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Ethnomedicinal Plants Used Against Skin Diseases in Some Villages of Kali Gandaki, Bagmati and Tadi Likhu Watersheds of Nepal

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Abstract

The paper enumerates the traditional uses of 73 plant species belonging to 62 genera representing 47 families, which are used by the village communities of Kali Gandaki, Bagmati, and Tadi Likhu watersheds of Nepal for the treatment skin diseases. Some of useful species are under serious threat due to unsustainable activities. Hence, a proper documentation of useful plants with their present status and local traditional knowledge as well as practices is urgently needed. Effort should also be initiated to implement appropriate conservation measures for preservation and sustainable uses of these useful species.

Introduction

The rural communities of Nepal are still dependent upon wild plants for their primary healthcare and treatment of diseases. They collect the useful plants from various habitats such as forests, scrub, grassland, cultivated fields and use these plant materials as raw drugs. These communities have acquired good knowledge on the useful and harmful properties of the useful plant resources in course of their constant association with forest and agro-ecosystems. However, at present, this vast store of information is being eroded as a result of human's unsustainable activities. The loss of traditional knowledge within

cultures undergoing rapid change is just as irreversible as the loss of species (Joshi and Joshi, 2005). Hence efforts should be made to document the various uses of plants before some of these plants are eliminated from the area, or before these inhabitants shift over to modern remedies. In this context, the rich and diverse forest ecosystems and vast tribal population with traditional knowledge systems due to cultural and environmental diversity in the country have attracted a number of workers for ethnomedicinal studies in the past (Acharya, 1996; Bhattarai, 1992; Chaudhary, 1994; Coburn, 1984; Joshi, 1988; Joshi, K. 1991; 1996; 2000; 2003a & b; 2004a & b; 2005; Joshi and Edington, 1990; Joshi and Joshi, 2000; 2005; Joshi, Shrestha and Joshi 2003; Manandhar, 2002; Phole, 1990; Sacherer, 1979; Taylor, Manandhar and Towers, 1995; Toba, 1975). However, the vast store of ethno-medicinal information of these study areas have not been fully documented.

In the present paper an attempt has been made to present indigenous knowledge and uses of the wild plants which are used by local communities for treatment of skin diseases.

The study is carried out in some villages of Kali Gandaki, Bagmat and Tadi Likhu Watersheds of Nepal. The land forms of the study areas are characterized by moderate to steep sloppy mountainous terrain. The study areas are endowed with rich and varied vegetation types due to their diverse topography and variable climatic conditions. The human pressure on these vegetative resources is very heavy except on very steep, almost vertical and inaccessible rock faces near the river. The villages are inhabited by different ethnic tribes which are rich in folk lore.

Materials and Methods

Several field trips in and around the study areas were undertaken during the years 2004-2006 with a view to collect plant species of ethnomedicinal value and to document the indigenous practices. The information was gathered using various techniques such as open and structured interview, and discussion with local informants, such traditional healers / “jkankri”, and experienced village elders including

midwives and by direct observations on the way different plant materials were being collected and used (Joshi and Edington, 1990). The plant specimens were identified with the help of floras. Voucher specimens are deposited in the Botany Department, Patan Campus, Tribhuvan University, Kathmandu, Nepal.

Enumeration of Plants

During the field survey, ethnobotanical information of 73 species of medicinal plants belonging to 47 families was compiled from various habitats of the study areas. The study shows that among the skin diseases, scabies, wounds, and boils are the major diseases in the villages. During the treatment of the diseases, various forms of preparation are used. In the following enumeration, the species are arranged alphabetically. Botanical name followed by family, Nepalese name, uses of the plants and their parts as reported by the local inhabitants, and habitat along with the information collected areas.

Abrus precatorius L. Leguminosae

Nep. Ratigedi, Lalgedi

Use: Fresh leaf is crushed to paste and warmed slightly. It is applied over boils.

Habitat: Forests, Sundarijal, Bagmati watershed, Kathmandu District.

Acacia catechu (L. f.) Willd . Leguminosae

Nep. Khayar.

Use: Leaf paste mixed with mustard oil is applied externally in case of scabies.

Habitat: Along the bank of Kali Gandaki River and forests, Beltari, Mirmi and Setibeni, Kali Gandaki watershed.

Achyranthes aspera L. Amaranthaceae

Nep. Apamarga

Use: Plant is crushed to paste which is applied externally to cure eczema.

