complaints, blood circulatory diseases and many others. Field observations showed that deforestation, over grazing, agricultural expansion and unscientific collection, processing and preservation of natural vegetation are the major threats in the investigated area. Measures for the conservation of plant resources of Razmak forest are urgently needed.

Keywords: Ethnobotanical uses, Plant resources, Razmak North Waziristan Agency, Pakistan

INTRODUCTION

Ethnoecology is the study of indigenous knowledge of local community and management of associations between cultural, plants, economic components of manmade issues, ecological and natural ecosystem of an area (Martin, 2001). Razmak is a subdivision of North Waziristan Agency which falls under Sinojapanese Region (Ali and Qaiser 1986). Razmak subdivision is divided into three Tehsils namely, Razmak, Dosali and Garyum. It is surrounded by gigantic mountains which are attached with Koh-e-Sufaid in the North and Koh-e-Suleiman in the South. The research area lies between 32°41'22" N latitude and 69°50'31" E longitude with altitude of 1828m to 3353m. The Gymnosperms flora of Razmak is dominated by species such as *Pinus species* and *Abies pindrow*. *Quercus incanna*, *Quercus dilata* and *Nanorrophus retichiana* are also growing in the mountains of Razmak. The area receives monsoon rainfall (Ali & Qaiser, 1986). The average rainfall is about 75mm and snowfall is about 0.5mm. The research area is irrigated by springs, streams and rainfall. The soil is mostly shallow and calcareous supporting *Dodonia viscosa*, *Tamarix* and *Accacia* species. Livestock rearing, fuelwood and medicinal plants collection are generally practiced in the research area.

Plants always have great importance in culture. Human beings are user of plants of their own requirements like nourishment, wearing, protection, hunting and nursing. Plants provide the remedies and had been the source of medicines since inception. The interest in folk medicine has highly increased in recent years. Nearly 25% of all medicines are based on plants extracts (Sara *et al.* 2009). Medicinal plants have an important value in the spiritual, socio-cultural and medicinal use in tribal and rural lives of the developing countries (Shinwari *et al.*, 2003). Many wild herbs, shrubs and trees were found to be used as medicinal plants by the inhabitants in the valley (Wazir *et al.* (2004). *Solanum miniatum* is used to treat urinary disorder, as anti-rheumatism, heart pain. *Boerhavia diffusa* roots as anti-jaundice, anemia, edema; *Capsicum annuum* fruit against evil eye and giant, yellow fever. *Momordica balsamina* leaves used for wound healing. The bulb juice of *Allium sativum* used as anti cancer, blood pressure and contraceptive. *Corriandrum sativum* seeds are used as diuretic and anti spermatogenesis. *Raphanus sativus* seeds were used for curing of syphilis (Ishtiaq *et al.* (2007). *Traxacum officinale* was analyzed to active different constituents which used for different medicinal purpose (Amin *et al.* (2013). A survey was conducted to ethnotaxonomical study on Gymnosperms of Razmak North Waziristan agency. 11 plants species belonging to 4 families of Gymnosperms were studied. They concluded that these 11 plants species were not only sources of timber and food but is utilized as medicinal and detergent (Dawood *et al.* 2013). Some 21 medicinal plants species belonging to 19 families were identified for different uses against different diseases in Kurram Agency. The vernacular names, chemical constituents, scientific names, families, part used, habitat, conservation status and

locality were also given with species (Hussain *et al.* 2012). Ethnobotanical studies have also been carried out by Iylas *et al.*, 2012; Shah and Hussain, 2012; Qaisar *et al.*, 2013; Asad *et al.*, 2014; Hassan *et al.*, 2015; Hadi *et al.*, 2014; Shosan *et al.*, 2014; Adnan *et al.*, 2015; Sawasan *et al.*, 2015; in various parts of the country, however no work as a whole on the ethno botany of Razmak subdivision has been presented. Therefore, the present study reports the customary consumption of some plants of the area, which might be helpful for the future pharmacologists, taxonomists, workers, ecologist, wild life and water shed managers.

Methodology:

A survey was conducted during 2014-2015 to document the traditional uses of plants. Plant specimen were collected, dried and preserved properly. They were identified through available literature (Nasir & Ali, 1971-1995; Ali & Qaisar, 1995-2006). The plants were classified according to their economic value (medicinal, fodder, vegetables, thatching, food, fuel wood) through interviewing and filling questionnaires from drug dealers, shopkeepers, timber dealers, fuel wood seller, local hakims, and farmers but priority was given to local elderly people and Hakims who were the real users and had a lot of information about the plants and their traditional uses. Literature survey and general observations adds some more information. The voucher specimens were submitted to the Dr. Syed Mukaram Shah lecturer, Center of Plant Biodiversity University of Peshawar, Botanical Garden Azakhel, Nowshera, Pakistan.

Result and Discussion:

Ethnobotanical profile

The following ethnobotanical information was collected on 189 plant species in the investigated area (Table 1). There were 156 (82.54%) species used as fodder, 87 (46.03%) species were used as fuel wood, 123 (65.07%) species as medicinal, 40 (21.16%) species as timber wood, 19 (10.05%) species as vegetables, 30 (15.87%) species as fruits, 13 (6.88%) species as condiment and 24 (13%) were species as used for thatching purposes (Table 1).

a. Fodder

The plant species browsed and grazed by the domesticated and wild life animals are the fodder plant species. The dominant plant species used in the area were fodder. The residents of Razmak are poor and they fulfill their needs of agriculture, milk and other from livestock. They also collect a considerable amount of money from the sale of different products obtained from the livestock. To feed their livestock, they are depended on fodder that obtained from grasses growing on wild. They also collect green fodder from the surrounding forests for their livestock. It was observed that there were maximum 156 (82.54%) plant species used for livestock in the Razmak area (Table 1).

b. Fuel wood

It was observed that 87 species were used as fuel wood. Wood is the major fuel source and 95% local people dependent only on wood in Razmak. Pinaceae is the leading family with 9 species in case of fuel wood. The species used as fuel wood include, *Alnus incana*, *Alnus nitida*, *Quercus baloot*, *Quercus dilata*, *Quercus ilex* and *Quercus incana* (Table 1).

c. Timber wood

Timber and fuel wood plays an important role in the daily life of people of Razmak area and due to lack of household energy source like electricity and gas, fuel and timber wood is an important component in daily life. In the area most of the people are poor and lack basic facilities. 40 (21.16%) species are reported as timber wood value. The commonly important species were *Quercus baloot*, *Cedrus deodara*, *Pinus wallichiana* and *Pinus gerardiana* (Table 1).

d. Vegetables

Vegetables play an important role in human nutrition. The vegetables are the important source of food. It is observed that there were 19 (10.05%) species used as vegetables that are used locally by the people. Among of them i.e *Allium sativum*, *Allium cepa*, *Curcubita canadensi* and *Chenopodium album* are frequently used for different type of cooking, dishes and as salad (Table 1).

e. Medicinal plants

Medicinal plants are used to cure various ailments of both human beings and their livestock. It was noticed that there were 123 (65.07%) species used as medicinal. *Cyperus difformis*, *Ephedra gerardiana*, *Abies pindrow*, *Cymbopogon jwarancusa*, *Zingiber officinale*, *Amaranthus retroflex* and *Amaranthus viridis* were frequently used

as medicinal plants in the investigated area (Table 2). The use of medicinal plants is still trusted in the local health care system in the traditional societies. The study revealed that the local people of Razmak use medicinal plants in their daily life for curing various diseases.

Table 1. Ethnobotanical profile of Plant species of Razmak North Waziristan Agency, Pakistan.

| S.No | Plant Species | Fodder | Medicinal | Timber wood | Fuel wood | Fruit | Vegetables | Condi ments | Thatching |
|-------------------------------|--|--------|-----------|-------------|-----------|-------|------------|-------------|-----------|
| A. Pteridophyta | | | | | | | | | |
| 1. Family Adiantaceae | | | | | | | | | |
| 1. | <i>Adiantum capillus-veneris</i> L. | + | + | - | - | - | - | - | - |
| 2. | <i>Adiantum venustum</i> D. Don | + | + | - | - | - | - | - | - |
| 2. Family Equisetaceae | | | | | | | | | |
| 3. | <i>Equisetum arvense</i> L. | + | + | - | - | - | - | - | - |
| 4. | <i>Equisetum diffusum</i> D. Don | + | + | - | - | - | - | - | - |
| 1. Family Pteridaceae | | | | | | | | | |
| 5. | <i>Pteris vittata</i> L. | + | - | - | - | - | - | - | - |
| B. GYMNOSPERMS | | | | | | | | | |
| 2. Family Cupressaceae | | | | | | | | | |
| 6. | <i>Cupressus sempervirens</i> L. | + | + | - | - | - | - | - | - |
| 3. Family Ephedraceae | | | | | | | | | |
| 7. | <i>Ephedra Gerardiana</i> L. | - | + | - | + | - | - | - | - |
| 4. Family Pinaceae | | | | | | | | | |
| 8. | <i>Abies pindrow</i> (Royle). | - | + | + | + | + | - | - | - |
| 9. | <i>Arucaria columnaris</i> J.R. Forst. Hook. | - | + | + | + | - | - | - | - |
| 10. | <i>Cedrus deodara</i> Roxb ex Lamb G. Don | - | + | + | + | - | - | - | - |
| 11. | <i>Pinus Gerardiana</i> Wall ex Lamb. | - | + | + | + | + | - | - | - |
| 12. | <i>Pinus roxburghii</i> Sarg. | - | + | + | + | + | - | - | - |
| 13. | <i>Pinus wallichiana</i> A.B | - | + | + | + | + | - | - | - |
| 14. | <i>Picea smithiana</i> (Wall.) Boiss. | - | + | + | + | - | - | - | - |
| 15. | <i>Taxus wallichiana</i> Zucc. | - | + | + | + | - | - | - | - |
| 16. | <i>Thuja occidentalis</i> L. | - | + | + | + | - | - | - | - |
| C. Angiosperms | | | | | | | | | |
| a. Monocotyledon | | | | | | | | | |
| 5. Family Alliaceae | | | | | | | | | |
| 17. | <i>Allium sativum</i> L. | + | + | - | - | - | - | + | - |
| 18. | <i>Allium cepa</i> L. | + | + | - | - | - | - | + | - |
| 6. Family Arecaceae | | | | | | | | | |
| 19. | <i>Arisaema flavum</i> (Forssk.) Schott. | - | + | - | - | - | - | - | - |
| 20. | <i>Nannorrhops ritchiana</i> (Griff.) Aitch. | + | + | - | + | - | - | - | - |
| 21. | <i>Phoenix dactylifera</i> L. | - | + | - | + | + | - | - | + |
| 7. Family Cyperaceae | | | | | | | | | |
| 22. | <i>Cyperus difformis</i> L. | + | - | - | - | - | - | - | - |
| 23. | <i>Cyperus rotundus</i> L. | + | - | - | - | - | - | - | - |
| 8. Family Poaceae | | | | | | | | | |
| 24. | <i>Apluda mutica</i> L. | + | - | - | - | - | - | + | - |

