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Research Article

Ethno-veterinary uses of medicinal plants in district Bandipora of Jammu & Kashmir Union Territory

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Abstract

Plants due to their medicinal properties are essential component of health industry and are utilized in averting various ailments. A study was carried to understand the quickly vanishing traditional information of medicinal plants in Bandipora district of Jammu and Kashmir, India. Information was collected using purposive sampling to reach the target population. A total of 103 people comprising tribal people, medical practitioners, traditional healers and locals were interviewed throughout the study. A total of 29 species were found in the study area which were having ethanoveterinary uses. During the survey it was observed that the most dominant families with respect to number of species were Lamiaceae followed by Asteraceae, Liliaceae, Ranunculaceae, Apiaceae, Pinaceae, Salicaceae, Malvaceae (2 each) and remaining families having one species. It was also observed that elderly population have better folklore information and males are more respondent than the females. Furthermore, the valuable folk knowledge about flora and fauna is playing an essential role in supporting healthcare system of both livestock and human in these remote areas which lack modern medical care.

Keywords Bandipora, ethno-veterinary, livestock, medicinal plants

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Introduction

District Bandipora, J&K lies amid latitude 34º 64' in the North and longitude 74º 96'in the East and encompasses an area of 398 km2. Topographically the district is hilly terrain and in west is surrounded by district Kupwara, by district Ganderbal in the south-east, by district Kargil in the east, Baramulla in the south and on its north side it is bounded by LOC (Line of Control). This district is rich in natural beauty and biodiversity. The weather of the district fluctuates with the elevation. The winters are harsh with an average minimum temperature of -10º and average maximum 32º. The livestock population includes 85999 number of cattle, 771 number of buffalo, 3896 number of equines, 2.3 lac. sheep, 50994 number of goats, 2.3 lac. Chickens (broiler), 256891 number of chickens (backyard poultry) in 2021.

Throughout human development plants have been utilized. This relationship resulted in the establishment of a medicinal industry for the exploration of potent compounds from medicinal plants all over the world [1]. Ethnoveterinary medicine constitutes all the methods practiced by humans to enhance their livestock production, like feed technology, breeding procedures, methodic, phytotherapy, mysticism and ethno epidemiological knowledge on livestock ailments [2]. The nomadic communities mostly inhabit the Himalaya and are solely dependent on livestock rearing for their income. The beautiful valley of Kashmir is largely a mountainous track dwelled by many pastoral

communities like Paharis, Gujjars and Bakarwals. These communities move to alpine pastures during the summer season to graze their livestock (mainly sheep, goats and cows). As these tribes usually inhabit far-flung and remote areas, access to veterinary pharmacists becomes difficult or in other words impossible. So, this difficult life has made them learn and exercise the utilization of medicinal plants for the treatment of their diseased livestock [3]. In 2007, Khuroo et al., [4] reported ethno veterinary medicinal usage of 24 angiosperm plant species by the Gujjar community of Kashmir. Plants are used to treat different ailments in livestock by the pastoral communities of Kashmir Himalayas [5-9]. Taking into account the importance of livestock rearing in this particular region it was found worthy to document the folklore medicinal usage of herbal drugs by the tribal people for treating their sick animals

Table 1. Physicochemical parameters

Scientific name	Family	Vernacular name	Growth form	Parts used	Utilization
Asparagus filicinus Buch. Ham	Liliaceae	Halyun	Perennial herb	Seeds	For easy delivery in ewes and cows, a decoction made by boiling about 10g of dry seeds in sugary milk is given.
Aconitum laeve Royle	Ranunculaceae	Muneri	Perennial herb	Rhizome	The infected cattle with worms are treated by feeding them fodder mixed with extract of Aconitum rhizomes.
Ajuga parviflora Benth	Lamiaceae	Ratibooty	Perennial herb	Aerial parts	External inflammation and wounds of animals are cured by applying a paste of dry aerial parts with oil.
Alnus nitida Endl	Betulaceae	Saroli	Deciduous tree	Leaves	Dried leaves mixed with oil on low flame is used for the treatment of foot and mouth disease in cattle.
Actaea spicata L.	Ranunculaceae	Rech dad	Perennial herb	Rhizome	Fresh as well as dried rhizomes are used to cure ailments like worm infection and asthma.
Anglica glauca Edgew	Apiaceae	Chora	Perennial herb	Rhizome	Paste of dried rhizomes mixed with fodder is used to enhance the milk production in livestock.
Allium cepa L.	Liliaceae	Gande	Annual herb	Bulb	During the breeding season, a mixture of fresh onion bulbs mixed with paddy chaff is given to ewes and cows to stimulate their estrus cycle.
Artemisia absinthium L.	Asteraceae	Tethwan	Perennial herb	Whole plant	Crushed whole plant material mixed with wheat flour and sugar is given to cattle for treating worm infection.
Achillea millifolium L.	Asteraceae	Pahel- ghass	Perennial herb	Whole plant	The whole plant is given to cattle to treat abdominal worms.
Brassica campestris L.	Brassicaceae	Sarson	Annual herb	Seeds	A combination of crushed seeds with mustard oil is used to cure skin infections in cattle.
Cannabis sativa L.	Cannabaceae	Bhang	Annual herb	Leaves	To prevent lice infection a paste of fresh leaves is used.
Cedrus deodara (Roxb.) G. Don f.	Pinaceae	Deodar/ Diar	Tree	Needles	Deodar oil is employed to get rid of ticks and lice infections.
Chenopodium album L.	Amaranthaceae	Wan- palak, bathua	Herb	Leaves	Application of leaves boiled in mustard oil results in faster healing of wounds.

