Research Article

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

Asma Sultan, T. H. Masoodi, Qurat Ul Ain Binte Syed, Jauhar Rafeeq, Mir Adil

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

Introduction

District Bandipora, J&K lies amid latitude 34° 64’ in the North and longitude 74° 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 -10° and average maximum 32°. 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

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

**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 pastoral 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
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.

References