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|----------------------------------|---|---|---|---|---|---|---|---|---|
| 25. | <i>Cenchrus ciliaris</i> L. | + | - | - | - | - | - | + | - |
| 26. | <i>Cymbopogon jwarancusa</i> (Jones) Schult. | + | + | - | - | - | - | - | - |
| 27. | <i>Cynodon dactylon</i> (L.) Pers. | + | - | - | - | - | - | - | + |
| 28. | <i>Cynodon plectostachyus</i> (K.Schum) Pilg. | + | - | - | - | - | - | - | - |
| 29. | <i>Dactyloctenium aegyptium</i> (L.) | + | - | - | - | - | - | - | - |
| 30. | <i>Desmostachya bipinnata</i> (L.) Stapf. | + | - | - | - | - | - | - | - |
| 31. | <i>Dichanthium annulatum</i> (Forssk.) Stapf. | + | - | - | - | - | - | - | - |
| 32. | <i>Echinochloa colona</i> (L.) Link. | + | - | - | - | - | - | - | - |
| 33. | <i>Eragrostis cilianensis</i> (All.) Lut. | + | - | - | - | - | - | - | - |
| 34. | <i>Eragrostis minor</i> Host. | + | - | - | - | - | - | - | - |
| 35. | <i>Phragmites karka</i> (Retz) Trin. | + | - | - | - | - | - | + | - |
| 36. | <i>Poa annua</i> L. | + | - | - | - | - | - | - | - |
| 37. | <i>Poa informis</i> L. | + | - | - | - | - | - | - | - |
| 38. | <i>Polypogon monspeliensis</i> L. | + | - | - | - | - | - | - | - |
| 39. | <i>Saccharum munja</i> Roxb. | + | - | - | - | - | - | - | + |
| 40. | <i>Triticum aestivum</i> L. | + | - | - | - | - | - | - | - |
| 41. | <i>Zea mays</i> L. | + | - | - | - | - | - | - | - |
| 9. Family Typhaceae | | | | | | | | | |
| 42. | <i>Typha latifolia</i> L. | + | - | - | - | - | - | - | - |
| 10. Family Zingiberaceae | | | | | | | | | |
| 43. | <i>Zingiber officinale</i> Roscoe | - | + | - | - | + | + | - | - |
| b. Dicotyledons | | | | | | | | | |
| 11. Family Amaranthaceae | | | | | | | | | |
| 44. | <i>Aerua javanica</i> (Burm. f.) Juss. | + | + | - | - | - | - | - | - |
| 45. | <i>Aerua lanata</i> (L.) Juss. ex Schult. | + | - | - | - | - | - | - | - |
| 46. | <i>Achyranthus aspera</i> L. | + | - | - | - | - | - | - | - |
| 47. | <i>Amaranthus retroflexus</i> L. | + | + | - | - | - | - | - | - |
| 48. | <i>Amaranthus viridis</i> L. | + | + | - | - | - | + | - | - |
| 12. Family Apiaceae | | | | | | | | | |
| 49. | <i>Bupleurum falcatum</i> L. | - | - | - | + | - | - | - | - |
| 50. | <i>Coriandrum sativum</i> L. | - | + | - | - | - | - | + | - |
| 51. | <i>Trachyspermum amuni</i> L. | | + | - | - | - | - | + | - |
| 52. | <i>Torilis arvensis</i> L. | + | + | - | - | - | - | - | - |
| 53. | <i>Caralluma tuberculata</i> N.E.Br. | - | + | - | - | - | + | - | - |
| 13. Family Apocynaceae | | | | | | | | | |
| 54. | <i>Rhazya stricta</i> L. | + | + | - | - | - | - | - | - |
| 14. Family Asclepiadaceae | | | | | | | | | |
| 55. | <i>Calotropis procera</i> (Wight).Ali. | - | + | - | + | - | - | - | - |

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| 56. | <i>Nerium oleander</i> L. | - | + | - | + | - | - | - | - |
| 15. Family Asteraceae | | | | | | | | | |
| 57. | <i>Artemista maritima</i> L. | + | + | - | + | - | - | - | - |
| 58. | <i>Calendula officinallis</i> L. | - | + | - | - | - | - | - | - |
| 59. | <i>Cirium arvense</i> L. | + | + | - | - | - | - | - | - |
| 60. | <i>Conyza canadensis</i> L. | + | - | - | - | - | - | - | - |
| 61. | <i>Conyza bonariensis</i> L. | + | - | - | - | - | - | - | - |
| 62. | <i>Eclipta alba</i> L. | + | - | - | - | - | - | - | - |
| 63. | <i>Helianthus annuus</i> L. | + | + | - | - | - | - | - | - |
| 64. | <i>Lactuca serriola</i> L. | + | - | - | - | - | - | - | - |
| 65. | <i>Tagetes minuta</i> L. | + | - | - | - | - | - | - | - |
| 66. | <i>Tussilago farfara</i> L. | + | - | - | - | - | - | - | - |
| 67. | <i>Sonchus asper</i> L. | + | - | - | - | - | - | - | - |
| 68. | <i>Sonchus oleraceus</i> L. | + | - | - | - | - | - | - | - |
| 69. | <i>Vernonia cinerea</i> Linn. | + | + | - | - | - | - | - | - |
| 70. | <i>Xanthium strumarium</i> L. | + | - | - | + | - | - | - | - |
| 16. Family Berberidaceae | | | | | | | | | |
| 71. | <i>Berberis lycium</i> Royle. | + | + | - | + | - | - | - | - |
| 17. Family Betulaceae | | | | | | | | | |
| 72. | <i>Alnus incana</i> L. | + | - | + | + | - | - | - | - |
| 73. | <i>Alnus nitida</i> (Spach) Endl. | + | - | + | + | - | - | - | - |
| 18. Family Brassicaceae | | | | | | | | | |
| 74. | <i>Brassica campestris</i> L. | + | + | - | - | - | + | - | - |
| 75. | <i>Lepidium draba</i> L. | + | + | - | - | - | - | + | - |
| 76. | <i>Raphanus sativa</i> L. | + | + | - | - | - | + | + | - |
| 19. Family Buxaceae | | | | | | | | | |
| 77. | <i>Buxus wallichiana</i> Baill. | + | + | - | - | - | - | - | - |
| 20. Family Boraginaceae | | | | | | | | | |
| 78. | <i>Heliotropium strigosum</i> Wild. | + | + | - | - | - | - | - | - |
| 79. | <i>Incarvilla emodi</i> Lindl. | + | + | - | - | - | - | - | - |
| 21. Caesalpinaceae | | | | | | | | | |
| 80. | <i>Bauhania varigata</i> L. | + | + | + | - | + | - | - | - |
| 22. Family Calastraceae | | | | | | | | | |
| 81. | <i>Maytenus royleana</i> (Wall.ex.M.A). | + | + | - | - | - | - | - | - |
| 23. Family Cannabianaceae | | | | | | | | | |
| 82. | <i>Cannabis sativa</i> L. | - | + | - | + | - | - | - | - |
| 24. Family Capparidaceae | | | | | | | | | |
| 83. | <i>Capparis decidua</i> L. | + | + | - | + | - | - | - | - |
| 25. Family Chanopodiaceae | | | | | | | | | |
| 84. | <i>Chenopodium album</i> L. | + | + | - | + | - | + | - | - |
| 85. | <i>Chenopodium botrys</i> L. | + | - | - | - | - | - | - | - |
| 86. | <i>Chenopodium ambrosioides</i> L. | + | + | - | - | - | - | - | - |
| 26. Family Convolvulaceae | | | | | | | | | |
| 87. | <i>Convolvulus arvensis</i> L. | + | + | - | - | + | - | - | - |

