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## Ethno-Veterinary Medicinal Uses of Some Plant Species by the Gujar Tribe of the Kashmir Himalaya

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**Abstract:** The documentation of biodiversity and its traditional use(s) by the ethnic communities have assumed priority due to the rampant loss of biodiversity, the looming threats of biopiracy and the increasing patent wars on bio-resources. In view of this, the present paper describes in detail the ethno-veterinary medicinal uses of some angiosperm plant species by the Gujar tribe of the Kashmir Himalaya; with the sole objective of documentation of this secret treasure-trove of valuable ethno-botanic knowledge. In the present investigation, each plant species has been provided with the scientific name, local name, growth form, altitudinal range and present status of occurrence; followed by part(s) used, mode of preparation, method of use and the dosage.

**Key words:** Biodiversity, ethno-veterinary uses, documentation, Kashmir Himalaya

### INTRODUCTION

The recent return to natural medicine through out the world has emphasized the importance of gathering information about medicinal plant species traditionally used by the indigenous and tribal communities. There is now growing evidence that indicates a strong relationship between ethnic knowledge and sustainable use of biodiversity (Sullivan and Shealy, 1997). The time-tested ethnic knowledge when supplemented with the latest scientific insights can offer new models of economic development, that are both eco-friendly and socially acceptable (Croom, 1983).

Kashmir Himalaya, perched at the north-western tip of the Himalayan Biodiversity Hotspot, supports a rich and spectacular biodiversity of great scientific curiosity and promising economic benefits; chiefly owing to its topographic variations spanning from valley floor through terraced lands and dense forests, up to snow-capped alpine peaks (Husain, 2001). Mosaic of diverse niches -a byproduct of the habitat heterogeneity and the microclimatic variation along the altitudinal gradient display a bewildering floristic diversity (Dar *et al.*, 2001).

The Gujars, a semi-nomadic tribe mostly inhabiting the hilly areas of the Kashmir Himalaya, mainly depend on the livestock rearing for their livelihood. Living on the fringes of the mountains, they traditionally graze their livestock such as cows, bulls, buffaloes, goats, sheep, horses, etc through out the landscape in the region (Lawrence, 1895). From very ancient times, in the need of hour, they have learned and practiced the medicinal usage

of plants growing in their close vicinity for treating various ailments of their livestock. This prized ancient wisdom has usually been disseminated through the word of mouth, therefore urgently needs to be documented on scientific lines.

During the last century, various studies have been carried out to document the ethno-medicinal uses of the plant species growing in the region. Albeit, most of these research efforts have been restricted towards the chronicling of the medicinal plants used for the treatment of human ailments (Dar *et al.*, 1984; Kachroo and Nahvi, 1987; Ara and Naqshi, 1992; Kaul, 1997; Shahzad *et al.*, 1999; Dastagir, 2001; Saghir *et al.*, 2001; Gorski and Miraj, 2002; Gorski and Shahzad, 2002; Dar, 2003). Very rarely, the ethno-veterinary medicinal uses of the floral diversity have been investigated. In this backdrop, the main objective of the present research was to fill the knowledge gaps in this important sub-area of cultural biodiversity directly relevant to the livelihood of the tribal communities.

### MATERIALS AND METHODS

The methods employed during the present study were designed with the sole purpose of eliciting the precious wealth of information on the ethno-veterinary uses of medicinal plants practiced by the Gujar tribe of the Kashmir Himalaya. Field surveys were conducted in the various localities inhabited by the Gujars during different seasons of the year 2004-05. Some of these localities are: Aharbal, Aru, Dara, Dugwan, Gulmarg, Hirapora, Kangan,

Thajwas, Tosa Maidan, Uri, etc., Usually, the elderly and experienced members of the tribe, locally known as 'Hakims', were interviewed. Often, they were accompanied to the field for the identification of plant species used and their preferred habitats. Also, the plant specimens collected from the alpine and subalpine pastures were shown to them for authentication. All the relevant information, in particular the mode of preparation, method of use and dosage of each medicinal plant species was recorded. To bring an element of accuracy, the information obtained from one locality was cross-checked with that of others. Specimens of medicinal plants collected from each locality were provided with a collection number for future reference. The plant specimens collected were processed at the laboratory of the Centre of Plant Taxonomy and then identified with the help of available literature (Stewart, 1972; Nasir and Ali, 1970-87; BSI, 1996). The properly processed plant specimens have been deposited in the Kashmir University Herbarium (KASH).

