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ETHNOBOTANY OF ARGHAKHANCHI DISTRICT, NEPAL: PLANTS USED IN DERMATOLOGICAL AND COSMETIC DISORDERS

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Abstract

An attempt was made to explore, identify, and document medicinal plants used in dermatological and cosmetic disorders by the people of Arghakhanchi district of western Nepal. The study was conducted during 2006-2008 using semi-structured, open-ended questionnaires, informal interviews, and group discussion with traditional healers and persons of different age and occupation having knowledge about plants and plant based remedies. A total of 31 plant species belonging to 24 families were identified and documented. Arghakhanchi district has a rich repository of medicinal plants. The indigenous traditional knowledge has been transmitted orally for years is becoming extinct, with the introduction of modern and alternative facilities of treatments in the district. Hence, these traditional practices need proper documentation and this reinforces the need for screening new active compounds. These documented plant species may be used for development of new, cheap, and effective medicines in future.

Key words: Traditional knowledge, Medicinal plants, Dermatology, Cosmetics, Western Nepal.

Introduction

Skin diseases are of common occurrence among the rural people due to poor hygienic conditions, poor sanitation facility and use of contaminated water. Traditional herbal medicines used by different communities play an important role in alleviating skin diseases such as wounds, cracks, ringworm, boils, scabies, allergy, eczema, skin burn, prickly heat and white patches of skin etc. Traditions of collecting, processing and applying plant based medicines are maintained by indigenous societies for long and carefully. They have been handed down by verbally from generation to generation. Human infections, particularly those involving the skin and mucosal surfaces, constitute a serious problem, especially in tropical and sub tropical developing countries (Portillo et al., 2001). The significance of ethnomedicine and ethnopharmacology is now increasingly recognized in modern medicine (Maydell, 1990), and these are enjoying a respectable position today, where modern healthcare services are limited. These remedies have gained popularity amongst the people of developing

countries, being safe, effective, and less expensive. The identification of medicinal plants from indigenous pharmacopoeias that have been shown to have significant healing power, either in their natural state or as a source of new pharmaceuticals and the recognition that herbal formulations are less toxic than most pharmaceutical agents; during latter part of the last century made the traditional herbal medicine research mainstream worldwide (Elvin-Lewis, 2001; Marini-Bettolo, 1980). The aim of the present study was exploration, identification and documentation of plant species used in dermatological and cosmetic disorders by the people of Arghakhanchi district.

Study area

The district Arghakhanchi, a part of Western Development Region of Nepal is located between 27° 45' - 28° 06' N latitude and 80° 54' - 83° 23' E longitude with an area of 1193 km² (Fig-1). It is a land of small holdings and 70 percent of population practice subsistence agriculture, but the most peasants are not self sufficient. In most localities, no organized medicinal aid is available; therefore, they depend

mainly on the local herbal medicines. The different skin diseases are treated with plant remedies on the basis of empiric knowledge. Nepali is the state official language known to the people and also they have their own local dialects. District is bounded by Palpa and Gulmi districts from east, Pyuthan and Dang from west, Gulmi from north and Kapilvastu and Rupandehi from south. The elevation of the district varies from 305 m to 2515 m above the sea level. There are 42 village development committees in the district. The major area of the district is mid mountain and foothill, with 69.11 % of area under slopes above 30 degree (ICIMOD, 1997).

The district has variation of climate from tropical, subtropical to temperate while most of the area lies under subtropical region. The average temperature of the district is maximum 24⁰ C and minimum 14.5⁰ C

Schima wallichii, *Ficus semicordata*, above this belt *Pinus roxburghii* mixed with *Castanopsis indica*, *Diospyros malabarica*, *Rhododendron arboreum*, *Quercus* species are associated with *Maesa chisia*, *Berberis asiatica*, *Rubus ellipticus*, *Justica adhatoda*, *Zanthoxylum armatum*, *Woodfordia fruticosa* etc.