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|------------------------------------|---|---|---|---|---|---|---|---|---|
| 27. Family Cucurbitaceae | | | | | | | | | |
| 88. | <i>Citrullus lanatus</i> (Thunb.) Matsum. & Nakai. | + | + | - | - | - | - | - | - |
| 89. | <i>Citrullus colocynthis</i> Schrad. | + | - | - | - | - | - | - | - |
| 90. | <i>Cucumis melo</i> L. | + | - | - | - | + | - | - | - |
| 91. | <i>Curcubita canadensis</i> S | + | - | - | - | - | + | - | - |
| 28. Family Euphorbiaceae | | | | | | | | | |
| 92. | <i>Euphorbia helioscopia</i> L. | + | - | - | - | - | - | - | - |
| 93. | <i>Ricinus communis</i> L. | + | + | - | + | - | - | - | - |
| 29. Family Fagaceae | | | | | | | | | |
| 94. | <i>Quercus baloot</i> Griffith. | + | + | + | + | - | - | - | + |
| 95. | <i>Quercus dilata</i> Lindl ex Royle. | + | + | + | + | - | - | - | + |
| 96. | <i>Quercus ilex</i> Albeat. | + | - | + | + | - | - | - | + |
| 97. | <i>Quercus incana</i> Roxb FI Ind. | + | - | + | + | - | - | - | + |
| 30. Family Fumariaceae | | | | | | | | | |
| 98. | <i>Fumaria indica</i> (Hausk) Pugsly. | + | + | - | - | - | - | - | - |
| 31. Family Hippocastanaceae | | | | | | | | | |
| 99. | <i>Aeslus indica</i> Wall. ex Camb. | + | + | + | + | - | - | - | - |
| 32. Family Juglandaceae | | | | | | | | | |
| 100. | <i>Ajuga regia</i> Waller. Benth. | + | + | + | + | - | - | - | - |
| 101. | <i>Juglans regia</i> L. | + | + | + | + | + | - | - | - |
| 102. | <i>Tectona grandis</i> L. | + | + | + | + | - | - | - | - |
| 33. Family Lamiaceae | | | | | | | | | |
| 103. | <i>Lycopus europeus</i> L. | + | - | - | - | - | - | - | - |
| 104. | <i>Marrubium vulgare</i> L | + | + | - | - | - | - | - | - |
| 105. | <i>Mentha arvensis</i> L. | + | + | - | - | - | + | - | - |
| 106. | <i>Mentha longifolia</i> L. | + | + | - | - | - | + | - | - |
| 107. | <i>Mentha spicata</i> L. | + | + | - | - | - | + | - | - |
| 108. | <i>Nepeta hindostana</i> Roth. Haines. | + | + | - | - | - | - | - | - |
| 109. | <i>Saliva moorcraftiana</i> Wall.Ex Benth | + | - | - | - | - | - | - | - |
| 110. | <i>Thymus serpyllum</i> L | + | + | - | - | - | + | - | - |
| 111. | <i>Ajuga bracteosa</i> Wall. Ex. Benth | + | + | - | - | - | - | - | - |
| 112. | <i>Ballota pseudodictamnus</i> Benth. | + | + | - | - | - | - | - | - |
| 113. | <i>Vitex nugundo</i> L. | + | + | - | + | - | - | - | - |
| 34. Family Malvaceae | | | | | | | | | |
| 114. | <i>Malva neglecta</i> Wallr | - | + | - | - | - | + | + | - |
| 115. | <i>Malva parviflora</i> L. | - | + | - | - | - | + | + | - |
| 35. Family Meliaceae | | | | | | | | | |

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|----------------------------------|--------------------------------------|---|---|---|---|---|---|---|---|
| 116. | <i>Melia azadarach</i> L. | + | + | + | + | - | - | - | + |
| 117. | <i>Azadirachta indica</i> Adr. Juss. | + | + | + | + | - | - | - | + |
| 36. Family Mimosoaceae | | | | | | | | | |
| 118. | <i>Accacia modesta</i> L. | + | - | + | + | - | - | - | + |
| 119. | <i>Accacia nilotica</i> L. | + | + | + | + | - | - | - | + |
| 37. Family Moraceae | | | | | | | | | |
| 120. | <i>Ficus carica</i> L. | + | + | + | + | + | - | - | - |
| 121. | <i>Ficus religiosa</i> L. | + | - | + | + | + | - | - | - |
| 122. | <i>Morus alba</i> L. | + | + | + | + | + | - | - | + |
| 123. | <i>Morus laevigata</i> Wall.ex | + | - | + | + | + | - | - | + |
| 124. | <i>Morus nigra</i> L. | + | + | + | + | + | - | - | + |
| 38. Family Myrsinaceae | | | | | | | | | |
| 125. | <i>Myrsine africana</i> L. | + | + | - | - | + | - | - | - |
| 39. Family Myrtaceae | | | | | | | | | |
| 126. | <i>Eucalyptus lanceolatus</i> | + | - | + | + | - | - | - | + |
| 40. Family Nyctaginaceae | | | | | | | | | |
| 127. | <i>Boerhavia diffusa</i> | + | - | + | + | - | - | - | - |
| 41. Family Oleaceae | | | | | | | | | |
| 128. | <i>Olea europaea</i> L. | + | + | + | + | + | - | - | + |
| 42. Family Oxalidaceae | | | | | | | | | |
| 129. | <i>Oxalis corniculata</i> | + | + | + | + | - | - | - | - |
| 43. Family Papilionaceae | | | | | | | | | |
| 130. | <i>Alhagi maurorum</i> L. | + | + | - | - | - | - | - | - |
| 131. | <i>Melilotus officinalis</i> L. | + | + | - | - | - | - | - | - |
| 132. | <i>Pisum sativum</i> L. | + | - | - | - | - | - | + | - |
| 133. | <i>Sophora mollis</i> (Royle) Baker | + | - | + | + | - | | - | - |
| 134. | <i>Trigonella corniculata</i> L. | + | - | - | - | - | + | - | - |
| 135. | <i>Trigonella grandifolia</i> Bung. | + | - | - | - | - | + | - | - |
| 136. | <i>Trifolium repens</i> L. | + | + | - | - | - | + | - | - |
| 44. Family Plantanaceae | | | | | | | | | |
| 137. | <i>Platanus orientalis</i> L. | + | + | + | + | - | - | - | + |
| 45. Family Plantaginaceae | | | | | | | | | |
| 138. | <i>Plantago lanceolata</i> L. | + | - | - | - | - | - | - | - |
| 139. | <i>Plantago major</i> L. | + | - | - | - | - | - | - | - |
| 46. Family Polygonaceae | | | | | | | | | |
| 140. | <i>Polygonum aviculare</i> L. | + | + | - | - | - | - | - | - |
| 141. | <i>Polygonum barbatum</i> L. | + | + | - | - | - | - | - | - |
| 142. | <i>Rumex crispus</i> L. | + | + | - | - | - | + | - | - |
| 143. | <i>Rumex dentatus</i> L. | + | + | - | - | - | + | - | - |
| 144. | <i>Rumex hastatus</i> L. | + | + | - | - | - | + | - | - |
| 47. Family Punicaceae | | | | | | | | | |
| 145. | <i>Punica granatum</i> L. | + | + | - | + | + | - | - | - |
| 48. Family Ranunculaceae | | | | | | | | | |
| 146. | <i>Adonis aestivalis</i> L. | - | - | - | + | - | - | - | - |

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| 147. | <i>Clematis orientalis</i> L. | - | - | - | + | - | - | - | - |
| 148. | <i>Ranunculus muricatus</i> L | + | - | - | - | - | - | - | - |
| 149. | <i>Ranunculus sceleratus</i> L. | + | - | - | - | - | - | - | - |
| 49. Family Rhamnaceae | | | | | | | | | |
| 150. | <i>Sageretia thea</i> (Osbeck) M.C. Johnst. | + | - | - | - | - | - | - | - |
| 151. | <i>Zizyphus jayuba</i> Mill. | + | + | + | + | + | - | - | + |
| 152. | <i>Zizyphus mauritiana</i> Lam. | + | + | - | + | + | - | - | - |
| 153. | <i>Zizyphus nummularia</i> (Burm.f) | + | + | + | + | + | - | - | - |
| 50. Family Robiaceae | | | | | | | | | |
| 154. | <i>Galium triflorum</i> L. | + | - | - | - | - | - | - | - |
| 51. Family Rosaceae | | | | | | | | | |
| 155. | <i>Cotoneaster nummularia</i> Fisch. & C.A. Mey. | - | + | - | + | + | - | - | - |
| 156. | <i>Malus domestica</i> Borkh. | + | - | - | + | + | - | - | - |
| 157. | <i>Prunus armeniaca</i> L. | + | + | - | + | + | - | - | - |
| 158. | <i>Prunus domestica</i> L. | + | + | - | + | + | - | - | - |
| 159. | <i>Prunus persica</i> L. | + | + | - | + | + | - | - | - |
| 160. | <i>Pyrus communis</i> L. | + | + | - | + | + | - | - | - |
| 161. | <i>Pyrus malus</i> L. | + | + | - | + | + | - | - | - |
| 162. | <i>Rosa indica</i> L. | + | + | - | + | - | - | - | - |
| 163. | <i>Rosa moschata</i> | + | - | - | + | - | - | - | - |
| 164. | <i>Robus fruticosus</i> L | + | + | - | + | - | - | - | - |
| 52. Family Saliaceae | | | | | | | | | |
| 165. | <i>Populus alba</i> L. | + | - | - | + | - | - | - | + |
| 166. | <i>Salix acmophylla</i> | + | - | - | + | - | - | - | + |
| 167. | <i>Salix tetrasperma</i> Roxb | + | - | - | + | - | - | - | + |
| 53. Family Salvadoraceae | | | | | | | | | |
| 168. | <i>Salvadora oleoides</i> Decne. | + | + | + | + | - | - | - | + |
| 54. Family Sapindaceae | | | | | | | | | |
| 169. | <i>Dodonaea viscosa</i> (L.) Jacq. | + | + | - | + | - | - | - | + |
| 55. Family Sapotaceae | | | | | | | | | |
| 170. | <i>Monothea buxifolia</i> Falc. | + | + | - | + | - | - | - | - |
| 56. Family Scrophulariaceae | | | | | | | | | |
| 171. | <i>Verbascum thapsus</i> L. | + | + | - | + | - | - | - | - |
| 57. Family Simarubiaceae | | | | | | | | | |
| 172. | <i>Ailanthus altissima</i> (Mill.) Swingle. | + | - | - | + | - | - | - | - |
| 58. Family Solanaceae | | | | | | | | | |
| 173. | <i>Datura metel</i> L. | - | + | - | + | - | - | - | - |
| 174. | <i>Datura stramonium</i> L. | - | + | - | + | - | - | - | - |
| 175. | <i>Solanum nigrum</i> L. | + | + | - | + | - | - | - | - |
| 176. | <i>Solanum tuberosum</i> L. | + | + | - | + | - | - | - | - |
| 177. | <i>Solanum surattense</i> Burm. F. | + | + | - | + | - | - | - | - |
| 178. | <i>Solanum xanthocarpum</i> L. | - | - | - | + | - | - | - | - |

