

Full Length Research Paper

Traditional knowledge on medicinal plants used for the treatment of livestock diseases in Sardikhola VDC, Kaski, Nepal

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People in different parts of the world depend on plants and plant parts to fulfill their daily needs and have developed unique knowledge of their utilization. There have been very few studies on the ethnobotanical studies of the plants that are used for the treatment of livestock diseases in Nepal. This study aims to document information about ethnobotanical information of plants used for the treatment of livestock diseases in Sardikhola VDC of Kaski district. Information on the use of plants were collected in April-May 2009 by interviewing key informants using a semi-structured open-ended questionnaire. Altogether 18 plant species belonging to 17 families were recorded as being used for treatment of different livestock diseases. This traditional knowledge is declining as the younger generation shows less interest in using plants. Further research in this field is necessary as this finding may help to counter the needs of people during a scarcity.

Key words: Ethnobotany, Nepal, veterinary, Sardikhola VDC.

INTRODUCTION

Plants are the basis of life on earth and are central to people's livelihood. Indigenous people living in particular areas depend on the use of wild plants or plant parts to fulfill their needs and often have considerable knowledge on their uses. The people generally depend on nearby forest areas to supply their needs such as medicine, timber, fuelwood, wood, wild vegetables and many more. According to Edwards (2004), about two-thirds of 50, 000 medicinal plants in use are still harvested from the natural habitat and about one fifth of them are now endangered. The indigenous knowledge on medicinal plants is gaining worldwide recognition. The World Health Organization has estimated that more than 80% of the world's population in developing countries depends primarily on herbal medicine for basic healthcare needs (Vines, 2004).

Traditional use of plant and plant resources has a long history in Nepal and its use is rapidly spreading due to

having no side-effects, easily available at affordable prices and sometime the only source of health care available to the poor (Acharya et al., 2009). About 85% of the total population inhabitants in rural areas (CBS, 2002) and many of them rely on traditional medicines. In Nepal, many plants are used to treat livestock diseases and these traditions have survived in many areas. Many of this knowledge are handed down orally from generations to generations (Manandhar, 2002).

The traditional knowledge of plants and plant resources is limited to certain key member of the society. They communicate their knowledge to limited members of their periphery if they show interest. Not only that, the younger generations show less interest in this field mostly because of poor recognition of the traditional healers and availability of modern health facilities. Because of which, we are in a danger of losing the traditional knowledge forever (Manandhar, 2002). So, the priority should be given to the documentation of traditional knowledge and conservation of existing species and habitats before some of these are eliminated from the area (Joshi et al., 2003). Nepal Biodiversity Strategy has also highlighted its

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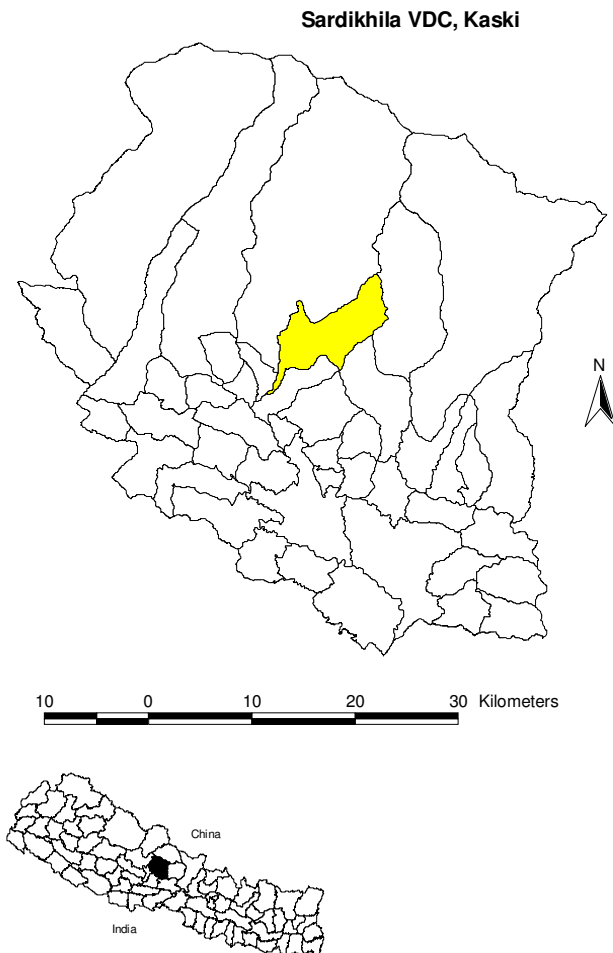


Figure 1. Map of the study area.

importance for documentation and proper conservation of traditional knowledge and biodiversity (NBS, 2002).