## RESULTS

Each plant species is provided with its scientific name and author citation; followed by the family to which it belongs to; local name (in italics); growth form; altitudinal range (in meters above mean sea level); distribution status in the region (very common, common, less common and rare); and lastly in brief the part (s) used and the mode of preparation and the dosage (wherever available). The sequence of the plant species in an alphabetical order is as follows.

***Aconitum laeve* Royle:** Ranunculaceae; Muneri; Perennial herb; 2800-3400 m; Less common.

The rhizomes are used to treat stomach ailments and other internal disorders of the cattle. Also the flukes or worms in the liver or other internal organs (which render cattle weak) are treated by the administration of the rhizome extract. Mostly, the rhizomes of many individuals of the plant species are interwoven with each other. So the interwoven bundle of rhizomes after expulsion from the soil is washed thoroughly. Next, the rhizomes are boiled in water to extract concentrate. Now, the rhizomes may be thrown away or if mixed with extract, then they have to be cut into very small pieces. The prepared extract is administered to the cattle as such or mixed with fodder as required. This is one of the commonly used practices by these people to make their cattle healthy when they show signs of weakness after diarrhoea, delivery, etc.

***Actaea spicata* L.:** Ranunculaceae; Larddi; Perennial herb; 2000-2800 m; Common.

Both fresh and dried rhizomes are used to treat worms in the stomach, difficulty in breathing freely (asthma) and overall health conditions of the cattle. The rhizomes may be used fresh, or may be dried, stored and used when needed. In either case, rhizomes are crushed and added to water and other fodder items to form a mixture. The dose of about 10-15 g is administered to the cattle early in the morning (when stomach is almost empty) twice or thrice within one month.

***Ajuga parviflora* Benth:** Lamiaceae; Ratibooty; Perennial herb; 2100-2900 m; Common.

Dried aerial parts are ground to a fine powder. A paste of this powder is made by adding few drops of edible oil and then massaged externally on the sores, wounds, swelling on the body of the cattle for a week.

***Allium cepa* L.:** Liliaceae; Gande; Annual herb; Cultivated.

Fresh bulbs are mixed with paddy chaff (Poi) to stimulate the estrus cycle of the cows and ewes during breeding season.

***Alnus nitida* Endl:** Betulaceae; Saroli, Deciduous tree; 1500-1700 m; Less common.

Dried leaves mildly fried in the edible oil to make a poultice and applied to the sores during the foot and mouth disease of the cattle.

***Anglica glauca* Edgew:** Apiaceae; Chora; Perennial herb; 1900-2900 m; Less common.

The rhizomes are used to enhance milk production in the cattle, particularly in cows and goats. After washing thoroughly with water, the rhizomes are dried in open sunlight. After drying, they may be either used immediately or stored for future use as needed. The dried rhizomes are ground to make a fine powder. The powder obtained from the rhizome of one plant individual is sufficient dose for at least 2-3 cows. About 5-10 g of the rhizome powder is mixed with fodder, milk, or rice-water (as the cattle likes) and administered to them. Within 1-2 weeks, a marked change may be observed in the milk yield. If required, dose may be administered twice within a span of 20 days.

***Asparagus filicinus* Buch. Ham:** Liliaceae; Perennial herb; 1800- 2500 m; Less common.

About 10 g of dried seeds are boiled in 1-2 liters of milk with 5 g of sugar. The infusion prepared is given to cows and ewes to facilitate the easy delivery.

**Geranium wallichianum D.** Don Geraniaceae; Rattan-jog; Perennial herb; 2000-2900 m; Common.

Rhizomes used to treat dislocation of locomoter organs, inflammation of hooves, warts and abscissions. The rhizomes after through washing are boiled in specific quantity of water, until content in rhizomes is extracted fully. The rhizomes are removed and the extract is now mixed with 50-100 g of maize, rice or wheat flour (as per availability). The mixture is cooked in ghee to prepare a halva and then massaged on the affected portion of the cattle.