Habitat: Forests, Sundarijal, Okharni and Mulkhadka, Kathmandu District, Central Development Region; Kakani, Nuwakot District, Central Development Region.

Achyranthes bidentata Blume, Amaranthaceae

Nep. Datiwan, Rato apamarga

Use: Roots are powdered, mixed with crushed snails and applied in case of pimples.

Habitat: Forests and cultivated fields, Adhi khola and shady places of

Mirmi, Kali Gandaki watershed; Chaubas, Kathmandu district, Central Development Region; Thansen and Likhu, Nuwakot district, Central Development Region.

Acorus calamus L. Araceae

Nep. Bojho

Use: Rhizome is crushed to paste and then applied externally to cure scabies.

Habitat: Mershy places, Chaubas, Bagmati watershed, Kathmandu District, Central

Development Region.

Adiantum caudatum L. Adiantaceae

Nep. Uneu

Use: Green leaves are pounded in water and juice is applied in case of itches.

Habitat: Stone crevices and rocky slopes, Kakani and Talakhu of Tadi Likhu Watershed, Nuwakot district, Central Development Region.

Adiantum incisum Forssk, Adiantaceae

Nep. Uneu

Use: Frond is squeezed between thumb and then juice is applied externally to cure scabies.

Habitat: Forests, Matragau, Nuwakot district, Central Development Region.

Aegle marmelos (L.) Correa, Rutaceae

Nep. Bel.

Use: Young fruit is crushed with a piece of turmeric which is applied to cure ulcers.

Habitat: Forests, Kakani of Tadi Likhu watershed, Nuwakot district, Central Development Region.

Ageratum conyzoides L. Compositae

Nep. Ganaune ghans, Gandhe.

Use : Fresh leaf paste is applied to cure infections of skin between the toes.

Habitat: Moist and waste places, Mirmi of Kali Gandaki watershed; Matragaun from Thansen of Tadi Likhu watershed, Nuwakot district, Central Development Region; Okharni and Mulkharka of Bagmati watershed, Kathmandu district, Central Development Region.

Allium wallichii Kunth., Amaryllidaceae

Nep. Jimbu jhar, Vanlasun

Use: Fresh juice of bulb is applied externally in case of itches and to remove maggots from wounds.

Habitat: Shady places, forests, Chaubas, Kathmandu District, Central Development Region; Syabru, Langtang watershed, Rasuwa district; Kakani, Nuwakot district.

Amaranthus caudatus L., Amaranthaceae

Nep. Seto late

Uses: Paste of leaves is applied locally over boils to hasten their bursting.

Habitat: waste land and edges of the cultivated fields, Kakani, Nuwakot district; Okharni and Mulkhadka, Kathmandu District, Central Development Region.

Amaranthus spinosus L., Amaranthaceae

Nep. Ban lunde, Luren latte.

Use: Leaves are crushed to paste and applied externally to cure eczema.

Habitat: Mostly occurs on open and sunny places, waste ground, Mirmi of Kali Gandaki watershed; Chaubas, Okharni, and Mulkhadka, of Bagmati watershed, Kathmandu District, Central Development Region; Kakani, Bhadratar and Mahakali of Tadi Likhu watershed, Nuwakot district, Central Development Region.

Artemisia dubia Wall. ex Besser, Compositae

Nep. Titepati, Nagadamani

Use: Leaf is crushed with lemon juice and paste obtained applied externally in case of itches.

Habitat: Syabru, Langtang watershed, Rasuwa district

Artemisia indica Willd., Compositae

Nep. Titepati, Gandhe jhar

Use: Leaf paste is applied in case of ringworm and eczema.

Habitat: Forest, scrub, cultivated field, Kakani and Thansen of Tadi Likhu Watershed, Nuwakot district,

Artocarpus lakoocha Wall . Moraceae

Nep. Badhar

Use: Stem is crushed to paste and applied to cure old ulcers.

Habitat: Forests, Mirmi and Dumrichur of Kali Gandaki watershed.

Asparagus filicinus Buch.-Ham. ex D. Don., Liliaceae

Nep. Van kurilo

Use: Root paste is applied on pimples.

Habitat: Forests, Shcrub, Chaubas of Bagmati watershed, Kathmandu district.

Azadirachta indica A. Juss., Meliaceae

Nep: Neem

Use: Leaf extract is applied externally on boils and blisters.