Curcuma longa L.	Zingiberaceae	Haldi, lidar	Perennial herb	Rhizome	Rhizome powder mixed with oil is applied on wounds and cuts then tied with a cloth.
Foeniculum vulgare Mill.	Apiaceae	Saunf, baidean	Perennial herb	Aerial parts	To cure indigestion in animals, decoction of aerial parts is given.
Geranium wallichianum D.	Geraniaceae	Rattan- jog	Perennial herb	Rhizome	Decoction of rhizome mixed with maize flour cooked in ghee is used to treat inflammation of hooves and warts in animals.
Glycine max L.	Paplionaceae	Gabbe muth	Annual herb	Seeds	Powder of dried seeds with wheat bran is fed to lactating animals.
Inula royleana DC.	Asteraceae	Gugi phool	Perennial herb	Flower	Flower extract mixed with oil is used to treat inflammation of hooves and wounds in cattles.
Mentha sylvestris L.	Lamiaceae	Pudina, paedne	Perennial herb	Leaves	To get rid of abdominal worms, animals are fed with leaves.
Malva sylvestris L.	Malvaceae	Aarm Sotzhal	Biennial herb	Aerial parts	Mostly used to cure respiratory disorders in goats by mixing extract of shoot part with wheat bran.
Nepata laevigata Hand. Mazz	Lamiaceae	Longir	Perennial herb	Flowers	Urine tract infection in animals is treated by giving decoction of dried flowers.
Pinus wallichiana A.B. Jacks	Pinaceae	Kayud	Tree	Needles	Needles mixed with grass are fed to animals for treatment of abdominal worms.
Populus nigra L.	Salicaceae	Phras	Tree	Bark	Bark boiled in water and then the decoction is given to animals for treatment of parasitic worms.
Malva neglecta Wallr.	Malvaceae	Sotchal	Annual herb	Leaves	New born calves are fed with grinded leaves and salt for strength.
Plectranthus rugosus Wall	Lamiaceae	Sloi	Deciduous shrub	Leaves	Sore throat in goats is treated by directly adding dried leaves to forage.
Sedum rhodiala DC	Crassulaceae	Hasbi jund	Perennial herb	Aerial parts	Dried stem powder is used to treat wounds. Its application leaves no scars.
Silene vulgaris Garcke	Caryophyllaceae	Takla	Perennial herb	Rhizome	Powder of dried rhizomes mixed with wheat flour and water is given to buffaloes, goats and cows to increase lactation.
Swertia petiolate D: Don	Gentianaceae	Sarad jaddi	Perennial herb	Leaves	Grinded leaves in water are used as an antiseptic.
Salix alba L.	Salicaceae	Veer	Tree	Leaves	Leaves and bark decoction is given to animals for intestinal worms.

Methodology

Study area

The Kashmir valley is located in the northernmost latitude of the country and holds almost the central position in the continent of Asia. Above sea level, average altitude of Kashmir valley (valley zone) ranges between 1, 500 to 2, 300 m. The present study was conducted in the district Bandipora of Kashmir Himalayas. District Bandipora lies in extreme north of the valley, situated between 34° 25' 12" North latitude and 74° 39' 00" East longitude. Bandipora district comprises 7 Tehsils and 12 Blocks. The study area is

located at an elevation of 3,284 m above the mean sea level. The study area experiences temperate climate experiencing four distinct seasons: a severe winter (December to February), a cold spring (March to May), a mild summer (June to August) and a pleasant autumn (September to November).