**Glycine max L.:** Papilionaceae; Gabbe Muth; Annual herb; Cultivated.

The dried seeds are crushed to a fine powder, mixed with the wheat chaff (Kush) and then fed to the lactating sheep and goats.

**Inula royleana DC:** Asteraceae; Gugi Phool; Perennial herb; 2800-3400 m; Less common

About 20 g of dried flowers are boiled in the water for about half an hour. Then few drops of edible oil are added to the extract and massaged on the throat sores, wounds and inflammation on the hooves, for about a week.

**Malva sylvestris L.:** Malvaceae; Sotzhal; Biennial herb; 1500-2000 m; Common.

About 1 kg of the dried leaves and flowers are boiled in 2 liters of water. The extract is mixed with wheat chaff (Kush) and served to goats suffering from respiratory disorders.

**Nepeta laevigata Hand. Mazz:** Lamiaceae; Longir; Perennial herb; 1500-2400 m; Less common.

About 250 g dried inflorescence are boiled 2 L of water. The concentrated decoction is given to cattle suffering from intestinal disorders and urine infection.

**Plectranthus rugosus Wall:** Lamiaceae; Sloi; Deciduous shrub; 1500-2800 m; Very common.

Dried leaves of the plant are simply added to the fodder, in case of severe throat infections in the goats.

**Sedum rhodiola DC:** Crassulaceae; Hasbi jund; Perennial herb; 2800-3400 m; Rare.

The stem is used to heal wounds and relieve pain in the cattle. Fleshy stems are first washed and then dried in open sun light. As the stems possess enough water, it takes much longer time to dry completely. After drying, the stems can be used immediately or stored for future need. At the time of use, the stems are ground to a fine powder. Depending upon the nature and magnitude of

wound, a specific dose of powder is poured on the dried wounds and then covered with a clean cloth. The treatment is repeated 2-3 times after an interval of 3-4 days. The wound gets completely healed within a month and leaves no scar.

**Ranunculus muricatus L.:** Ranunculaceae; Kakodel; Annual herb; 1500-1800 m; Very common.

Aerial portion of the plant species is first dried. About ½ kg of it is boiled in about 3 L of water. The concentrate is served to cattle along with fodder to regulate the normal heart beat, body temperature and to alleviate the fever and nausea. The dosage is given for 2-3 days.

**Rumex nepalensis Spreng:** Polygonaceae; Abij; Perennial herb; 2000-2600 m; Common.

About 20 g of the outer portion of the roots, usually black, is first crushed hard. The paste so obtained is added with 5 g of salt and 10 mL cow milk and then boiled for 10 min. The semi-solid balls of this paste are given to newly born calf twice a day for about one month, to protect them from juvenile infections.

**Rumex patientia L.:** Polygonaceae; Jungli abij; Perennial herb; 1500-2100 m; Less common

A powder is made from about 100 g dried roots. Also added is the 30 g of crushed roots of the *Taraxacum officinale* (Haend). This is mixed with 50 g of curd and fermented for a week and then given to cattle suffering from liver-fluke and other digestive disorders. The dosage is given for a fortnight in the early morning.

**Silene vulgaris Garcke:** Caryophyllaceae; Takla; Perennial herb; 2500-3200 m; Less common.

The dried rhizome is first ground to fine powder. About 100 g of this powder is mixed with 50 g of wheat flour and sprinkled with little amount of water. The semi-fluid extract is served to cows, goats, etc., to increase milk production.

**Swertia petiolata D:** Don Gentianaceae; Sarad Jaddi; Perennial herb; 2800-3200 m; Less common.

Leaves are used for healing wounds of animals (cows, horses, ponies etc.). Firstly, about 10 fresh leaves are collected and crushed in 5-10 mL of water so as to prepare a concentrated extract. With this extract, the affected part(s) of the animal is washed repeatedly to remove the blood stains, dirt, etc., completely. Next, the already prepared fine powder, by grinding the dried leaves of the same plant, is gently pasted on the wound and then immediately covered by a clean cloth. The process is

repeated at least three times within a span of 15 days. The wound, which otherwise would have resulted into many stitches and the associated complications, gets healed within a fortnight.