Habitat: Forests, Kakani and Thansen of Tadi Likhu watershed, Nuwakot district.

Bauhinia purpurea L. Leguminosae

Nep. Koiralo, Kachnar

Use: Fresh leaves are crushed to paste and warmed slightly and the applied over Boils.

Habitat: Forests and cultivated field, Mirmi, Kali Gandaki watershed; Kakani and Talakhu of Tadi Likhu watershed, Nuwakot district.

Berberis aristata DC, Berberidaceae

Nep. Chutro

Use: Bark is crushed and applied externally in case of pimples, itches and scabies.

Habitat: Forests, open meadow, sunny trail side, Setibeni, Kakani, Nuwakot district; Sundarijal, Okarni, Mulkhadka and Chaubas, Kathmandu District, Central Development Region; Syabru, Rasuwa district; Mahangal, Chilaune Thansen, and Mahakali of Tadi Likhu watershed, Nuwakot district.

Berberis asiatica Roxb. ex DC., Berberidaceae

Nep. Chutro

Use: Bark is crushed to paste and applied to cure old ulcers.

Habitat: Forest, open meadow, sunny trail side, Okarni, Mulkhadka and Chaubas, Kathmandu District, Central Development Region; Syabru of Langtang watershed, Rasuwa district; Mahangal, Chilaune Thansen, and Mahakali of Tadi Likhu watershed, Nuwakot district.

Boerhavia diffusa L., Nyctaginaceae.

Nep. Punarva, Sano pate

Use: Root paste is taken orally, three times a day to cure pimples.

Habitat: Forests, Ridi, Ramdi, and Balam of Kali Gandaki watershed.

Bombax ceiba L., Bombacaceae

Nep. Simal, Simar

Use: Root paste is applied externally in case of pimples

Habitat: Forest, Thansen of Tadi Likhu watershed, Nuwakot district.

Buddleja asiatica Lour., Loganiaceae

Nep. Bhimsenpati

Use: Young leaves are crushed with a piece of turmeric which is applied externally to cure scabies.

Habitat: open places, Thansen of Tadi Likhu watershed, Nuwakot district; Chaubas, Kathmandu District, Central Development Region.

Buddleja paniculata Wall., Loganaceae

Nep. Narayanpati

Use: Leaf paste is applied one time a day for the treatment of pimples and itches.

Habitat: Syabru of Langtang watershed, Rasuwa district; Chaubas, Kathmandu District, Central Development Region.

Cannabis sativa L., Cannabaceae

Nep. Bhang, Ganja

Use: Crushed leaves are rubbed on the affected areas to control scabies.

Habitat: Commonly occurs as weed in open places and scrubs, Kakani of Tadi Likhu watershed, Nuwakot district; Burge, Ridi, Ramdi, Balam of Kali Gandaki watershed.

Cassia tora L., Leguminosae

Nep. Chukarmandi, Tapre.

Use: Fresh leaves are pounded into a paste and are applied in case of ringworm.

crushed leaf are soaked with sugar overnight in half a glass of water. It is filtered and taken in empty stomach in the morning to cure ulcers.

Habitat: Waste lands, sunny places, Mirimi of Kali Gandaki watershed; Thansen of Tadi Likhu watershed, Nuwakot district; Chaubas, Kathmandu District, Central Development Region.

Centella asiatica (L.) Urban., Umbelliferae

Nep. Ghortapre

Uses: crushed leaf and root extract is applied to the affected parts to kill germs

from wounds; decoction of leaves is also applied to cure leprotic wound.

Habitat: Sunny or slightly shaded damp places, Okharni, Mulkhadka and Sundarijal, Kathmandu District, Central Development Region; Kakani of Tadi Likhu watershed, Nuwakot district.

Choerospondias axillaris (Roxb.) B.L. Burtt. & A.H. Hill, Anacardiaceae

Nep. Lapsi, Amla

Use: Seed is fired and the ash mixed with butter is applied to cure boils

Habitat: Forest, Thansen of Tadi Likhu watershed, Nuwakot district.

Clematis montana Buch –Ham. ex DC., Ranunculaceae

Nep. Angur jhar, Junge lahara

Use: Root extract is applied externally on pimples.

Habitat: Forest, Sybru, Langtang watershed, Rasuwa district.

Cuscuta reflexa Roxb. Convolvulaceae

Nep. Akasbeli, Amar lata

Use: Plant is crushed to paste and applied externally to cure urticaria.

