



Hitherto Unknown Uses of Plants by Indigenous People of Himachal Pradesh

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Abstract

Ethnobotany is the holistic approach which involves the reciprocal and dynamic aspect of the interaction of indigenous people with plants^{la,b}. and includes studies such as food, fibre, dyes, tannins, medicinal and other useful plants, harmful plants, taboos and magico-religious beliefs about plants, material use and act of domestication, conservation improvement or destruction of plants. The term ethnobotany, first coined by Harshberger² 1895, encompasses entire studies concerning plants which describes local people's interaction with the natural environment. Himachal Pradesh, a hilly state in India situated in the North-West Himalaya between latitude 30°-3' to 33°-3'N and longitude 75°-3' to 79°E is considered a veritable emporium of medicinal and aromatic plants and diverse ethnic communities, viz., Gaddis, Gujjars, Kinners, Jads, Lahoulis, Spitians, Pangwalas, Swangalas. There are as many as 16,997 villages of different sizes covering around 55,678 sq kms area under its 12 districts, having altitudinal range between 300-8,000m. Since ages, the rural inhabitants of Himachal Pradesh are considered the inheritors and developers of rich traditions of plants and ecosystem. Another noticeable aspect of the state is that it also boasts of a wide diversity of plant forms of European, Tibetan and Chinese origin in its sub-tropical, temperate, alpine and cold desert regions, and the place is a very fertile area for ethnobotanical research for which the studies so far are a few and fragmentary and needs to be undertaken far ushering in economic prosperity to the people of the state. The study highlights the ethnic uses of 296 plant species belonging to 243 genera under 86 families (medicinal 263 species, edible 133 species, fodder 108 species, ornamental 67 species, sacred 48 species, magico-religious 34 species, fibre 29 species, veterinary ailments 123 species, miscellaneous purposes 84 species; by the rural communities of district Hamirpur, H.P. Of the plants utilized for their sustenance, there are 116 herbs representing 39.189% of the overall diversity, 59 shrubs (19.93%), 88 trees (29.72%), 10 under shrubs (3.37%), and 6 lianas (2.02%) with floristic composition dominated by dicots constituting bulk share of 84.45% representation (250 species, 205 genera, 71 families, followed by monocots 13.51% (40 species, 33 genera, 10 families), gymnosperms 1.01% (3 species, 3 genera, 3 families: *Cycas*, *Pinus Thuja*) and pteridophytes 1.01% (3 species, 2 genera, 2 families: *Adiantum*, *Equisetum*). Amongst these, the study identifies the use of 175 wild plants, 108 species under cultivation and 13 species as wild and under cultivation.

INTRODUCTION

Indian region is very rich in ethnobotanical heritage as there are about 67.7 million tribal people (which account for about 22 per cent of world's population) belonging to 573 tribal groups living in different geographic locations with various subsistence patterns. Moreover predominant tribal area in India comprises of 15 per cent of the total geographical area of the country. As many as 106 different languages and 227 subsidiary dialects are spoken by the tribals in India³. More than 50,000 plants have been exploited for their medical potential⁴. These communities live in biodiversity rich areas and their wisdom acquired over years of quest is vanishing consequent to the assault of modern civilization into the areas, causing much damage both to diversity and to the well being of man. Among Angiosperm plants, 4,22,000 flowering plants were reported from the world⁵ and many tropical species are not yet named. More than 50,000 plants have been used for medicinal purposes⁴. India is blessed with two (Eastern Himalayas and Western Ghats) of the eighteen world's hotspots of plant biodiversity and is seventh among the sixteen Mega diverse countries, where 70 per cent of the world's species occur collectively. In India, there are over 17,500 species of higher plants, 64 Gymnosperms, 1,200 Pteridophytes, 2850 Bryophytes, 2021 Lichens, 15,500 Fungi and 6,500 Algae are reported⁶. Unfortunately much of the accumulated extraordinarily abundant knowledge on plants which have been acquired due to their long-term practices and handed down usually orally, from one generation to another, is dwindling because of loss of their main culture and changes in sustenance economy⁷. With the disappearance of indigenous cultures biodiversity is also disappearing and the loss is beyond retrieval. Therefore the need of the hour is to give priorities to activities related to documenting of this knowledge before it is being lost forever to posterity.