Methodology

The various villages were first visited in view of knowing the geography, people, language, occupation, forest cover, season etc. Knowledgeable informants were particularly noted such as senior (50-72 years of age), local healers, plant collectors, farmers, school teachers, social workers, and farm laborers in the study area. The data presented are based on ethnobotanical interviews with the above said informants, who are native to the study area. We used a questionnaire

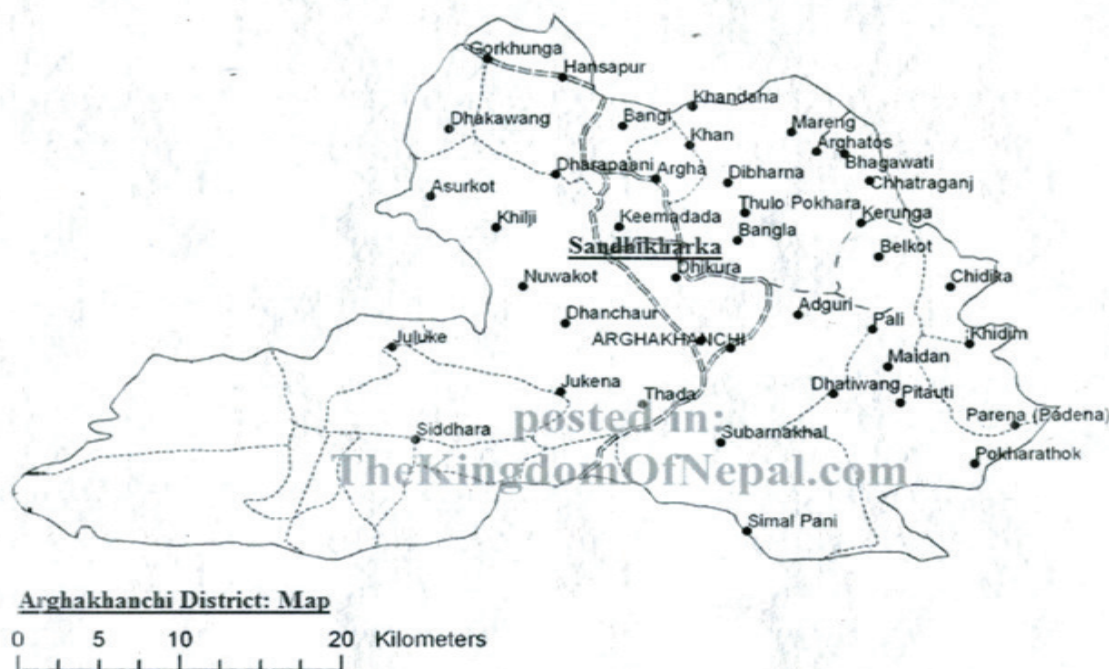


Fig 1: Map of Arghakhanchi district

(Anonymous, 1999) with dry winter and wet summer. The district gets monsoon rain with average 850 mm annual rainfall (Anonymous, 1999).

The vegetation of Arghakhanchi district basically dominated by broad leaved *Schima-Castanopsis-Diospyros* mixed forest. The low land of south side of the district is covered by lower tropical Sal (*Shorea robusta*) forest and mixed with broad leaved forest, above this Hill Sal forest, similarly Chir-Pine (*Castanopsis-Pinus*) forest extended from west and *Schima-Castanopsis* forest extended from east meet in this area (Department of Forest, 2002). In the middle belt hill species of Sal (*Shorea robusta*) is found with *Albizia* species, *Anogeissus latifolia*, *Juglans regia*,

specially prepared for the purpose. Thus methodology adopted is a combination of structural and non-structural interviews. We also participated, on some occasions, in group discussions involving the informants (usually 10-12 in number) were allowed to express their views and experience in their local language. Data were collected during 2006-2008 in different seasons. On other frequent visit, the data accrued were verified. During data collection, plant vouchers were also collected. Sometimes the collected voucher specimens were shown to informants and confirmed, because voucher specimens were the core of study. At least two specimens of each plant species were collected and treated following standard method (Woodland, 1997; Judd et al., 2002). Collected plant

specimens were identified in the field as well as in the laboratory. They were examined thoroughly and identified with the help of available literature (Hooker, 1872-1897; Bailey, 1949; Bulletins of Department of Medicinal Plants, 1969, 1970, and 1986; Pandey, 1982; Adrian & Storrs, 1984; Mc Crackers & Shrestha 1992; Cook, 1996; Singh, 1997; Polunin and Stainton, 1984; Maheshwari, 1966; Chaudhary, 1998; Manandhar, 2002; Singh et al.,2011). Further the specimens were cross checked with the specimens deposited at National Herbarium and Plant Laboratory (KATH) Godavari, Nepal. Scientific names provided in “An Enumeration of Flowering Plants of Nepal” by Hara et al., (Vol I, 1978); Hara & Williams (Vol. II, 1979); and Hara et al. (Vol III, 1982) and “Annotated checklist of the Flowering Plants of Nepal” by Press et al., (2000) have been adopted.