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| 179. | <i>Withania coagulans</i> Stocks . | - | + | - | + | - | - | - | - |
| 180. | <i>Withania somnifera</i> L. | - | + | - | + | - | - | - | - |
| 59. Family Tamaricaceae | | | | | | | | | |
| 181. | <i>Tamarix aphylla</i> L. | + | - | - | + | - | - | - | + |
| 60. Family Thymeliaceae | | | | | | | | | |
| 182. | <i>Daphne oleoides</i> Schreb. | - | + | - | + | - | - | - | - |
| 61. Family Ulmaceae | | | | | | | | | |
| 183. | <i>Celtis eriocarpa</i> Decne. | + | + | + | + | + | - | - | - |
| 62. Family Urticaceae | | | | | | | | | |
| 184. | <i>Urtica dioica</i> L. | + | + | - | + | - | - | - | - |
| 63. Family Verbenaceae | | | | | | | | | |
| 185. | <i>Verbena officinalis</i> L. | + | + | - | + | - | - | - | - |
| 64. Family Violaceae | | | | | | | | | |
| 186. | <i>Viola canescens</i> Wall.ex Roxb. | + | + | - | + | + | - | + | - |
| 65. Family Vitaceae | | | | | | | | | |
| 187. | <i>Vitis vinifera</i> L. | + | + | - | + | + | - | - | - |
| 66. Family Zygophyllaceae | | | | | | | | | |
| 188. | <i>Fagonia indica</i> var. <i>schweinfurthii</i> | + | + | - | - | - | - | - | - |
| 189. | <i>Peganum harmala</i> L. | + | + | - | + | - | - | - | - |

Table 2. Ethnomedicinal uses of Plants Species of Razmak, North Waziristan Agency, Pakistan.

| S.No | Botanical Names | Local Names | Collectors | Part used | Constituents | Medicinal Uses |
|------------------------------|-------------------------------------|--|------------|-----------|--|--|
| A. Pteridophyta | | | | | | |
| 1. Family Adiantaceae | | | | | | |
| 1. | <i>Adiantum capillus-veneris</i> L. | Bar sumbal, Maidenhair Fern, Rocky Fern, | Men | Fronds | Nicotiflorin, Astragalin, isoquercitrin. | Used as demulcent, diuretic and for sore throat. |

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| | | Hansraj | | | | |
| 2. | <i>Adiantum venustum</i> D.Don | Babozae Evergreen ,Maidenhair Fern, sunbal siyah | Men | Fronds | B-sitosterol, stigmasterol oleanane triterpenoids, keto- alcohol, leucopelarg onidin, α -carotene monoepoxide, quercitin glucosides and kaempferol. | The extract of leaves used as diuretic, emetic and expectorant. |
| 2. Family Equisetaceae | | | | | | |
| 3. | <i>Equisetum arvense</i> L. | Bandukay Horsetail Devils' Guts | Men | Shoot | Hexahydrofarnesyl acetone, cis-geranyl acetone, thymol and trans-phytol. Ionone, | The juice take out from shoot is used as anti-acidic diuretic, anti-lice and tonic.It is also used for removing stones from kidney. It is locally used to treat toothache. It is directly used as (Maswak) thrice a day. Its decoction is used for aching teeth. |
| 4. | <i>Equisetum diffusum</i> D.Don. | Nakbel,Spreading Hogweed, Bashkhira | Men | Whole plant | Genkwanin,luteoline ,kaempferol,glucose, adenine,sitosterol,da ucosterol, epoxy,ionone,loliod e,triol. | Whole plants are useful in acidity and dropsy. |
| B. GYMNOSPERMS | | | | | | |
| 3. Family Epherdraceae | | | | | | |
| 5. | <i>Ephedra gerardiana</i> L. | Muwa, Ephedra, Asmania | Men | Shoots | Ephedrine, pseudoephedrine, norephedrine, norpseudoephedrine (cathine), methylephedrine, methylpseudoephedr ine. | The decoction of shoots is used for cough and respiratory disorders. |
| 4. Family Pinaceae | | | | | | |
| 6. | <i>Abies pindrow</i> Royle | Lamanza, Pindrow Fir, Fir | Men | Leaves and bark | Triterpenoids, flavonoids, carbohydrates, fatty acids, pinitol and maltol. | Leaves are used for asthma, catarrh, cough and other pulmonary infections. |
| 7. | <i>Cedrus deodara</i> Roxb. ex Lamb G.Don. | Diyar, Cedar, Deodar | Men | Bark, wood and fruit | Essential Oil | Oil extract used as antiseptic, diaphoretic, diuretic and useful in leprosy, skin diseases, ulcer and fever. Bark is astringent. |
| 8. | <i>Cupressus sempervirens</i> L. | Saro, Italian Cypress, Cypress | Men | Berries and leaves | Terpinolene, alkaloids, flavonoides and saponins | Fruits are astringent and anthelmantic. |
| 9. | <i>Pinus gerardiana</i> Wall. ex Lamb. | Zanghzai, chilgoza pine, Chalhoza | Men/ Childere n | seed | Lignine, alphacellose contents, | Seeds are eaten as tonic. |

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| | | | | | alpha humulene | |
| 10. | <i>Pinus roxburghii</i> Sargent | Chir pine, Chir | Men /Children | Bark, wood and fruit | Caryophyllene and α -humulene as well as monoterpene alcohols terpinen and α -terpineol. | Resin extracted from stem is used as stomachache, stimulant, and as remedy for facial acnes. It's also used as irritant and diuretic. |
| 11. | <i>Pinus wallichiana</i> A.B | Nakhtar, Blue pine, Kial | Men | Wood and leaves | Lignin, selinene, limonene and alphacellulose contents. | Leaves are antiseptic and sedative |
| 12. | <i>Picea smithiana</i> (Wall) Boiss | Khar sarup, West Himalayan Spruce, Saro | Men | Whole plant | Delta-3-carene, limonene, beta pinene, α - pinene, Camphene, Alpha-terpinolene, P-cymene and beta phelledrene. | Oleo resin used for heel cracks and wounds. |
| 13. | <i>Taxus wallichiana</i> Zucc. | Bunya, Yew, Sarw-Turkistani | Men | Bark | Caryophyllene oxide, 1-octanol and hexanoic acid. | Bark is used for fever and relieves muscular pain. |
| 14. | <i>Thuja occidentalis</i> L. | Pankh, Northern White Cedar, Thuja | Men | Leaves | Dextro-pinene, laevo-fenchone, dextro-thujone, pinipicrin and thujin. | Leaves are used for scurvy and insecticide. |

C. Angiosperms

1. Monocotyledonous

5. Family Alliaceae

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|-----|--------------------------|-----------------------|------------|-----------------|---|---|
| 15. | <i>Allium cepa</i> L. | Piaz, Onion, | Men /Women | Bulb and leaves | Acetal, Acetic acid, Alanine, Allicin, Allyl Propyl Disulfide and Arginin. | It is used extensively in cooking as flavoring agent and condiment. The bulb is used as stimulant. Its leaves are used as antiseptic, diuretic, aphrodisiac and expectorant. Its juice is used in the cure of irritation caused by scorpion, sting and tobacco poisoning. |
| 16. | <i>Allium sativum</i> L. | Wozha, Garlic, Lehsan | Men/ Women | Whole plant | Saponins, tannins, sulfurous compounds, prostaglandins, alkaloids, volatile oils and allicin. | Small piece of <i>Allium sativum</i> chewed twice a day to control blood pressure. It is also used as laxative, Digestive and carminative. |

6. Family Arecaceae

| | | | | | | |
|-----|---|---------------------------------------|------------|-----------------|--|---|
| 17. | <i>Arisaema flavum</i> L. | Mangoor wana, Yellow Cobra, Soorganda | Men | Seeds | Triterpenoid 2-hydroxydiptolol. | Seeds are used as aphrodisiac and contain narcotic properties. |
| 18. | <i>Nannorrhops ritchiana</i> . (Griff.) Aitch. | Mazzari, Silver Date Palm, Mazari | Women | Seed and leaves | Carbohydrates, triterpenoid, tannins and flavonides. | Crushed leaves are used as Carminative. Fresh leaves are given to animals as purgative. |
| 19. | <i>Phoenix dactylifera</i> L. | Khajeera, Date Palm, Kajoor | Men /Women | fruits | P-cresyl methyl ether and caryophyllene | Fruit are edible and used for body weakness. |