There have been very few studies on ethnoveterinary use of plants in different regions of Nepal (Alam and Thapalaya, 2009), but none have been done on the ethnoveterinary use of plants in Sardikhola VDC of Kaski district. So, the ethnobotanical knowledge of people is in danger of extinction. We here attempt to document traditional knowledge on the use of plants to treat livestock diseases in Sardikhola VDC of Kaski district.

MATERIALS AND METHODS

Study area

Sardikhola VDC is located in northern part of Kaski district of central Nepal, between 28°20'N latitude and 83°58'E longitude (Figure 1). It is part of the midhill region of Nepal. Our research was conducted in three wards of Sardikhola VDC and people of this region depend on Community Forests and national forests for their daily needs. The total population of VDC is about 3,112, of which majority are Gurung followed by Tamang, Kami, Brahmin hills and others (CBS, 2002). The altitude of the district ranges from 990 to 1200 m a.s.l.

The forest is mainly dominated by Katus (*Castanopsis indica*) and Chilaune (*Schima wallichii*). The climate of the area is typically sub-tropical dominated by the south-east monsoon. The temperature ranges from an average of 6°C in winter to an average of 30°C during summer.

Data collection

The study area was surveyed in April 2009. Key informants were identified after preliminary discussion with the people. Information on ethnobotanical uses of the plants was collected by interviewing key informants of the community using a semi-structured open-ended questionnaire. To collect plant species for herbarium preparation, key informants were employed. Some of the collected specimens were identified in the field, whereas others were identified with the help of standard literature (Polunin and Stainton, 1984; Stainton, 1997) and with cross checking the specimens deposited at Tribhuvan University Central Herbarium (TUCH), Kirtipur. The nomenclature of the identified species and their family name follows Press et al. (2000). Collected voucher specimens are deposited at TUCH. Nomenclature of species is frequently changing. Some of the synonyms of the species were later corrected after visiting the checklist web page of Royal Botanical Garden, Kew (Royal Botanical Garden, Kew, 2009).

RESULTS AND DISCUSSION

A total of 18 species are documented. These 18 species belong to 17 families. A list of plant species along with their scientific name, family name, local name, parts used and uses is given below in enumeration. Out of 18 plants, the majority of the species are climbers (39%) followed by tree (28%), herb (22%) and shrub represent the least (11%) (Figure 2).

The most widely used remedies are derived from whole plant (31%), Bulb/Root (21%), fruit and leaf (each with 16%), followed by bark (11%) and milky juice (5%) (0). The maximum use of whole plants and bulb/root or fruits indicates that these parts may have strong medicinal properties. However, this needs scientific verification (Figure 3).

Regarding different disease categories, the majority of the plants are related to mastitis, anthelmintic, stomach disorders and plants used for scabies and astringent are very less in comparison with all uses. According to the village members, mastitis is a very common problem in present study area and they had used traditional medicines to treat this disease. Five species: *Artocarpus heterophyllus*, *Asparagus racemosus*, *Eclipta prostrata*, *Solena heterophylla* and *Trichosanthes anguina* are used to treat mastitis, three species each for stomach disorder and Anthelmintic, two species each for urinary disorder, corneal opacity and lactation and one species each for scabies, astringent and expel placenta (see enumeration below).

Most of the medicinal plants are used in juice form which is extracted from different parts of a plant followed by paste, fresh plants and plant parts and powder form (see enumeration below).

All most all the species are common plants and are found in nearby forest area and grasslands. However, in recent years, they informants have to walk far to collect these plants that had earlier been easily available close to their villages. According to them, rapid deforestation and expansion of agricultural lands are the main reasons for loss of medicinal plants. This study reports some new findings which were not mentioned in previous studies. For example use of *Argyrea hookeri* for expulsion of placenta is not mentioned in Rajbandari (2001) and Manandhar (2002). Similarly, use of *Avena sativa* for lactation, use of *Citrus limon* for stomachache, use of *Mirabilis jalapa* for urinary disorder and use of *Trichosanthes anguina* for mastitis has not been reported in earlier studies.