Survey

Field surveys were conducted in the Bandipora district of Jammu and Kashmir during the year 2021. Information was collected using purposive sampling to reach the target population. A total of 103 people comprising tribal people, medical practitioners, traditional healers and locals were interviewed throughout the study. Survey was conducted in the areas of Ajas, Banakoot, Athwathoo, Aragam and Arin. During the survey, scientific name, local name of the plant used, plant part used and method of applications were recorded.

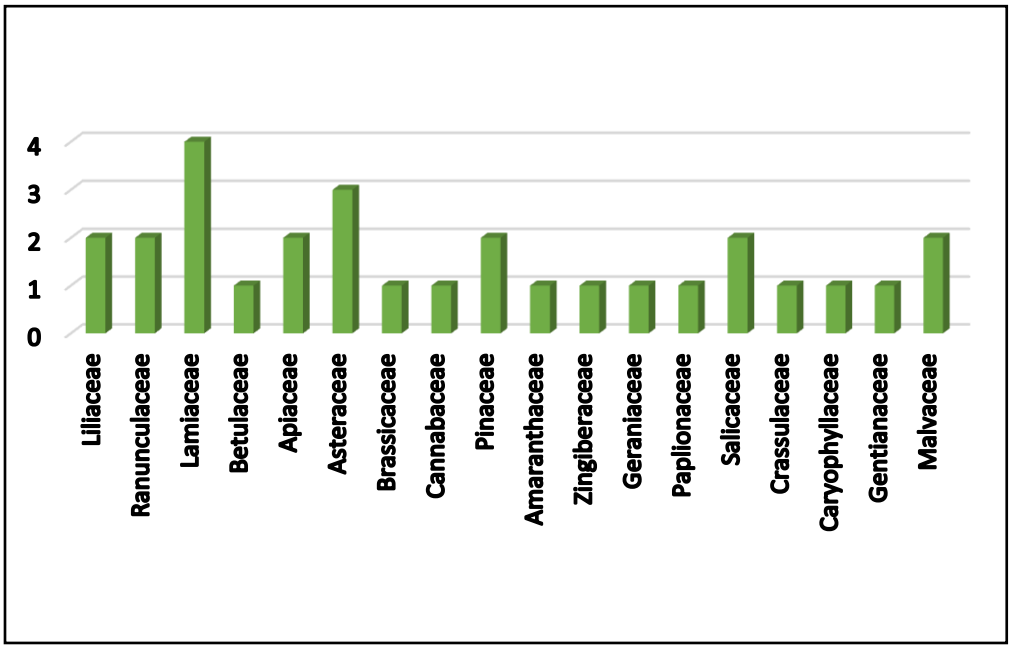

Figure 1. Distribution of species among different families

Results and Discussion

A comprehensive information about the ethnoveterinary uses of 29 plants, scientific names, families, vernacular names, growth form and plant parts used, utilization of plant to cure different ailments of livestock in Ajas, Banakoot, Athwathoo, Aragam and Arin, District Bandipora is given in the table (Table1). During the survey it was observed that the most dominant families with respect to number of species were Lamiaceae (4) followed by Asteraceae (3), Liliaceae, Ranunculaceae, Apiaceae, Pinaceae, Salicaceae, Malvaceae (each 2) and remaining families having one species (Figure 1). Ethnobotany plays an essential role as a tool for understanding the natural resource management of the pastorals as well as keeping alive the fading knowledge about plants. In the current study, the ethnoveterinary uses were revealed from local nomads, semi nomads and herbal practitioners. A total of 29 plant species in 28 genera and 18 families were found which are used to treat several ailments of animals and poultry by the indigenous people of the area (Table 1). A number of studies have been conducted regarding the usage of plants for treating several ailments of cattle practiced in Kashmir [9]. Ahmad and his colleagues during their survey documented 32 plant species belonging to 19 families that are used by the natives for treating their livestock. The 33 plant species distributed among 32 genera and 25 families were used as veterinary medicines to treat the animals reared by the indigenous people of District Bandipora. The most utilized