Results and discussion

People of Arghakhanchi district possess tremendous ethnobotanical knowledge. They use plants and their parts in various purposes in their daily life. It is evident from the present study that the ethnic communities are dependent on a variety of plants to meet their requirements and beliefs to cure different dermatological disorders (Fig 3). In some cases the whole plant parts are utilized only for medicinal purposes. They have been using plant parts to cure some important dermatological diseases such as cuts, wounds, cracks, boils, ringworm, scabies, allergy, eczema, leucoderma, skin burn, prickly heat and white patches of skin. The empirical knowledge is squeezing to limited persons and becoming extinct with the introduction of modern medical facilities. Present study is an attempt to explore, preserve and proper documentation of traditional knowledge associated with dermatological diseases. The investigation revealed that the local senior people, healers, and Vaidyas have been using number of plant species to cure various dermatological and cosmetic diseases. Analysis of present study reveals that a total of 31 plant

species were identified belonging to 24 families of which 41.9% were herbs (13), 25.8% trees (8), 9.6% shrubs (3), 9.6% climbers (3), 9.6% small sized trees (3) and 3.2% semi parasite (1) each (Fig 2). Out of 24 families of ethnomedicinal plants, 21 families belong to dicotyledons and the rest others 3 to the monocotyledons. The number of species for each families (Fig 4) are: Fabaceae (05), Asteraceae, Euphorbiaceae and Zingiberaceae (02 each), the remaining twenty families by a single species each for cure of dermatological disorders. Total plant species administrated in dermatological and cosmetic disorders in Arghakhanchi district are arranged alphabetically in table-1.