Habitat: Waste land edges of cultivated fields, Chaubas, Kathmandu District, and Central Development Region.

Cynodon dactylon (L) Pers., Gramineae

Nep. Dubo

Use: Root paste is applied externally to cure ulcers and boils.

Habitat: sunny or slightly shaded damp places, Okharni, Mulkhadka and Sundarijal, Kathmandu District, Central Development Region; Kakani of Tadi Likhu watershed, Nuwakot district.

Cyperus rotundus L. Cyperaceae

Nep. Mothe

Use: the root is pounded and then applied to treat boils and blisters.

Habitat: occurs as weed on the cultivated fields, Mirmi of Kali Gandaki watershed; Kakani of Tadi Likhu watershed, Nuwakot district.

Datura metel L. Solanaceae

Nep. Kalo dhaturo

Use: Seeds are crushed and cooked in mustard oil. It is applied to cure scabies.

Habitat: Open sunny places and wastelands, Mirmi, and Harmichur, Kali Gandaki watershed; Thansen, Tadi Likhu watershed, Nuwakot district.

Equisetum debile Roxb. ex Vaucher, Equisetaceae

Nep. Ankhe jhar

Use: Plants are pounded and paste is then applied to cure old ulcers.

Habitat: Moist areas, Kakani, Tadi Likhu watershed, Nuwakot district.

Euphorbia hirta L., Euphorbiaceae

Nep. Dudhe, Dhudhya

Use: Latex is applied to cure burn wounds and boils.

Habitat: Common as weeds in roadsides, Mirmi of Kaligandaki watershed; Syabru of Langtang watershed, Rasuwa district.

Euphorbia longifolia D. Don., Euphorbiaceae

Nep. Dhurtsi

Use: Fresh juice of root is applied to remove maggots from wounds.

Habitat: Wasteland, shady bank, Talakhu and Kakani, Tadi Likhu watershed, Nuwakot district.

Eurya acuminata DC., Theaceae

Nep. Jhingani, Pate, Tegar

Use: Juice of leaves is used to cure itches and scabies.

Habitat: Forest, Syabru of Langtang Watershed, Rasuwa district.

Ficus bengalensis L. , Moraceae

Nep. Bar

Use: Bark powder is used externally to cure scabies.

Habitat: Forest and roadsides, Okarni of Bagmati watershed, Kathmandu district.

Ficus hispida L.f. , Moraceae

Nep. Kharseto

Use: Latex with mustard oil is used externally to cure cut, burn wounds and ulcers.

Habitat: Roadsides, bushes and thickets, Thansen of Tadi Likhu watershed, Nuwakot district.

Ficus recemosa L. Moraceae

Nep. Gular

Use: Bark powder is used externally in case of pimples, itches and scabies.

Habitat: Forests, Kakani and Thansen, Tadi Likhu watershed, Nuwakot district.

Ficus religiosa L., Moraceae

Nep. Pipal.

Use: Green leaves are pounded in water and the juice applied to treat scabies,

Habitat: Roadsides, open places, villages, Mirmi of Kaligandaki Watershed.

Glochidion velutinum Wight, Euphorbiaceae

Nep. Leti kath

Use: Fruit is crushed and paste is applied for curing pimples.

Habitat: Forest, Kakani of Tadi Likhu watershed, Nuwakot district.

Grewia hirsuta Vahl. Tiliaceae

Nep. Phusre

Use: Root paste is applied on pimples and boils.

Habitat: Forests, Kakani and Thansen, Tadi Likhu watershed, Nuwakot district.

Hedera nepalensis K. Koch., Araliaceae

Nep. Pipal pate, Dudelo

Use: Decoction of leaves is taken twice daily in case of urticaria.
Habitat: Forest and Scrub, Syabru of Langtang watershed, Rasuwa district.

Hibiscus rosa-sinsnsis L., Malvaceae

Nep. Jappuspi, Barahmase

Use: Leaf is crushed to paste and applied over boils.

Habitat: Scrub, Chaubas, Okarni and Mulkhadka, Bagmati watershed,
Kathmandu district.

Ipomea carnea Jacq., Convolvulaceae

Nep. Jyanti

Use: Leaf paste is applied to cure infections of skin between the toes.

Habitat: Forest, Syabru, Lamtang watershed, Rasuwa district.

Jatropha curcas L., Euphorbiaceae

Nep. Sajiwan.