During our study period what we have found that the elderly persons/traditional healers have greater knowledge upon the utilization of medicinal plants in comparison to younger generation. According to the key informants, they are practicing this method since time immemorial. When we interacted with children of the traditional healers and younger generation of the society, they showed less interest in traditional practices mostly because of poor recognition of traditional healers and

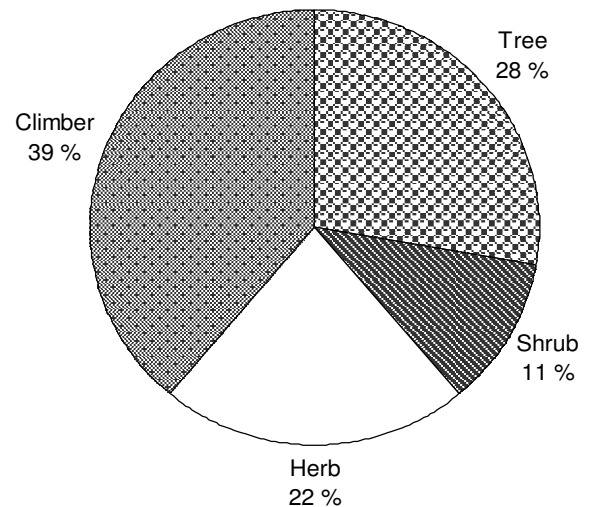


Figure 2. Different life forms of medicinal plants collected.

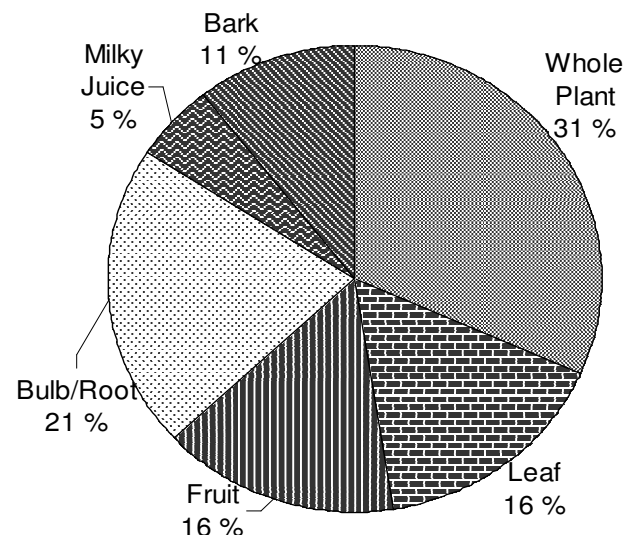


Figure 3. Graph showing plant parts used.

availability of modern health facilities and this scenario is presented in almost all literatures working on ethnobotanical studies. But, they are in positive that this type of knowledge which their forefathers followed should be documented before they are lost or disappeared. To preserve these valuable natural resources, first these existing valuable information are needed to be documented before they are lost or disappeared. Therefore, strong emphasis should be given for the documentation of indigenous uses, traditional knowledge and practices.

Enumeration

Botanical name : *Aesculus indica* (Colebr. ex Cambess.) Hook

Family : Hippocastanaceae
 Local name : Pangra
 Life form : Tree
 Parts used : Leaf
 Uses : Anthelmintic: About 3-4 kg fresh leaves of the plant is fed to animals for 4-5 days to rid them of intestinal parasites.

Botanical name : *Argyreia hookeri* C.B. Clarke
 Family : Convolvulaceae
 Local Name : Suntiki laharo
 Life form : Climbing shrub
 Parts used : whole plant
 Uses : To expel placenta: If the placenta of an animal is not expelled for a long time, the plant is tied externally circling the stomach of an animal. After this the placenta is expelled but the plant should be removed as soon as the placenta is expelled.

Botanical name : *Artocarpus heterophyllus* Lam.
 Family : Moraceae
 Local name : Rukh Katahar
 Life form : Tree
 Parts used : Part inside fruit
 Uses : Mastitis: The paste of inner part of the fruit is applied to the infected part.

Botanical name : *Asparagus racemosus* Wild.
 Family : Liliaceae
 Local name : Kurilo
 Life form : Woody climber
 Parts used : Root
 Uses : Mastitis and increase lactation: The root of the plant is cleaned with water and sliced. About one Kg of the slices is cooked with about two liters water for about half an hour. About half a liter is fed to animals to increase lactation. The paste prepared from root is applied twice a day, at morning and evening to treat mastitis.

Botanical name : *Avena sativa* L.
 Family : Gramineae
 Local name : Jai Ghas
 Life form : Herb
 Parts used : whole plant
 Uses : Lactation: The grass is supposed to increase lactation in animals if about 5 to 10 Kg is provided daily.