Ethnobotany plays a crucial role in the study of traditional medicine as it has an interfacial function linking nature with culture and traditional knowledge with modern technology contributing to the understanding of traditional medicinal knowledge⁸. The field of ethnobotany experienced a shift from the raw compilation of data to a greater methodological and conceptual reorientation. This is also the beginning of academic ethnobotany. Indigenous Societies, Traditional knowledge and Tradomedicalism:- Truly, traditional knowledge survives usually among the indigenous and local communities they maintain a balanced ecological rhythm in their surroundings. These groups of people are not to be pitied for primitive existence: they rather deserve to be honoured and respected for their richness of human existence in harmony with nature. The term "Indigenous peoples" referred to those who have close, personal relationships with the lands where they are residents (or regularly migrate across)- including waters, forests, sky, hills and mountains associated with those lands Despite the undoubted success of a scientific approach to pharmaceuticals, the last few decades have reformed towards the spectacular rise in interest in herbal medicinal products for cure of livestock by the indigenous people of H.P., India. The present study was carried out between 2008 to 2011. Recording of indigenous medicinal plants used for common diseases in animals along with the interviews with elderly persons, cattle owners, traditional farmers, healers and house wives was done.

For organ-wise analysis, the data reveals predominant use of leaves (206), whole plant (128), fruits (91), seeds (82), rhizomes/bulbs/tuber/root (60), flower (53), wood (48), stem (47), twig/aerial plant parts (40) whereas inflorescence (4), oil cake (4), rind (3), receptacle (2) and spine (1) do not find much favour in the region. From the view point of utilitarian genera *Ficus* (7 species), *Citrus* (5 species), *Solanum* (5 species), *Brassica* (3 species), *Terminalia* (3 species), *Acacia* (3 species), *Jasminum* (3 species), *Prunus* (3 species) and *Saccharum* (3 species), etc. predominate in their day to day life. Undeniably the rural inhabitants of the district have good knowledge about the bio-resources in their area since time immemorial and are using these resources very carefully to ensure year-round supply of food, fuel, fodder, medicine to them and their cattle.

THERAPEUTIC USAGE OF PLANTS

By and large, therapeutic usage of 263 plants belonging to 218 genera under 82 families have been documented singly (130) or in combination (133), for curing 67 types of ailments affecting the rural populace of district Hamirpur. Most of these herbal drugs are prescribed orally. As evidenced from the use, the most prevalent ailments in the region are skin ailments (pimples, boils, acne, cracked skin, rashes, dermatitis, eczema: 70 species), stomach disorders (54 species), joint diseases (50 species), gastrointestinal disorders (49 species), cough (42 species), backache/muscular pain (38 species), followed by febrifuge (29 species), cold, liver disorders, mouth sores, throat/chest/respiratory tract infection (26 each), asthma (25), hair care (24), anaemia, bites, coolant/refrigerant (23 each), diabetes (19 species), constipation (18), blood purifier, expelling worms, massage (17 each), diuretic, laxative, swelling/ inflammation (16 each), appetiser, fractures/sprains (14 each), burns, delivery, neuralgic disorders, menstrual disorders (13 each), astringent, bronchitis, heart ailments, piles, vomiting/ nausea (12 each), antilithic, eyesight (11 each), antiemetic, flatulence, sex diseases (10 each), antiseptic, clotting, kidney stones (9 each), ulcer (8), body heat, fear psychosis (7 each), burning soles, sweating (6 each), ear complaints, leucorrhoea, uterine disorders (5 each), tuberculosis (4), dark circles (3), bandage, communicable diseases, excessive saliva, rabies (2 each), hernia, impotency, nose bleeding, slipped neck (1 each), etc thereby indicating their less prevalence in the area.

Various plant part/s used in order of preference for alleviating prevalent health problems are: leaves (190 species), whole plant (108 species), fruits (78 species), seeds (76 species), roots (48 species), flower (46 species), stem (41 species), twig/ branches/ aerial parts/shoots (39 species), wood (31 species), stem bark (28 species), latex/ gum (26 species), rhizomes/ tubers/ bulbs (13 species), oil cakes (4 species), receptacle (2 species), rind (2 species), spines, galls, inflorescence/ female cones (1 species each), etc. Among, the genera, *Citrus* (5 species) and *Solanum* (5 species) showed highest species diversity, followed by *Ficus* (4 species), *Acacia*, *Amaranthus*, *Brassica*, *Jasminum*, *Prunus*, *Terminalia*, (3 species each), *Abelmoschus*, *Achyranthes*, *Adiantum*, *Albizia*, *Allium*, *Aloe*, *Artemisia*, *Artocarpus*, *Asparagus*, *Bambusa*, *Bauhinia*, *Carissa*, *Cassia*, *Chenopodium*, *Cinnamomum*, *Datura*, *Eugenia*, *Euphorbia*, *Mentha*, *Ocimum*, *Pyrus* and *Vitis* (2 species each), etc. and rest of 187 genera represented by one species each.