Use: Latex of stem and leaves with mustard oil is applied to cure scabies
and
eczema.

Habitat: Common along roadsides, cultivated fields and wasteland, Mirmi
and Beltari of Kaligandaki Watershed; Kakani and Thansen of Tadi
Likhu
watershed, Nuwakot district.

Kalanchoe spathulata DC., Crassulaceae

Nep. Hathi kane

Use: Stem and leaf are crushed together and applied over boils for
hastening
their bursting and healing.

Habitat: Forest, Syabru of Langtang watershed, Rasuwa district.

Lyonia ovalifolia (Wall) Drude, Ericaceae

Nep. Angeri

Use: Fresh leaf past is applied externally on wounds and pimples.

Habitat: Forests, Chaubas, Kathmandu District, Central Development Region;
Kakani, Thansen of Tadi Likhu watershed, Nuwakot district.

Maesa chisia Buch.-Ham. ex D. Don, Myrsinaceae

Nep. Bilauni

Use: Plant juice is applied on the affected part in case of ringworm.

Habitat: Forests, Okharni and Mulkhadka, Kathmandu District, Central
Development Region; Kakani of Tadi Likhu watershed, Nuwakot district.

Magnifera indica L., Anacardaceae

Nep. Aamp.

Use: Latex is applied to cure ulcers.

Habitat: Forests, and edges of cultivated fields of Mirmi, Manawa, and Beltari of Kali Gandaki watershed.

Melia azedarach L., Meliaceae

Nep. Bakanu

Uses: Leaves are pounded and extract is then applied in case of carbuncle; bark and fruit paste is applied to cure leucoderma and wound.

Habitat: Edges of cultivated fields, Sundarijal, Kathmandu District, Central Development Region; Kakani, Nuwakot district; Forests, Mirmi of Kaligandaki watershed.

Mallotus philippensis (Lam.) Muell, Euphorbiaceae

Nep. Sindhure, Rohini

Use: Power from fruit is applied externally in case of itches and scabies

Habitat: Forests and scrub, Talakhu and Thansen of Tadi Likhu watershed, Nuwakot district.

Mimosa pudica L., Leguminosae

Nep. Lajjawati, Lajauni

Use: Root paste mixed with oil is applied to cure bruises.

Habitat: Grassy slopes near the Kali Gandaki river and Beitari, Kali Gandaki watershed; forests, Okharni and Mulkhadka, Kathmandu District, Central Development Region.

Mimosa rubicaulis Lam., Leguminosae

Nep. Bokshi ghans

Use: Leaves are pounded and the paste is applied over boils for hastening their bursting and healing.

Habitat: Forests of Beitari, Kali Gandaki watershed.

Ocimum basilicum L., Labiatae

Nep. Tulsi, Bam tulsi

Use: Leaf paste is applied to cure ulcers. leaf paste (1 teaspoon) is also taken orally twice daily to cure ulcers.

Habitat: Open places, waste places, edge of cultivated fields, roadsides, Bote gaun, Mirmi and Adhikhola of Kaligandaki Watershed.

Osbeckia stellata Buch.-Ham. ex D. Don., Melastomataceae

Nep. Rato chulsi

Use: Leaf paste is applied in case of cuts, wounds and scabies.

Habitat: Open places, Likhu, Tadi Likhu watershed, Nuwakot district.

Phyllanthus emblica L., Euphorbiaceae

Nep. Amala

Use: Leaf powder and oil mixed together and the paste is applied to cure burn wound.

Habitat: Forests, Kakani, Tadi Likhu watershed, Nuwakot district.

Pinus roxburghii Sarg., Pinaceae

Nep. Rani Salla

Use: Resin is applied externally to cure boils.

Habitat: Forests, Chaubas of Bagmati watershed, Kathmandu district; Syabru of Langtang watershed, Rasuwa district; Kakani and Thansen, Tadi Likhu watershed, Nuwakot district.

Pinus wallichiana A.B. Jacks, Pinaceae

Nep. Gobre salla

Use: resin is used to cure blisters and boils.

Habitat: Forests, Likhu, Nuwakot district.

Plumbago zeylanica L., Plumbaginaceae

Nep. Chitu.

Use: Whole plant is crushed with a pinch of salt and the paste is applied externally in case of ringworm.

Habitat: Sunny or partly shady places, Mirmi, Kali Gandaki watershed.