Botanical name : *Centella asiatica* (L.) Urban
 Family : Umbelliferae
 Local name : Ghodtapre
 Life form : Herb
 Parts used : Whole plant
 Uses : Urinary disorder: whole plant is fed to animals to treat urinary disorders.

Botanical Name : *Citrus limon* (L.) Burm. f.

Family : Rutaceae
 Local name : Nibuwa
 Life form : Tree
 Parts used : Fruit
 Uses : Stomachache: one to two spoonful juice of a fruit is diluted in about 250 ml water and fed to animal with the help of bamboo cylinder.

Botanical name : *Colebrookea oppositifolia* Sm.
 Family : Labiatae
 Local name : Dhurseli
 Life form : Shrub
 Parts used : Leaf
 Uses : Anthelmintic and Corneal opacity or Keratoconjunctivitis: Juice obtained by pounding young leaves is used as anthelmintic. About 25 - 30 ml is fed once a day for 2 - 3 days. The juice prepared as above is dripped into the eyes with the help of sprayer or with hand to treat corneal opacity or conjunctivitis.

Botanical name : *Dioscorea bulbifera* L.
 Family : Dioscoreaceae
 Local name : Bhyakur
 Life form : Herbaceous climber
 Parts used : Bulb
 Uses : Astringent: About 5 - 10 drops of a juice obtained by pounding a bulb is applied to an infected part.

Botanical name : *Eclipta prostrate* (L.) L.
 Family : Compositae
 Local name : Bhringiraj
 Life form : Herb
 Parts used : whole plant
 Uses : Mastitis: Paste prepared from the whole plant is applied to an infected part.

Botanical name : *Euphorbia royleana* Boiss.
 Family : Euphorbiaceae
 Local name : Siundiko kanda
 Life form : Shrub
 Parts used : Milky Juice
 Uses : Corneal opacity or keratoconjunctivitis: If the corneal opacity is on the left eye, the milky juice is massaged at the left side of a forehead and vice versa.

Botanical name : *Melia azedarach* L.
 Family : Meliaceae
 Local name : Bakaino
 Life form : Tree
 Parts used : Bark and Leaf
 Uses : Anthelmintic: The juice obtained by pounding leaves and bark is used. About 200 ml, once a day is fed to animals for 3 - 4 days.

Botanical name : *Millettia extensa* (Benth.) Baker
 Family : Leguminosae

Local name : Gaujo
 Life form : Woody climber
 Parts used : whole plant
 Uses : Scabies: Juice obtained by pounding the plant is applied to the infected part twice a day (morning and evening) for one week.

Botanical name : *Mirabilis jalapa* L.
 Family : Nyctaginaceae
 Local name : Lankeshwori
 Life form : herb
 Parts used : root
 Uses : Urinary disorder: Juice from the roots is prepared by pounding roots. About 200 ml juice is fed to animals to treat urinary disorder.

Botanical name : *Schima wallichii* (DC.) Korth.
 Family : Theaceae
 Local name : Chilaune
 Life form : Tree
 Parts used : Bark
 Uses : Stomach disorder and liver fluke: About 250 gm powdered bark and about half kilogram rice husk is mixed with water and is fed once a day to animals for 3-4 days.

Botanical name : *Solena heterophylla* Lour.
 Family : Cucurbitaceae
 Local name : Gol kankri
 Life form : Climber
 Parts used : Root
 Uses : Mastitis: The paste prepared from root is applied to the infected part twice a day for 3 - 4 days.

Botanical name : *Stephania glandulifera* Miers
 Family : Minispermaceae
 Local Name : Gujargano
 Life form : Climbing shrub
 Parts used : Whole plant
 Uses : Stomach disorders: Juice obtained by pounding bark is fed to animals once a day for 3 - 4 days.

Botanical name : *Trichosanthes anguina* L.
 Family : Cucurbitaceae
 Local name : Chichindo
 Life form : Climber
 Parts used : Fruit:
 Uses : Mastitis: The ripe fruit is sliced. Sliced pieces are pounded in stone slab. The powder paste is applied to the infected part for 3 – 4 days

Conclusion

There is still a paucity of quantitative data on ethnove-terinary use of plants. The ethnic communities in different parts of Nepal have developed excellent traditional knowledge due to long term association with forests. This valuable information needs to be documented before it disappears. Therefore, it is strongly recommended to promote the documentation of indigenous uses and traditional knowledge and practices, using quantitative methods. Furthermore, research related to chemical screening should also be initiated to analyse the chemical contents of medicinal plants and the implications on health. In addition to medicinal use, plant resources can be linked to the preservation of biodiversity and alleviation of poverty.

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