PLANTS USED FOR TONIC, BODY TONES AND DENTAL CARE

The study highlights the use of 42 tonics under 31 genera as iron source (*Amaranthus paniculatus**, *Amaranthus spinosus**, *Amaranthus viridis**, *Brassica campestris**, *Brassica juncea*, *Brassica nigra*, *Chenopodium album*, *Chenopodium ambrosioides*, *Cicer arietinum*, *Mentha piperata*, *Mentha spicata*, *Spinacia oleracea*), memory boosters (*Centella asiatica*, *Emblia officinalis**, *Habenaria pectinata*), refreshing drink (*Cucumis sativus*, *Daucus carota*, *Saccharum officinarum*), vitamin C (*Citrus aurantium*, *Citrus medica*, *Emblia officinalis**, *Oxalis corniculata*, *Physalis peruviana*, *Rumex hastatus*), cardiac tonic (*Carica papaya*, *Habenaria pectinata*, *Terminalia arjuna*), B-complex (*Brassica juncea*, *Brassica nigra*), nervous tonic (*Centella asiatica*, *Habenaria pectinata*), liver tonic (*Saccharum officinarum*, *Terminalia bellirica*, *Terminalia chebula*), protein source (*Arachis hypogaea**, *Glycine max*); and for strength (*Linum usitatissimum*, *Sesamum indicum*), blood formation and purification (*Eugenia cerasoides*, *Eugenia jambolana*) as well as for overcoming anaemic conditions (*Annona squamosa**, *Carissa carandus*, *Carissa spinarum*, *Fragaria chiloensis*, *Lycopersicon esculentum*, *Morus alba*) and fatigue (*Punica granatum*). For a desired effect these are being given to the patients for a period ranging from several days to months.

Amongst these two species (*Juglans regia*, *Vitex negundo*) are used as substitute for lip-stick; 3 species as shampoo/detergents (*Acacia concinna*, *Randia dumetorum*, *Sapindus mukorossi*); 1 species, *Luffa aegyptica*, as body scrubber; 3 species for dark circles (*Cucumis sativus*, *Lens culinaris*, *Solanum tuberosum*); 8 species as chewing gum (*Aegle marmelos*, *Albizia lebbek*, *Bambusa arundinacea*, *Bambusa nutans*, *Dendrocalamus hamiltonii*, *Emblia officinalis*, *Holarrhena pubescens*, *Musa sapientum*, *Ocimum sanctum*, *Saccharum spontaneum*, *Santalum album*); 9 species for killing lice (*Annona squamosa*, *Eruca sativa*, *Eucalyptus umbellata*, *Lantana camara*, *Mentha spicata*, *Milletia extensa*, *Nicotiana tabacum*, *Roylea cinerea*, *Wendlandia heynei*); 10 species for pimples (*Adhatoda vasica*, *Allium cepa*, *Artocarpus lakoocha*, *Azadirachta indica*, *Berberis asiatica*, *Bryophyllum calycinum*, *Curcuma domestica*, *Ipomoea carnea*, *Nicotiana tabacum*, *Santalum album*); 11 species for facial cosmetics (*Aloe barbedensis*, *Aloe vera*, *Artocarpus lakoocha*, *Azadirachta indica*, *Berberis asiatica*, *Brassica campestris*, *Bryophyllum calycinum*, *Carica papaya*, *Celastrus paniculatus*, *Cicer arietinum*, *Citrus aurantium*, *Cucumis sativus*, *Curcuma domestica*, *Lavendula angustifolia*, *Lens culinaris*, *Melissa officinalis*, *Rosa damascena*, *Santalum album*, *Solanum tuberosum*); and 18 species under 14 genera belonging to 10 families with predominance of Lamiaceae (8 species) as a family, *Jasminum* as a genus and leaves (12 species) as a plant part employed for perfumery; 21 species under 18 genera for body massage; 22 species under 17 genera for scouring teeth; 24 species under 23 genera for hair care; 31 species under 29 genera for dental caries, gum diseases and pyorrhoea; and 70 species under 67 genera for skin ailments like cracked skin, skin eruption, skin rashes, dermatitis. Usages of most of these plants have been recorded for the first time⁹ and hold considerable scope for popularization to be developed as safe beauty aids for modern human societies.

Another unique feature of the present study is the use of seeds of *Achyranthes bidentata* for suppressing hunger. This information is of great significance in training forces and commandors especially in jungle warfare. Undeniably, the information presented extends the base of our food bowl and also at the same time enhances our chances of survival in

the event of any crisis like famine and war. On comparing nutritional values of two of the presently investigated ethnobotanical taxa, the analysis reveals high contents of calcium (199.19 mg/100g), phosphorus (133.7 mg/100g), magnesium (84.69 mg/100g), carbohydrates (69.42g/100g) in fruits of *Zizyphus jujuba* as well as high contents of saponins (+++) in its leaves. High values for calcium (128.56 ppm), magnesium (30.57 ppm) and iron (247.8 ppm) in gum, 'Banslochan' obtained from *Bambusa nutans* and also justifies the reason for it being given in the form of 'panjiri' to women after delivery to overcome weakness and fatigue due to deficiency of the above minerals. Importantly, nutritional comparison of data (present study) with the earlier published literature also point to their high nutraceutical potentiality for incorporation as a part of human diet in one form or other in this part of Himalayas and also at the same time offers a challenging task to the agronomists for improving upon their growth form for domestication by employing modern scientific tools.