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| | | | | | oxide. | |
| 7. Family Poaceae | | | | | | |
| 20. | <i>Cymbopogon jwarancusa</i> (Jones) Schult | Sargarey, Khavi grass, Khawi Ghas | Women | Shoots | Trans-Geraniol and α -elemol. | Three gm crushed shoots are boiled in half liter of the water. The decoction thus obtained is given three times a day to treat typhoid fever. Its smell is snake repellent. |
| 8. Family Zingiberaceae | | | | | | |
| 21. | <i>Zingiber officinale</i> Roscoe | Adrak, Ginger | Men / Women | Rhizome | Oxygenated mono- and sesquiterpenes, phenolic compounds; shogaol and gingerol. | Used as brain tonic, neurasthenia, paralysis and for general weakness. |
| 2. Dicotyledons | | | | | | |
| 9. Family Amaranthaceae | | | | | | |
| 22. | <i>Aerva javanica</i> (Burm. f.) Juss. | Sperai, Pillow weed, Tuwaim | Men | Whole plant | Ehyde and ursolic acid. | Relieves headache and rheumatism. |
| 23. | <i>Achyranthes aspera</i> L. | Ghoski/ Rinzak, Sanskrit, Charchita Ashneen | Men | Whole plant | Saponins, oleonic acid, dihydroxy ketones and alkaloids. | The extracts form boiled roots is taken half cup twice a day for expulsion of kidney stone. Leaf paste is useful against bee sting; decoction of fruits is given for toothache and Stomachache. |
| 24. | <i>Amaranthus reteolfleox</i> L. | Astmabayata, Careless weed, Shadab | Women | Root | Caryophyllene oxide, β -cubebene, β -Caeyophyllen and α -copaen. | Roots are used in headache and also as demulcent. Decoction of the root is given as tonic to pregnant women. Also used for the treatment of gonorrhoea and kidney disorders, coetaneous affections and sugar in urine. |
| 25. | <i>Amaranthus viridis</i> L. | Ranzakah/ Banar, Green Amaranth, Jangli Chulai | Women | Whole plant | Squalene, trilinolein, polyprenol and phytol. | Potherb and laxative, A tea spoonful of crushed seeds and leaves are maxed with sugar is taken 4 times a day for curing constipation in children. |
| 10. Family Apiaceae | | | | | | |
| 26. | <i>Coriandrum sativum</i> L. | Dhaniya, Coriander | Women | Leaves and Seeds | Linoleic and furanocoumarins (coriandrine and dihydrocoriandrine). | Seeds are used as carminative, pectoral and sedative. Prescribed in eumatism, neuralgia, bleeding piles. Seeds used as poultice for ulcers and carbuncles. Leaves used as spleen complaint sores, venereal sores and syphilis. |
| 27. | <i>Trachyspermum ammi</i> L. | Sperkay, Alumni, Ajwain | Women | Seeds, and roots | Thymol, monoterpenoids. | Diarrhea. Roots are used as diuretic and carminative. |
| 28. | <i>Torilis arvensis</i> L. | Tarveka, Hedge parsley, Khatti-boti | Women | Seed and root | Beta-Selinene, Guaiene, (+) Spathuleno l, alpha-Guaiene, alpha-Selinene, tetradecanoic acid, 2- pentadecanone, Germacrene and | The seed is anthelmintic and antifungal, antiviral, expectorant and tonic. The juice of the root is used in the treatment of indigestion. |

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| | | | | | Geraniol. | |
| 11. Family Apocynaceae | | | | | | |
| 29. | <i>Calotropis procera</i> (Wight). | Spalmaka, Aak | Women | Whole plant | Alkaloids, terpenoids, saponins, tannins and cardiac glycosides. | Crushed leaves are used as bandages to heal rheumatic joints and swelling. Milky latex is used to extract broken thorn and spines from body parts. |
| 12. Family Asteraceae | | | | | | |
| 30. | <i>Artemista maritoma</i> L | Mugworta, Seriphidium, Afsanteen | Men | Whole plant | Sabinene, β - pinene, ketone, caryophyllene. | It acts as a tonic and is used in anti wormal and stomachic infusion |
| 31. | <i>Calendula officinalis</i> L. | Ashrafi Gul, Garden Marigold, Gul-Ashrafi | Women | Whole plant | Triterpenoids, flavonoids, coumarines, quinones, volatile oil, carotenoids and amino acids. | Used as burn, cut, bruises, ulcers, open wounds and sunburn. Flower used as amenorrhea, cholera, toothache and tuberculosis. |
| 32. | <i>Cirsium arvense</i> L. | Maswaki, Canada thistle, Maswak | Men | Root | Ciryneol C, Scopoletin, Pectolinarigenin-7-O-glucopyranoside, Acacetin and 6, 7 Dimethoxycoumarin | The root is use tonic, diuretic and astringent. It has been chwed as a remedy for toothache. |
| 33. | <i>Helianthus annuus</i> L. | Zindagola, Sunflower, Surajmaki | .Men | Seeds and leaves | 4-trihydroxyicos, docosanamide, tetracosanamide, Glucopyranosyloxy and acetone. | The seeds have diuretic and expectorant properties and have been employed with success in the treatment of bronchial, laryngeal and pulmonary affections, coughs and colds, also in whooping cough. |
| 13. Family Berberidaceae | | | | | | |
| 34. | <i>Berberis lycium</i> Royle | Kowaray, Berberry, Kashmal | Men | Whole plant | 2-azinobis, 3-ethyl-benzothiazoline and 6-sulfonic acid. | Root are used as intestinal colic and for eye diseases, bark powder is used as astringent, healing internal wounds and burning. |
| 14. Family Brassicaceae | | | | | | |
| 35. | <i>Brassica campestris</i> L. | Shershum, California rape, Sarson | Men /Women | Leaves, flowers and seeds. | Palmitic, linoleic and linolenic acids. | Seeds are used in exacerbations, cancer and tumors. Roots are emollient and diuretic, juice used in chronic cough and bronchial catarrh. |
| 36. | <i>Lepidium draba</i> L. | Bashkey, Peppergrass, Tudri | Women | Whole Plant | Glucocerucin | Used in anemia, cancer prevention. |
| 37. | <i>Raphanus sativa</i> L. | Mooli, Radish, Mooli | Women | Whole Plant | Sinapinic acid, esters and flavonoids. | Used as an alternative treatment for a variety of ailments including cancer, AIDS and immune disorders. |
| 15. Family Buxaceae | | | | | | |
| 38. | <i>Buxus wallichiana</i> Baill. | Chongarii, Climbing palas, Makoh | Men | Leave and barks | Steroids, alkaloids, flavonoids | Major constituents of teas as gastrointestinal tract. |
| 16. Family Boraginaceae | | | | | | |
| 39. | <i>Heliotropium strigosum</i> | Kharpoonray, | Men | Whole | Alkaloids and | Used for treating diseases of the |

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| | Wild. | Camel Thorn, Sufeed Bangrha | | plant | flavonoids. | gastrointestinal tract (GIT) and skin |
| 40. | <i>Incarvillea emodi</i> Lindl. | Khurry, Incavillea, Erlai | Men | Whole plant | Iridoid glucosides, plantarenal, boschnalosite and plantarenalosite. | Used for treatment of hepatitis, diarrhea and infectious diseases |
| 17. Family Caesalpinaceae | | | | | | |
| 41. | <i>Bahunia variegata</i> L. | Kchnar, White Orchid Tree, <i>Kachnar</i> | Men | Flowers | Terpenoids, flavonoids, tannins, saponins, steroids and cardiac glycosides. | The flowers are used to cure diarrhea |
| 18. Family Calastraceae | | | | | | |
| 42. | <i>Maytenus royleana</i> (Wall.ex.M.A) | Sagharzae, Maytenus Plant, jawansa | Men | Leaves | Triterpene ficusonic acid. | Leg pain, Joint diseases |
| 19. Family Cannabiaceae | | | | | | |
| 43. | <i>Cannabis sativa</i> L. | Bangey, Hashish, Bhang | Women | Whole plant | Mono- and sesquiterpenes, sugars, Hydrocarbons, steroids, flavonoids, nitrogenous compounds and amino acids. | used to reduce nausea and vomiting during chemotherapy, to improve appetite in people with HIV/AIDS, and to treat chronic pain and muscle spasms |
| 20. Family Capparidaceae | | | | | | |
| 44. | <i>Capparis decidua</i> L. | Kirrah Caper- Bush, Kabar | Men | Whole plant | Sterols , alkaloids , isothiocy anate glucoside . | Crushed shoots and fruits mixed in mustard oil are applied once a day for healing swelling. Fruits are laxative. |
| 21. Family Chenopodiaceae | | | | | | |
| 45. | <i>Chenopodium album</i> L. | Sharakeey/ Sarmay, Pigweed, Kharfeia | Women | Whole plant | Carbohydrate, saponins, vitamins and minerals. | Shoots are soaked in a glass of cold water for 2-4 hour and filtered to get extract, which is drunk twice a day to remove kidney pain. |
| 46. | <i>Chenopodium ambrosioides</i> L. | Tarveka, Skey bootay, MexicanT ea, Khatti-boti | Women | Whole plant | A-terpinene, α - terpinyl acetate, p- cymene, tyramine and patuletin. | <i>Chenopodium</i> oil is used to kill roundworms and hookworms in the intestine. |
| 22. Family Convolvulaceae | | | | | | |
| 47. | <i>Convolvulus arvensis</i> L. | Parwatay, Chardvel, Lehli, wanvehri, baily, krari | Women | Leaves | Palmitic, stearic, gentisic, p- coumaric, p- hydroxybenzoic, p- hydroxyphenylaceti c, ferulic, vannilic and salicylic acids. | Two tea spoonfull decoctions from leaves are taken on empty stomach to regulate the menstrual flow. The poultice from leaves serves as antiseptic. |
| 23. Family Cucurbitaceae | | | | | | |
| 48. | <i>Citrullus colocynthis</i> Schrud. | Ghata maraghone, Bitter gourd, Hanzal, Indrain | Men | Fruits, leaves | Carbohydrates, alkaloids, glycosides, triterpenoids, | The powdered fruits are mixed with natural honey to prepare tharkha Hallwa. Two or 3 teaspoonful of this recipe is taken three times a day for |