***Taraxacum officinale* Weber:** Asteraceae; Haend; Perennial herb; 1500-3300 m; Very common

About 1 kg of the dried aerial parts, including the leaves and flowering scapes, are first boiled in 10 L of water for 1 h. The extract so obtained is served daily to cows, goats, etc, after delivery for at least a fortnight to relieve from stretch of their bones, ligaments and the general weakness.

***Thymus serpyllum* L.:** Lamiaceae; Jawan d; Prostrate subshrub; 1800-3200 m; Common.

About 100g dried ripe seeds mixed with 2 kg gaur to make a semi-solid paste and given in the form of small balls to cattle to cure throat infections, fever and common cold during the winter.

***Valeriana jatamansi* Jones:** Valerianaceae; Mushki-bal a; Perennial herb; 2500-3200 m; Less common.

Rhizomes used to treat muscular pain, dryness and reddening of eyes in the cattle (especially to calves and lambs). The rhizomes after a thorough wash are dried and then stored. The dried rhizomes are ground and then sieved to obtain a fine powder. A small quantity of powder is dissolved in a normal 200 mL glass of water and administered early in the morning (empty stomach). The treatment may be continued for a week and gives the desired result.

***Verbascum thapsus* L.:** Scrophulariaceae; Wan-tamoo k; Biennial herb, 1500-2600 m; Very common.

Aerial parts, especially inflorescence, are first dried and then boiled for about 2 h. The decoction prepared is added to the paddy chaff (Kush) to cure flatulence in the cows, buffaloes and sheep.

***Vigna mungo* L.:** Papilionaceae; Mah Da l; Annual herb; Cultivated.

About 1 kg dry seeds are boiled in 10 L of water for nearly 2 h. The concentrate so obtained is dissolved in the drinking water for pregnant cattle, usually before a week of delivery. This facilitates the normal conception and eases the labour pain, to a large extent.

## DISCUSSION

The present study has reported the ethno-veterinary medicinal uses of 24 angiosperm plant species by the

Gujars of the Kashmir Himalaya. These plant species belong to 23 genera and 15 families and majority of them are perennial herbs. Different plant parts, such as leaves, inflorescences, seeds, rhizomes, roots, etc are used. The plant species are distributed along wide altitudinal range starting from 1500 up to 3400 m (amsl). They grow in diverse range of habitats, such as valley plains, montane forests, subalpine and alpine pastures. In general, these plant species through different modes of preparation to form crude drugs are fed as food supplements to promote faster weight gain; to soothe burns, abrasions and wounds; used as laxative, diuretic, antipyretics; and for the treatment of digestive, respiratory, locomotory and reproductive disorders.

Biodiversity and its' traditional use are complementary phenomena essential for the economic development of the society (Dhar *et al.*, 2000). Traditional knowledge about the biodiversity reflects many generations of experience and problem-solving by the ethnic tribes. It represents an immensely valuable database that provides the baseline information for the commercial exploitation of biological resources (Utkarsh *et al.*, 1999). Also, the information could be useful for the vets, pharmacologists, botanists, etc interested in the development of alternative therapies. For lesser known plant species, such a secret treasure of information could prove beneficial in phyto-pharmacological research for discovery of new therapeutic substances for veterinary drugs.

Of late, there has been growing concern among the developing countries about the threats of the biopiracy (Khan *et al.*, 2004) and the intensity of patent wars is increasing day by day (Utkarsh, 2001). Biopiracy is the unfair exploitation and monopolization of public domain knowledge and biological resources. In this context, the need of the hour is to speedily document evidence-based reliable information about the biodiversity and its' different uses by the ethnic tribes. Hopefully, the information thus generated, as in the present research, could supplement our efforts in the direction of the local biodiversity registers-a key instrument for achieving the regional and global biodiversity and the conservation goals.

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