The findings indicated that rural inhabitants of the region are conscious for the health of their livestock as evident from the usage of as many as 123 plant species belonging to 105 genera under 49 families. 29 genera of 20 families for magico-religious purposes; and 11 species under 10 genera (*Aegle marmelos**, *Bambusa arundinacea**, *Bambusa nutans*, *Cynodon dactylon*, *Dendrocalamus hamiltonii**, *Embllica officinalis*, *Holarrhena pubescens*, *Musa sapientum**, *Ocimum sanctum*, *Saccharum spontaneum**, *Santalum album*) for performing rituals associated with departed souls thereby indicating that the local populace is deeply religious and superstitious. Moreover, some of the practices like the use of *Asparagus adscendens** and *Asparagus racemosus** for Maternal 'milini' (welcome to maternal uncles at the time of marriage in the family); *Asparagus adscendens** in 'hawan' (purification) ceremonies; *Abrus precatorius** for making rosaries for worshipping; *Cestrum nocturnum** as incense; *Bombax ceiba** for making 'bedi' (around which both bride and bridegroom circumbulate and take holy pledge) and 'toran dwar' (main entrance at the time of marriage); *Thuja orientalis** as 'vidya patri'; *Holarrhena pubescens** in 'sharradh' (ceremony for peace to the departed soul) rituals; *Dendrocalamus hamiltonii** for bier making; *Abelmoschus esculentus** for purifying jaggery; *Acacia catechu** for tooth brush, *Acacia concinna** for wine making.

CONCLUSION

Situated in the lap of north-western Himalaya the picturesque state of Himachal Pradesh, spreading over an area of 55,673 sq. kms, is ethnobotanically and phytogeographically a very diverse terrain and inhabited by various ethnic groups. The area is a rich repository of medicinal and aromatic plants, diverse cultures and traditions. For their sustenance, the inhabitants use plant products for different purposes like, edible, fodder, fibres, medicinal, aromatic for flavour, oil production and for ethno veterinary medicines. The present communication aims to document the traditional knowledge about the wild plants of Hamirpur District of Himachal Pradesh, India, and their uses by the local inhabitants. About 296 plants belonging to 243 genera and 86 families are documented for their utilization. Some edible and medicinal plants have great economic value and are highly linked with socio-economic development of tribal communities of the state. A few such species may be introduced in agro-forestry systems, which could be potential genetic resources for plant breeding programmes in other areas of the world and also to provide edible and fodder resources to the communities in addition to making environment of that area pollution free. Biochemical analysis carried on the few wild edibles and fodder plants showed remarkable results. The inhabitants have a vast knowledge about plant wealth and their utilizations. The wild plants are the means of their livelihood and survival of their domesticated animals. As far as the observed density and availability of ethnobotanically important plant resources is concerned, 129 species have found to be abundant, 94 as very abundant and 73 species rare. The results of economic valuation of all the 296 ethnobotanical species indicate that *Grewia oppositifolia* ('beul') tops the list in possessing highest total importance value/ potentiality (70%), followed by *Dendrocalamus hamiltonii*, *Linum usitatissimum*, *Sesamum indicum* (65%) each, *Arachis hypogaea*, *Embllica officinalis*, *Juglans regia* (60%) each, *Brassica campestris*, *Dalbergia sissoo*, *Mangifera indica*, *Pyrus pashia*, *Saccharum officinarum*, *Triticum aestivum*, *Zea mays* (55%) each, *Aegle marmelos*, *Bambusa arundinacea*, *Bambusa nutans*, *Carissa carandas* var. *congesta*, *Cedrela toona*, *Cicer arietinum*, *Eruca sativa*, *Eugenia cerasoides*, *Eugenia jambolana*, *Mallotus philippinensis*, *Pinus roxburghii*, *Prunus persica*, *Spinacia oleracea*, *Zizyphus jujuba* (50%) each, etc. Undoubtedly, the resulted information can be judiciously exploited by using modern technologies and also at the same time are the fundamental requisite for any developmental planning concerned with the welfare of the rural inhabitants of this region of N. W. Himalayas.

It is obvious from the foregoing discussion that the local communities of the region are basically wise, eco-friendly and have a self-sufficient and self-reliant subsistence system as reflected by their dependence on a great diversity of plant species to ensure a year-round supply. At the same time, the practice reflects their conservational wisdom as it exerts less pressure on the available natural resources. Hopefully, the generated data will serve as a very valuable document for the planners, policy-makers, foresters, academicians and the scientific organizations on the basis of which better developmental schemes can be formulated for socio-economic uplifting of the rural inhabitants of the study area.

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