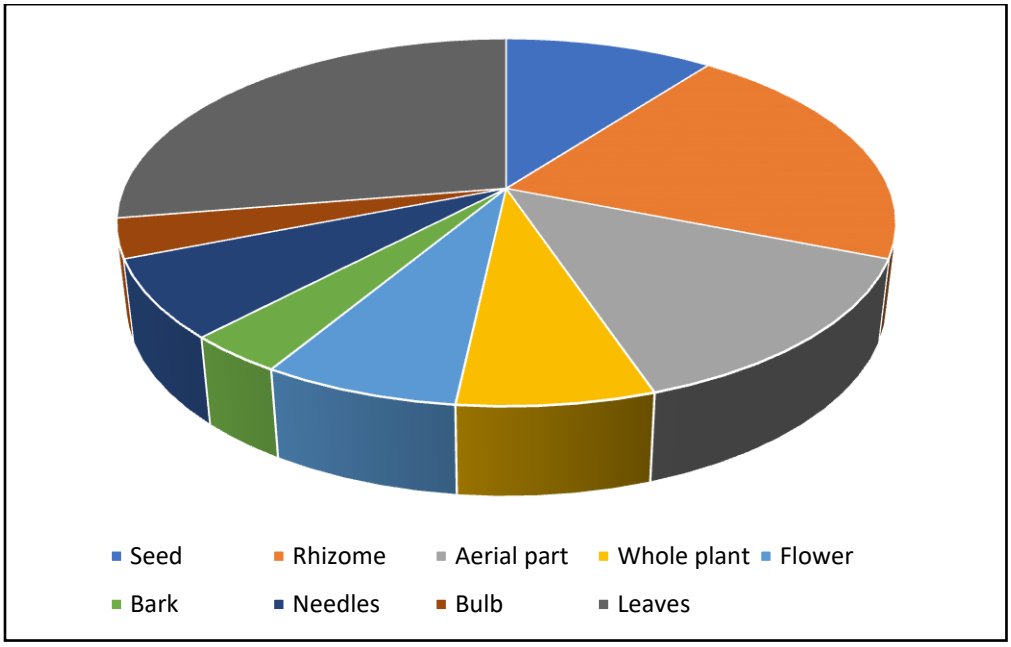

Figure 2. The percentage of plant parts used by the pastorals

growth forms found were herbs (26 species) and trees (4 species) followed by shrubs, sub-shrubs and climbers (1 species each) [7].

In regard to utilization, the leaves, rhizome, aerial part, seeds, whole plant, flowers, needles, bark and bulb were mostly used as plant parts by the locals (Figure 2). It has been reported that 24 plant species belonging to 23 genera and 15 families, prescribed dosage and mode of preparation for ethnoveterinary uses by the Gujjar communities of Kashmir valley [4]. Among the plants mostly the herbs were under high biotic pressure that led to extinction of the species from the site. It is found that elderly people in the age group of 65-70 years including both male and female are quite knowledgeable about the medicinal usage of plants in curing both human and livestock diseases. During the survey it is also observed that compared to young people, older people and traditional healers have sound knowledge about traditional Utilization of medicinal plants. The folk medicinal utilization of *Asparagus filicinus*, *Aconitum leave*, *Ajuga parviflora* and *Alnus nitida* is also supported by pharmacology study, yet further scientific investigation is required. During the study, it came to know that the people of this region also depend on medicinal plants for the treatment of human diseases. Some of these plants such as *Achillea millifolium*, *Aconitum leave*, *Inula royleana*, *Malva sylvestris* etc. were used to cure various human ailments and were under the threat of extinction.

These are under high biotic pressure due to over exploitation, smuggling and deforestation and fuel wood extraction by the native communities. Vegetation in the forests is affected by the people in various ways, such as having a huge livestock pressure, transporting of wood logs that crushes all the plants coming in its way, especially the herbaceous ones. One more reason responsible for the decreased vegetation of the site was the overgrazing by the cattle, goats and sheep of the local people, tribal people and shepherds during the growing seasons. The endangered species like *Aconitum laeve*, *Angelica glauca* and *Inula royleana* are in threat due to unscientific harvesting and unsystematic marketing. During the present investigation it was observed that older people have better folklore knowledge and male individuals are

more respondent than the females. Furthermore, the valuable folk knowledge about flora and fauna is playing an essential role in supporting healthcare system of both livestock and human in these remote areas which lack modern medical care. The efforts taken for the conservation of these medicinal plants in the district were lacking. Therefore, it is high time to generate awareness among the people about the scientific harvesting, sustainable utilization and conservation of these medicinal plants that are invaluable gift to us from nature.

Conclusion

Herbal medications compete with the synthetic drugs due to biocompatibility, environmentally friendly and cost-efficient. With changing time new diseases are appearing in animals and human beings by unreasonable use of antibiotics. At present it is the demand of time to work intensively on the plants for the benefit of society. In the Himalayan region of Kashmir, there is an urgent need for a coordinated program of research and development for evaluation of effectiveness of the medicinal plants in use and for standardization of cultivation practices of the plants. Such activities would most likely encourage continuous utilization of the medicinal plants for treatment of livestock by the tribal people.

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