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| | | | | | phenolics, tannins, saponins, and flavones. | curing stomachache and expulsion of round worms. |
| 24. Family Euphorbiaceae | | | | | | |
| 49. | <i>Ricinus communis</i> L. | Randan, Castor oil plant, Arand | Men | Leaves and Seeds | Quercetin, gallic acid, rutin, tannins, gentistic acid, an alkaloid, ricinine ricinus Agglutinin and Ricin A, B & C. | Seeds are eaten to induce vomiting, Leg pain, Back pain and skin infection. |
| 25. Family Fagaceae | | | | | | |
| 50. | <i>Quercus baloot</i> Griffith. | Spera serhey, Common Oak, Shah Balut | Men | Seed | Carbohydrates, tannins, alkaloids, saponins, proteins and flavonoids | Seeds are edible used as diuretic, astringent and for sore throat |
| 51. | <i>Quercus dilata</i> Lindl ex Royle | Seray, Royal Oak, Shah Balut. | Men | Whole plant | Proteins and flavonoids, Carbohydrates, tannins and alkaloid. | Gastrointestinal problems, Tonic and bark as Anthelmintic. |
| 26. Family Fumariaceae | | | | | | |
| 52. | <i>Fumaria indica</i> (Hausk) Pugsly | Papra, Indian Fumitory, Pitpapra | Men | Whole plant | Triterpenoid and flavonoids | Blood purifier, antipyretic and potheb |
| 27. Family Hippocastanaceae | | | | | | |
| 53. | <i>Aesculus indica</i> Wall ex Camb | Jawaz, Indian horse chestnut, Kanor | Men | Seeds | Triterpenoid and saponins | Chest diseases |
| 28. Family Juglandaceae | | | | | | |
| 54. | <i>Ajuga regia</i> Waller Benth | Soi beetaie, Aaron's-rod, Ma Almalook | Men | Whole plant | Cerotic acid, Ceryl alcohol, oleic acid, palmitic acid, linoleic acid, phenolic acids, alkaloids, triterpenoids, neutral bitter components, and diterpenoids. | Useful in arresting hemorrhages and is employed in coughs and spitting of blood in incipient consumption and also in some billiated disorders. |
| 55. | <i>Juglans regia</i> L. | Mattak/Ghoze Walnut, Akhroot | Men | Whole plant | Linoleic acid, oleic, linolenic and palmitic acids. | Bark and leaves are used for cleaning teeth, sore throat and for intestinal worm, fruits are, carminative and thermogenic. |
| 56. | <i>Tectona grandis</i> L. | Tik wana, Teak wood Plant, Sagwan | Men | Whole plant | Carbohydrate, tannins, alkaloids, saponins, proteins and flavonoids. | Used for inflammatory swellings, anemia, dysentery, skin itching and Wood is good for biliousness, liver related troubles, headache and burning sensation pain. |
| 29. Family Lamiaceae | | | | | | |
| 57. | <i>Marrubium vulgare</i> L. | Mako wana, White Horehound, Makoh | Men | Whole plant | Vulgarcoside, 3-hydroxyapigenin and cytokine. | Used in lungs troubles and cough. |
| 58. | <i>Mentha arvensis</i> L. | Pudina, Field Mint, Corn Mint, Podina | Men | Leaves | Menthol, menthone, piperitenone oxide and carvone. | Used to treat flatulence, digestion problems, gallbladder problems and coughs |

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| 59. | <i>Mentha longifolia</i> L. | Velanay, Horse Mint, Jungali Podina | Men | Whole plant | Menthol, menthone, piperitenone oxide and carvone. | Dried leaves powder is used to cure dysentery and diarrhea. |
| 60. | <i>Mentha spicata</i> L. | Podina, Garden mint | Women | Leaves | Menthol, menthone, piperitenone oxide and carvone. | It is used as salad to treat gastric problems and as carminative. |
| 61. | <i>Nepeta hindostana</i> Roth.Haines | Badrag boya, Badranj Boya | Men | Whole plant | Hydrocarbons, farnesene and ageratochromene. | It is used to treat various cardiovascular ailments such as cardiac thrombosis, angina pectoris, cardiac weakness and trachycardia. |
| 62. | <i>Thymus serpyllum</i> L | Marveziseae beeta, Conehead thyme. | Men | Whole plant | 27-ketotriacontanol and 3- ketopentatriacontan oic acid, 3 β - hydroxyolean-12- en-28-oic acid dihydrouronic acid and 3-O- β -D- glucopyranosyl- sitosterol. | Leaves are used as stomachic, stimulaant, carminative, for cooling purposes and antispasmodic. Leaves used as for tea preparation. Fruit and seeds used for stomach stimulant, stomach disorders, gastric problems and is digestive. |
| 63. | <i>Ajuga bracteosa</i> Wall. ex Benth | Soi beetaie, <i>Ajuga reptans</i> , Sultani booti | Men | Whole plant | bitter arabinose, Phenolic components, cerotic acid, D-glucoside, anthocynidin- glucosides and palmitic acid along with glucosidic constituents, | It is used in Diarrhea; Wound healing, Diabetes and Malaria. |
| 64. | <i>Ballota pseudodictamnus</i> Benth. | Kastoraie, Bastard dittanie, Ballota | Men | Whole plant | flavonoids | It is used in Malaria and Diabetes. |
| 30. Family Malvaceae | | | | | | |
| 65. | <i>Malva neglecta</i> Wallr | Teekalaye, Cheese plant, Mallow | Men | Leaves and Flower s | Alkaloids, flavonoids, cardiac glycosides, triterpenes, phlobatanins, tannins, saponins and steroids. | Leaves are used as antispasmodic. |
| 66. | <i>Malva parviflora</i> L. | Pachkay, Cheese weed, Mallow | Men | Leaves | Sterols, terpenes, flavonoids, tannins and polyphenolic compounds beside the presence of anthocyanines and anthocyanidene | Leaf decoctions are used as antispasmodic. Washed roots are dried and powdered. Two gm powder is mixed in butter is taken after dinner as sex tonic. It is also used as laxative. |
| 31. Family Meliaceae | | | | | | |
| 67. | <i>Melia azedarach</i> L. | Bankarah, China berry, Bakain | Men | Whole plant | Melianoninol, melianol, melianone, meliandiol, vanillin and vanillic acid. | Bark is used as cathartic, emetic and vermifuge. Fruit powder is used for liver complaints, night It is used for blindness, vomiting in fever and worm. Leaves are used as gastric, antiseptic and digestive. |

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| 68. | <i>Azadirachta indica</i> ADr. Juss. | Neem, Neem tree | Men | Whole plant | Hydrocarbons, phenolic compounds, terpenoids, alkaloids and glycosides. | Fruit powder is used for night blindness, liver complaints, worm and vomiting in fever. |
| 32. Family Mimosaceae | | | | | | |
| 69. | <i>Accacia modesta</i> Wall. | Palosa, Acacia, Babool | Men | Whole plant | Tannin, saponins, flavonoids and carbohydrate. | Gastrointestinal problems, Cardiovascular, Diabetes, Headache and Asthma. |
| 33. Family Moraceae | | | | | | |
| 70. | <i>Ficus carica</i> L. | Inzeer, Fig, Angeer | Men / Women | Whole plant | Phenolics, organic acids and volatile compounds. | Fruit edible, Six mature fruits are eaten twice a day to treat small pox. Few ripened fruits are crushed in a glass of curd to get a recipe which is called anger sherbets (syrup). It is given thrice a day to treat constipation. Unripe fruit when eaten because sensation and burning of the tongue. To counteract it, leaves of the same plants are rubbed directly on the tongue. |
| 71. | <i>Morus alba</i> L. | Speen toot, White mulberry, Toot | Men / Children | Whole plant | Flavanoid | Fruit are eaten as anti cough. |
| 72. | <i>Morus nigra</i> L. | Toor toot, Black Mulberry, Shah toot | Men / Children | Whole plant | Stilbenoid oxyresveratrol, arylbenzofuran moracin, four isoprenylated flavonoids and tritepenes. | Fruits are edible and blood enriches. |
| 34. Family Myrsinaceae | | | | | | |
| 73. | <i>Myrsine africana</i> L. | Manrgoaya , Cape myrtle, Zarnab | Men / Women | Fruit and Shoot | Myrsinoside, glucopyranoside, myrsinoside trihydroxyolean & arabinopyranoside | The powder of fruit is given to expel abdominal worms. |
| 35. Family Oleaceae | | | | | | |
| 74. | <i>Olea europaea</i> L. | Shawan, Ziatoon | Men / Women | Whole plant | Iridoids, flavonoids, flavanones, secoiridoids, triterpenes, biophenols, isochromans and benzoic acid derivatives. | The leaves are used in common colds, sore throat and antiseptic, diuretic and as tonic. Fruit are used as anti-diabetic and its juices as refrigerant. Oil extracted from seeds is used as edible, used for body pain and laxative. |
| 36. Family Oxalidaceae | | | | | | |
| 75. | <i>Oxalis corniculata</i> L. | Therwakay, Wood Sorrel, khatta sag | Men / Women | Whole plant | Flavonoids, alkaloids, tannins and phenols. | Extracted juice is used for stomach pain and fresh leaves used to stop bleeding from wounds, leaves also used as refrigerant and antispasmodic. |
| 37. Family Papilionaceae | | | | | | |
| 76. | <i>Alhagi maurorum</i> L. | Thandha, Camelthorn, Turan | Men / Women | Whole plant | Carbohydrates, terpine, sterols, | The exudation from leaves and branches is used once a day as blood |