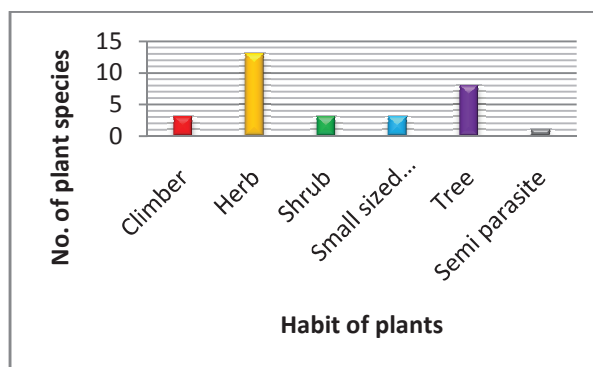


Fig 2: Habit of plants used in treatment of skin diseases

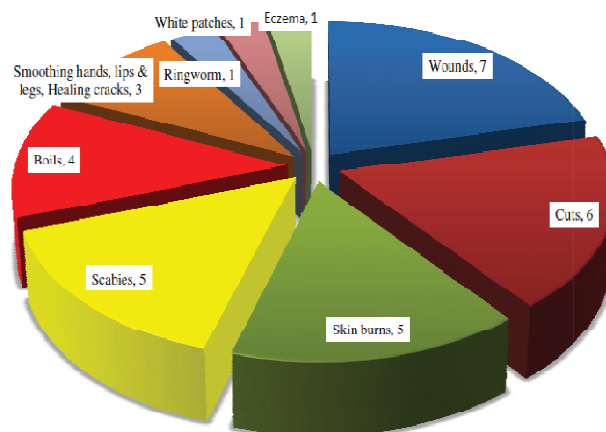


Fig 3: Types of skin diseases with number of plant species used in treatment

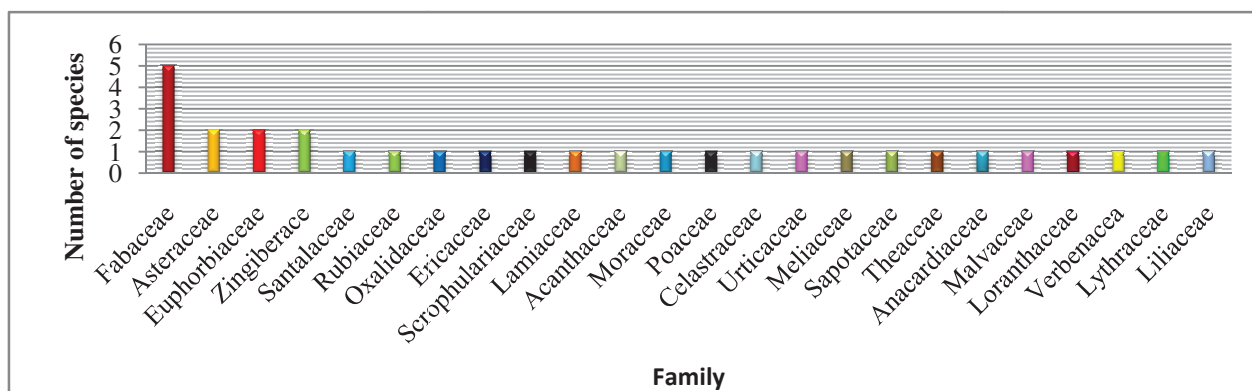


Fig 4: Number of species belonging to the different families

Table 1: List of Plants with their ethnomedicinal uses

Botanical name, Nepali name & Family	Habit & Availability	Parts used	Usage
<i>Abrus precatorius</i> L. Raategedi, Fabaceae	Climber, wild, frequently	Seed	One part of seed powder with 4 parts of <i>Eclipta prostrata</i> mixed with mustard oil is applied locally 3 times a day in dermatitis until cure. Paste prepared from seeds mixed with root paste of <i>Plumbago zeylanica</i> is applied locally 3 times a day in white patches skin diseases until cure.
<i>Acacia catechu</i> (L. f.) Willd. Khayar, Fabaceae	Tree, wild, frequently	Stem bark	Powder of stem bark is used externally to stop bleeding from cuts and wounds.
<i>Aesandra butyracea</i> (Roxb.) Baehni. Chiuree, Sapotaceae	Tree, wild, frequently	Seed	Vanashpati ghee prepared from seeds is applied externally two times a day for healing cracked heels and for smoothing hands, legs, and lips cracking.
<i>Aloe vera</i> (L.) Burm. f. Ghiu Kumari, Liliaceae	Succulent herb, cultivated	Leaf	Leaf pulp or juice is applied externally three times a day in skin burns until cure.
<i>Artemisia indica</i> Willd. Teete pati, Asteraceae	Herb, wild, frequently	Whole plant	Leaf juice is applied externally three times a day in skin diseases until cure. Infusion of whole plant is used for bathing to treat scabies.
<i>Azadirachta indica</i> A. Juss. Neem, Meliaceae	Tree, wild/cultivated, rarely	Leaf & Seed	Extract of fresh leaves or decoction of leaves is used to wash skin thrice a day to treat scabies and other skin diseases. Seed oil with powdered fruit of <i>Terminalia chebula</i> is used externally thrice a day for skin diseases until recovery.
<i>Bauhinia variegata</i> L. Koiralo, Fabaceae	Tree, wild/cultivated	Root	Root paste is heated and applied externally on boils two times a day to take out pus.
<i>Boehmeria platyphylla</i> D. Don. Khasreti, Urticaceae	Shrub, wild, frequently	Leaf	A paste of roasted leaves ash mixed with cow's butter, and is applied externally on skin burns three times a day for cooling and quick healing until recovery
<i>Cassia occidentalis</i> (L.) Link Chakmake/ Jayanti, Fabaceae	Herb, wild, frequently	Fruit & Seed	Roasted fruit and seeds are crushed and about 1 gm mixed with 5-10 ml rape mustard seed oil and applied three times day externally on scabies until cure.
<i>Celastrus paniculatus</i> Willd. Malkauno, Celastraceae	Climbing shrub, wild, frequently	Seed	Seed oil is applied externally three times a day on affected parts of eczema as well as it is mixed with mustard oil equally and applied externally two times a day in skin diseases until cure.
<i>Curcuma angustifolia</i> Roxb. Haledo, Zingiberaceae	Herb, cultivated	Rhizome	Rhizome powder along with mustard oil is applied on wounds for its alleged antiseptic and curative properties.
<i>Cynodon dactylon</i> (L.) Pers. Dubo, Poaceae	Herb, wild, frequently	Leaf	Paste of leaves is applied locally for healing cuts and wounds.
<i>Eclipta prostrata</i> (L.) L. Bhringraj, Asteraceae	Herb, frequently	Whole plant	Plant juice is applied externally in the cuts and wounds.
<i>Ficus benghalensis</i> L. Bar, Moraceae	Tree, wild/ cultivated	Latex	White latex is applied externally in healing of foot cracks.
<i>Kaempferia rotunda</i> L. Bhui champa, Zingiberaceae	Herb, wild/cultivated, frequently	Bulb	Bulb paste is applied in boils and over nuts of skin to burst out expelling the pus and remained foreign particles.
<i>Lepidagathis incurva</i> Buch.- Ham. ex D. Don. Haatkate, Acanthaceae	Herb, wild, frequently	Leaf	Fresh juice of leaves is applied to stop bleeding from cuts while working in fields.
<i>Leucas cephalotes</i> (Roth) Spreng Gumpati/ Dronpuspi, Lamiaceae	Herb, wild, rarely	Leaf & Young shoot	Juice of leaves and young shoot is applied externally three times a day in skin burns until recovery.