Podophyllum hexandrum Royle, Berberidaceae

Nep. Laghupatra, Ban bhanta

Use: Fruit powder is used externally to cure burn wound.

Habitat: Open and shady places, Chaubas of Bagmati watershed, Kathmandu District.

Prinsepia utilis Royal, Rosaceae

Nep. Ghatelo, Bhekali

Use: Fruits are crushed and the paste is applied on warts.

Habitat: Forest, Okharni and Mulkhadka, Kathmandu District, Central Development Region.

Psidium guajava L., Myrtaceae

Nep. Amba, Amrood

Use: Leaf paste is applied in case of itches

Habitat: Forest, Thansen of Tadi Likhu watershed, Nuwakot district.

Ricinus communis L., Euphorbiaceae

Nep. Ander, Andi

Uses: seed paste is applied to treat skin cracks. Paste of leaves and flowers is applied on leprotic wound.

Habitats: Road-side, waste ground, Okharni and Mulkhadka, Kathmandu District,
Central Development Region; Kakani and Thansen, Tadi Likhu watershed,
Nuwakot district.

Rumex nepalensis Spreng., Polygonaceae

Nep. Halhale.

Use: Crushed root paste is applied to cure eczema.

Habitat: Moist and shady places, waste lands, Mirmi of Kaligandaki watershed;
Thansen, Tadi Likhu watershed, Nuwakot district.

Schima wallichii (DC) Korth., Theaceae

Nep. Chilaune

Use: Bark decoction/ bark paste is applied to cure wounds.

Habitat: Forests, Kakani, Nuwakot district.

Scurrula elata (Edgew) Danser, Loranthaceae

Nep. Anjero

Use: Fresh leaf paste is applied externally on pimples and wounds.

Habitat: Likhu, Tadi Likhu watershed, Nuwakot district.

Shorea robusta Gaertn., Dipterocarpaceae

Nep. Sal, Sakhuwa

Use: Bark paste is used externally to cure cut, wound and ulcers.

Habitat: Forests, Thansen, Tadi Likhu watershed, Nuwakot district.

Smilax aspera L., Liliaceae

Nep. Chopchini

Use: Tender vegetative parts are crushed to the paste and applied in case of scabies.

Habitat: Forests, Syabru, Rasuwa district.

Tamarindus indica L., Leguminosae

Nep. Tate amilo

Use: Dry bark power mixed with oil is applied on burn wound, seed paste is applied externally to cure scabies.

Habitat: Forests, Thansen, Tadi Likhu watershed, Nuwakot district.

Terminalia chebula Retz., Combretaceae

Nep. Harro

Use: The fruit is rubbed on a stone to obtain a paste which is applied over boils
and also used to cure wound and ulcer.

Habitat: Roadsides and forests, Mirmi, Syalbas and Beltari of Kaligandaki watershed.

Tinospora sinensis (Lour.) Merr., Menispermaceae

Nep. Gurjo, guruch latti

Use: Root paste mixed with mustard oil is applied to cure pimple

Habitat: Forest, Syabru, Langtang watershed, Rasuwa district.

Woodfordia fruticosa (L.) Kurz., Lythraceae

Nep. Dhayaro

Use: Stems are pounded and mixed with curd and applied to treat scabies.

Habitat: Dry slopes, forests, Mirmi, Beltari and Setibeni, Kaligandaki Watershed.

Discussion

The results of the present study revealed that wild plants and their parts are widely used for skin diseases in the study villages of the Kali Gandaki, Bagmati and Tadi Likhu watersheds. Local people have remarkable detailed knowledge of species identity and characteristics. However, when questioned about the changing status of medicinal plants, the villagers listed some important species such as *Allium wallichii*, *Asparagus filicinus*, *Centella asiatica*, *Melia azaderach*, *Terminallia chebula* and *Zanthoxylum armatum*, which have declined in abundance during the last decade due to land use change, extensive grazing of domestic animals and over-exploitation of useful species. As more than 60 percent of plant species useful for skin diseases treatment appear to be restricted to shaded forest habitats in the forests, the anthropogenic unsustainable activities such as deforestation, habitat destruction, urbanization etc. may pose a serious threat to the species. Hence, priority should be given to the following three measures:

- 1) Investigation related to taxonomy, chemical screening and documentation of the useful species and their habitats;
- 2) Initiation of conservation action works with appropriate measures involving local participation; and,
- 3) Implementation of awareness activities with integrated approach for sustainable development.

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