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| | | bjbin | | | vitamins and alkoliodes. | purifier and as expectorant; twenty gm dried powdered roots are taken once a day for two weeks with water for relieving kidney troubles |
| 77. | <i>Melitotus officinalis</i> L. | Melata, Melilot, Dulal labha | Men / Women | Whole plant | Hexahydrofarnesyl acetone, eudesmol and globulol | Used in treatments of wounds, inflammation, swollen joints, stomach ulcers, twisted veins and hemorrhoids, phlebitis and thrombosis |
| 78. | <i>Trifolium repens</i> L. | Shawtala, white clover, Seh Shakh. | Men / Women | Leaves and flower | Hexahydrofarnesyl acetone, 4-vinylguaiaicol, phenylethanol, linalool and benzaldehyde. | Flower tea used for gout and rheumatism. Leaf extract is used as febrifuge. |
| 38. Family Platanaceae | | | | | | |
| 79. | <i>Platanus orientalis</i> L. | Chinar, Oriental Plane, Chinar | Men / Women | Whole plant | Hydroalcoholic and polyphenolic compounds. | The bark used in toothache, diarrhea, dysentery and rheumatism. The leaves grinded into powder used as ophthalmic. |
| 39. Family Polygonaceae | | | | | | |
| 80. | <i>Polygonum aviculare</i> L. | Tess sahareena, Knotgrass Atees, atis shirin, | Men / Women | Whole plant | quercetin and viscoazulone | Used in wound healing, blood pressure and dysentery |
| 81. | <i>Polygonum barbatum</i> L. | Palpoluk, Blue grass Poa grass, Nela gass | Women | Leaves | Itosterone, viscozulenic acid and acetophenone, flavanones. | Leaves are used to relieve colic pain, bleeding, leaves juice used for headache, toothache, liver enlargement and gastric ulcer. |
| 82. | <i>Rumex crispus</i> L. | Sag, Curly dock, Dhiddan | Women | Whole plant | Oxymethyl-anthraquinone, chrysophanic acid. Oxalic acid, rumicin, quercitrin and quercetin. | Skin disease and anti-cancer. |
| 83. | <i>Rumex dentatus</i> L. | Jungle sag, Español, Jangali palak | Men / Women | Leaves | Flavonoids, anthraquinones and chromones | Use as vegetable and is recommended once a week to combat cardiac problems. |
| 84. | <i>Rumex hastatus</i> L. | Tora sag, Flate Sedge, Khatti Buti | Men / Women | Leaves | Thujene, limonene, fenchon, estragole, anethole and Fatty acid. | From the plant juice extracted used as astringent and in the treatment of bloody dysentery. The fresh tuber is chewed to relieve aches in the throat. |
| 40. Family Punicaceae | | | | | | |
| 85. | <i>Punica granatum</i> L. | Walangahey, Pomegranate, Anaar | Men | Whole plant | Polyphenol, tannins and flavonoids such as; illogic acid, gallic acids, punicalin, and punicalagin. | Fruit is used as remedy for severe diarrhea and dysentery. The juice extracted from fruits is used as refrigerant. The peel is cardiac and stomachic. Leaves extracts used in skin diseases and dysentery. |
| 41. Family Rhamnaceae | | | | | | |
| 86. | <i>Ziziphus jayuba</i> Mill. | Markhanai, Chinese Date Beer, | Men / Children | Whole plant | Alkaloids, flavonoids, terpenoids, saponin and phenolic compounds. | Bark is used in diarrhea. Leaves used as burnt and smoke inhaled for coughs and colds. Leaves are also used in diabetes. Fruits are used as blood purifier and carminative. Powdered root is used for wound. |

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| 87. | <i>Ziziphus mauritiana</i> Lam. | Bera, Chinesee apple, Jujube | Men / Children | Whole plant | Glycosides, tannins, phenols and saponins. | Used as food. Decoctions of the leaves are used as hair tonic wash. Dried fruits are used for diarrhea and dysentery. |
| 88. | <i>Ziziphus nummularia</i> (Burm.f) | Karkarana, Wild jujube, Bair | Men / Women | Whole plant | alkaloids, flavonoids, Terpenoids, saponin and phenolic compounds. | The decoction of root used in jaundice. Fruit is edible and used for gas trouble and acidity. Hedge plant. Powder of fruits and leaves are used to treat constipation. |
| 42. Family Rosaceae | | | | | | |
| 89. | <i>Cotoneaster nummularia</i> Fisch. & C.A. Mey. | Sherawa, Coinwort Cotoneaster, Umbundu | Men / Women | Fruit, bark, stem | Glycosides, cryptochlorogenic acid, flavonol, neochlorogenic acid and chlorogenic acid. | It is used in Diarrhea and Gastric problems. Fruits are used as Tonic. |
| 90. | <i>Prunus armeniaca</i> L. | Mandata, Apricot, Zard alu | Men / Women | Fruits | Alkaloids, flavonoids and fatty acids. | The fruits are eaten as Tonic and in Respiratory diseases. |
| 91. | <i>Prunus domestica</i> L. | Alucha, European plum, Aalu bukhar | Men / Women | Fruit | anthocyanins, flavanols and total phenols | It helps to prevent many diseases due to pack of antioxidants and phytonutrients. |
| 92. | <i>Pyrus communis</i> L. | Nashpati, Wild Pear, Nashpate | Men / Women | Fruits | Fatty acids, Pectic polysaccharides, cellulose, hemicelluloses and amino acid. | The fruit is sedative, astringent and febrifuge. |
| 93. | <i>Pyrus malus</i> L. | Marnah, Apple, Saeeb | Men / Women | Fruit | Lactic acid, Bactiphen , methylparaben , ethylparaben , propylparaben and butylparaben | Fruits are eaten for the body to digest and able to correct over-acidity of the stomach. |
| 94. | <i>Prunus persica</i> L. | Shaftaloo, Peaches, Saftaloo | Men / Women | Fruit | Phenolic compounds. | The dried and powdered leaves are used for wounds and to help heal sores. |
| 95. | <i>Rosa indica</i> L. | Soor gulab, cyme rose, Surah gulab | Men / Women | Flower | phenolics, alkaloids, essential oils and terpenes | Petals are used medicinally for the preparation of an infusion and a confection, perfume and Gastro infections. |
| 96. | <i>Rubus fruticosus</i> L | Karwara ,Blackberry, Haamil | Men | Fruit and leaves | Steroids, Vitamins and lipids in seed oil. Flavonoids, terpenes, glycosides, acids and tannins. | Leaves are used in the treatment of cough, diarrhea and as diuretic. Fresh fruits are eaten for sore throat and colds. |
| 43. Family Salvadoraceae | | | | | | |
| 97. | <i>Salvadora oleoides</i> Decne. | Pleman, Paloo | Men | Whole plant | Beta-sitosterol, flavonoids, dihydroisocoumarin | Roots and branches are used for making miswak which is used for cleaning teeth. Root bark is used as |

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| | | | | | and terpenoids. | vesicant. |
| 44. Family Sapindaceae | | | | | | |
| 98. | <i>Dodonaea viscosa</i> (L.) Jacq. | Ghoraskai, Hop bush, Sanatha | Men / Women | Leaves and bark | Acid resins, gum, albumen, tannin, ash, carbohydrates, flavonoids, fixed oil, proteins, amino acids, saponins, steroids sterols and tannins. | Leaves are used in burns, swellings and wounds, also chewed as stimulant; the bark is applied as astringent. |
| 45. Family Sapotaceae | | | | | | |
| 99. | <i>Monotheca buxifolia</i> Falc. | Gurgura, Monotica, Gur gura | Men / Women/ Children | Fruit and leaves | Hexane, ethyl acetate and butanol. | Fruit are used as blood purifier. |
| 46. Family Scrophulariaceae | | | | | | |
| 100. | <i>Verbascum thapsus</i> L. | Kharghawag, Great mullein, Songar mullein | Men / Women | Leaf, flower, seeds | Saponins, triterpene and saikogenin | Locally the plant is used for diarrhea and dysentery of cattle. The plant also used as demulcent, emollient, stimulant and vermifuge. |
| 47. Family Solanaceae | | | | | | |
| 101. | <i>Datura metel</i> L. | Barmaka, Thorn Apple, Datura | Men / Women | Whole plant | Quercetin, Sitosterol and stigmasterol | Seeds and roots are used in skin diseases. Juices of leaves are used in earache. The stem is used as antidotal for snake bites. |
| 102. | <i>Datura stramonium</i> L. | Tora torii, Stinkweed, Jare booti | Men / Women | Whole plant | Alkaloids, tannins, saponins and cardiac glycosides | Leaves and seeds are smoked for their narcotic action. The extract of flower is useful for earache. |
| 103. | <i>Solanum nigrum</i> L. | Kozabaye, Black Nightshade, Makho | Men / Women | Whole plant | Alkaloids, saponins, tannins and flavonoides | It is used usually to treat different ailments such as fever, pain, inflammation and enteric diseases. |
| 104. | <i>Solanum surattense</i> Burm. F | Wara maraghone, Sanskrit, Katai khurd | Men / Women | Whole plant | Alkaloids, proteins, carbohydrates, resins, Steroid, saponins, starch, tannin, triterpenoids, flavonoids and glycosides. | Crushed leaves are made bandaged over the broken organs. A tea spoonful of powdered drug is taken thrice a day with honey to treat cough. Boiled fruits mixed with sugar are used to prepare jam which is used as health tonic and de worming agent. Seeds are smoked to treat toothache. |
| 105. | <i>Withania coagulans</i> Stocks . | Marwandai, Vegetable rennet, Panir/ Kuti lana/ Khumazra | Men | Whole plant | Alkaloids and steroidal compounds. | Used for intestinal pain and typhoid fever. A paste prepared by mixing powdered roots with oil is spread on its leaves and used as bandages on swollen joints to treat rheumatism. Sometimes, the leaves are directly tied over the affected parts to relieve pain. |
| 106. | <i>Withania somnifera</i> L. | Shafianga, Winter cherry, Ashwaganda | Men | Whole plant | Steroids, Diosgenin, cholesterol, Stigmasterol, sitosterol, alkaloids, steroidal lactones, tropine & cuscohygrin. | Treat rheumatism, sometime the leaves are directly tied over and effected parts to relieve pain. |
| 48. Family Thymeliaceae | | | | | | |