Table 1: List of Plants with their ethnomedicinal uses (contd.)

Botanical name, Nepali name & Family	Habit & Availability	Parts used	Usage
<i>Lindernia nummularifolia</i> (D. Don) Wettst. Pittamari jhar, Scrophulariaceae	Herb, wild, frequently	Whole plant	About 15-20 ml decoction of whole plant is taken two times a day as anti-allergic.
<i>Lyonia ovalifolia</i> (Wall.) Drude Anyero, Ericaceae	Small sized tree, wild frequently	Leaf & apical buds	Juice of young leaves and apical buds is applied one or two times externally to treat scabies.
<i>Mallotus philippensis</i> (Lam.) Arg. Rohinee/ Sindure, Euphorbiaceae	Tree, wild, frequently	Fruit powder	Red powder from outside of the fruit is mixed with mustard oil and applied externally two times a day in skin diseases until cure.
<i>Mimosa pudica</i> L. Lajjawati, Fabaceae	Herb, wild, frequently	Leaf	Fresh leaf juice is dropped in cuts, wound to cure and for quick healing.
<i>Oxalis corniculata</i> L. Chariamilo, Oxalidaceae	Herb, wild, frequently	Leaf	Leaf juice is applied externally on cuts and wounds as antiseptic.
<i>Ricinus communis</i> L. Ander, Euphorbiaceae	Small sized tree, wild, frequently	Root	Decoction of root is applied externally two times a day in skin diseases.
<i>Rubia manjith</i> Roxb. ex Fleming Manjeetho, Rubiaceae	Climbing herb, wild/frequently	Whole plant	Decoction of whole plant is applied externally three times a day in different skin diseases until cure.
<i>Santalum album</i> L. Chandan, Santalaceae	Small sized tree, cultivated, rarely	Wood	Wood paste is applied externally in normal skin burns and prickly heat.
<i>Schima wallichii</i> (DC) Korth Cheelaune, Theaceae	Tree, wild, frequently	Stem bark	Juice of stem bark mixed with cow's butter is applied externally three times a day for two weeks to heal and treat cracked heels.
<i>Semecarpus anacardium</i> L.f., Bhalayo, Anacardiaceae	Tree, wild, frequently	Fruit	Fruit juice is applied to the affected parts three times a day to treat ringworm.
<i>Sida cordata</i> (Burm f.) Borss. Balu jhar, Malvaceae	Herb, wild, frequently	Root/Stem	Root/stem paste is applied externally to take out pus from boils.
<i>Viscum album</i> L. Hadchur, Loranthaceae	Semiparasite, wild, frequently	Root/Stem	Powder of root/stem is applied locally once a day in boils and wounds.
<i>Vitex negundo</i> L. Simalee, Verbenaceae	Shrub, wild, frequently	Leaf	Leaf decoction is used to wash skin two times a day suffering from scabies.
<i>Woodfordia fruticosa</i> (L.) Kurz. Dhairi, Lythraceae	Shrub, wild, frequently	Flower	Flowers powder mixed in linseed (aalas) oil and is applied externally three times a day in skin burns until cure.

Conclusion

Despite the little development of rural health services, people of Arghakhanchi district still use medicinal herbs to a large extent for the treatment of different skin diseases. Further herbal medicines have shown no side effects, locally available and economically viable. But, there is an urgent need of detailed investigation and documentation of indigenous knowledge about medicinal plants and therapies which were being passed orally from generation to generation.

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