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| 107. | <i>Daphne oleoides</i> Schreb. | Laighonai, Daphe plant, Artemisia | Men | Root, Fruit | Coumarins, daphnane diterpenoids and lignoids. | Edible, gonorrhoea and anthelmintic |
| 49. Family Ulmaceae | | | | | | |
| 108. | <i>Celtis australis</i> L. | Tagha, Hackberry | Men | Wood, Leaves and Fruit | Triterpenoids, steroid ,apigenin, quercetin and glucoside | A piece of wood is tied to arms to protect from evil look (Nazar Bad). Fruits are edible and are considered as sacred plant. |
| 50. Family Urticaceae | | | | | | |
| 109. | <i>Urtica dioica</i> L. | Seeznakiy, Nettle, Bichubu | Men / Women | Shoot s | Amines, serotonin, histamine Carboxylic acid and Carotenoids. | Leaves are used as vegetable, supposed to reduce blood sugar. The aerial parts used as herbal tea improve the function of liver, intestine and kidney. It also causes skin irritation. |
| 51. Family Verbenaceae | | | | | | |
| 110. | <i>Verbena officinalis</i> L. | Karenta, vervain, Kabra | Men / Women | Root and leaves | Oleanolic acid,ursolic acid, β -sitosterol, 3- epioleanolic acid and 3-epiursolic acid . | Roots are used to cure scorpion stings and snake bites and leaves are tonic and febrifuge. |
| 52. Family Violaceae | | | | | | |
| 111. | <i>Viola canescens</i> Wall.ex Roxb. | Benafsha, Sweet violet, Banafsha | Men / Women | Whol e plant | Alkaloid, viola quercitrin, methyl salicylate and saponins. | The plant is used as antipyretic, demulcent, diaphoretic, refrigerant and anti-cancer. The juice extract from flowers used in eye diseases. |
| 53. Family Vitaceae | | | | | | |
| 112. | <i>Vitis vinifera</i> L. | Kwaar, Wilde druif, Angoor, Kishmish, | Men / Women | Leave s and fruit | Resveratrol, ϵ - viniferins, balanocarpol, and balanocarpol glycoside. | Leaves are used in mouth sores, fruits are used as diuretic, used in small pox treatment and as tonic. |
| 54. Family Zygophyllaceae | | | | | | |
| 113. | <i>Fagonia indica</i> var. <i>schweinfurthii</i> | Spelagzay, Khorasan thorn, Dhamiaan Kanda | Women | Whol e plant | Glycosides, Carbohydrates, flavonoid, saponins, steroids, alkaloids, amino acids, Sulphates, | It is used by the local hakims (herbalist) for curing abdominal pain and gastric troubles. Twigs and leaves crushed in water are drunk once a day to combat gastric trouble. It is also wormicidal. |
| 114. | <i>Peganum harmala</i> L | Sponda,Spilanai, Syrain Rue, Wild Rue, Ispand, Aspand | Women / Children | Seeds and leaves | Phenols, alkaloids, proteins, Zn and flavonoids. | Eye disorders and to increase the column of breast milk production. About 40 gm. crushed seeds are mixed with a cup of honey. A tea spoonful is taken once a day to treat fever, colic pain and for de worming tape worms. The powdered seeds mixed with mustard oil are rubbed on hairs once a day as antlike agent. |

REFERENCES

- Ajaib . M., Z.U Khan, N .Khan and M. Wahab. 2010. Ethnobotanical studies on useful shrubs of District Kotli, Azad Jammu and Kashmir, Pakistan. *Pak J Bot.*, 42(3):1407-1415.
- Ali, S.I. and M. Qaiser (Eds). 1995-2015. Flora of Pakistan. Department of Botany, University of Karachi.
- Ali, S.I. and M. Qaiser. 1986. A phytogeographical Analysis of Phanerogams of Pakistan and Kashmir. *Proc. of Royle Soc. Edinburgh.*, 89B: 89-101.
- Arshad.M., Nisar M.F, Majeed.A, Ismail.S. and Ahmad.M. 2011. Ethnomedicinal flora in district Sialkot, Punjab, Pakistan. *Middle-East J. Sci. Res.*, 9: 209-214.
- Attullah., S. M. Wazir. and A. Farooq. 2010. Ethnobotanical survey of plants of Kurram River beds of District Bannu, Pakistan. *Pak. J. Pl. Sci.*, 16 (1): 25-18.
- Badshah, L., F. Hussain and Z.Mohammad. 1996. Floristic and Ethnoecological studies on some plants of Pirghar Hills, S. Waziristan, and Pakistan. *Pak. J. Pl. Sci.*, 2(2): 167-177.
- Badshah, L., F. Hussain, G. Dastagir and T. Burni. 2006. Ethnobotany of fuel wood plants of Ladha, South Waziristan, Pakistan. *Pak. J. Pl. Sci.*, 12(2): 193-201.
- Badshah, L., M. Ibrar and F. Hussain. 2010. An ethnobotanical study on the usage of wild medicinal herbs from Malana hills, Parachinar, Kurram Valley. *J. Biol.Biotech.*, 7 (3): 267-271.
- Dawood, M., S.M.Wazir, R.U.Khan, S.U. khan, A.Khan, I.Ullah. and A. khattak. 2013.Ethnotaxonomical study of Gymnosperms of Razmak North Waziristan Agency. *Can J App Sci.*, 3(3): 459-472.
- Hassan, H.U., M.Waheed, A.Nisar, T.Akash, K.Ikramullah, A.Naveed and S. Jan. 2015. Indigenous uses of the plants of Malakand valley, district (Lower), KPK, Pakistan. *Pak. J. Weed Sci. Res.*, 21(1): 83-99.
- Hazrat, A., J. Shah, S. Ahmad, M. Nisar, A. K. Jan and Sikandar. 2010. Medicinal plants of Ushera valley, Dir, KPK, Pakistan. *Pak. J. Bot.*, 42 (1): 31-34.
- Hussain, F. 1989. Field and Laboratory Manual of Plant Ecology. UGC. Islamabad.
- Hussain, F., L. Badshah and G. Dastagir. 2006. Folk medicinal uses of some medicinal plants of South Waziristan, Pakistan. *Pak. J. Pl. Sci.*, 12(12): 9-27.
- Hussain.W., J.Hussain, R.Ali, S.Hussain, M.A.Khan, I.Khan, Z.K.Shinwari, W.A.Lopes and I.A.Naseimento.2012.Phytomedicinal studies of Kurram Agency in the Federally Administered Tribal Area (FATA), Pakistan. *Journal of Applied Pharmaceutical Science.*, 2 (10): 081- 085.
- Ilyas, M., R .Qureshi, N.Akhtar, M.Munir and Z.U.Haq .2015.Vegetation analysis of Kabal valley, district Swat, Pakistan. *Pak. J. Bot.*, 47(SI): 77-86.
- Ishtiaq, M., W. Hanif, M. A. Khan, A. Ashraf and A. M. Butt. 2007. An ethnomedicinal survey and documentation of important medicinal folklore food phytonims of flora of Samahni valley, (Azad Kashmir) Pakistan. *Pak. J. Biol. Sci.*, 10 (13): 2241-2256.
- Khan, N., M.Ahmed, A.Ahmed, S.S.Shaukat, M.Wahab, M.Ajaib, M.F.Siddiqui and M.Nasir. 2011. Important medicinal plants of Chitral Gol National Park (CGNP) Pakistan. *Pak. J.Bot.*, 43(2): 797-809.

- Martin, G.J. 2001. Ethnobiology and Ethnoecology. *Encyclopedia Biodiversity.*, 2: 609–621.
- Nasir, E. and S.I Ali .1971-1995. Flora of Pakistan department of Botany, Karachi University, Karachi. *Pak. Agric. Res. Council, Islamabad:* 1-190.
- Qaisar, M., S.Farooq, S.N Gilani, A.W .Wasim, M .Kakar, S.W.A. Shah and A.Rauf.2013. Ethnobotanical Survey of Medicinal Plants Used in Wazir and Daur Tribes of North Waziristan. *Pakistan. Global Veterinarian.*, 11 (3): 285-292.
- Qureshi, S. J., M. A. Khan and M. Ahmad. 2008. A survey of useful medicinal plants of Abbottabad in Northern Pakistan. *Rakia J. Sci.*, 6 (4):39-51.
- Raunkiær, C. 1934. The life forms of plants and statistical plants geography .Clarendon Press, Oxford, UK.
- Sara, V., T.Franca and F. Gelsomela. 2009. Traditional uses of medicinal plants in Invallestio (Italy). *J. Ethnopharmacol.*, 121: 106-116.
- Sawsan.A.S.O. and M.H.Dawud and Al-Eisaw.2015.Ethnobotanical survey of the medicinal plants in the central mountains (North-South) in Jordan. *Journal of Biodiversity and Environmental Sciences (JBES).*, 6(3): 381-400.
- Shah, S.M. and F.Hussain. 2012. Ethnomedicinal plant wealth of Mastuj valley Hindukush range, district Chitral, Pakistan. *Journal of Medicinal Plants Research.*, 6 (26):4328-4337.
- Shinwari, Z.K.2010. Medicinal plants research in Pakistan. *Journal of Medicinal Plants Research.*, 4(3): 161-176.
- Shosan, L.O., O.O. Fewibe, A.A.Ajiboye, T.A.Abeegunrin and D.A.Agboola. 2014. Ethnobotanical survey of medicinal plants used in curing some diseases infants in Abeokuta, Nigeria. *American journal of plant science.*, 5: 3258-3268.
- Taj, S., S. M. Wazir, M. Subhan, M. Hassan, S. U. Khan and M. Kamal. 2009. Some of the ethnobotanically important plants of Godi khel & its outskirts hilly areas, District Karak, Pakistan. *Pak. J. Pl. Sci.*, 15 (1): 39-43.
- Ullah .A., A.Rashid and S.N. Parveen. 2015. Medicinal Plants uses in the isolated region of Bimburet, Kalash valley, District Chitral, Pakistan. *Pakistan Journal of Weed Science Research.* 21(1): 83-99.
- Wazir, A. R. 2008. Synecological study of coniferous forest of Shawal in North Waziristan Agency. *Pakistan Journal Forestry.*, 58(2): 94-100.
- Wazir, S. M., A. A. Dasti and J. Shah. 2004. Common medicinal plants of Chapursan Valley, Gojalli, Gilgit Pakistan. *J. Res. Sci.*, 15 (1): 41-43.
- Wazir, S. M., S. Saima, A. A. Dasti and M. Subhan. 2007. Ethnobotanical importance of Salt range species of District Karak Pakistan. *Pak. J. Pl. Sci.*, 13 (1): 29-31.
- Zahoor, M., S. M. Wazir, A. Muhammad and S. F. Muhammad. 2009. Ethnobotany of some plants from Darra"e Pezo, District Lakki Marwat, Pakistan. *Pak. J. Pl. Sci.*, 15 (1): 75-80.
- Zaidi.A., S.M.Bukhari, F.A. Khan. , T.Noor and N. Iqbal.2015. Ethnobotanical, Phytochemical and Pharmacological Aspects of *Daphne mucronata* (Thymeleaceae). *Tropical Journal of Pharmaceutical Research*, 14 (8): 1517-1523.