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Study of Medicinal Plants Used to Treat Different Skin Ailments by Kaibarta Community in a Semi-Urban Village of Tinsukia District, Assam

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ABSTRACT:

Skin, which serves as the body's primary defense, is composed of specialized cells and three distinct layers viz; the outermost epidermis, middle dermis and the innermost hypodermis, each having important functions in the body. Skin diseases are prevalent among both humans and animals. From neonatal to elderly people, skin diseases are very common and cause harm.

The present ethnobotanical survey was carried out to document the use of plant-based remedies to treat different skin diseases by the people belonging to the Kaibarta community residing in Kaptanchuck Gaon, a semi-urban Village of the Tinsukia district of Assam, North- East India.

The study documents and highlights 32 Phyto species having different medicinal values belonging to 26 different families. Among these 32 key plant species, 44% are herbs, 34% are trees and the remaining 22% are shrubs. These plant species are used for treating various skin ailments such as abscess, vitiligo, leprosy, urticaria, eczema, skin burn and many other skin diseases. Different plant components including leaf extracts, seed oils or barks are used for the treatment of these diseases.

The use of plants for treating skin diseases is gaining more popularity with time since they have minimal side effects and numerous advantages for the skin.

Keywords: Medicinal plants, Skin diseases, Scheduled caste, Kaptanchuck Gaon, Tinsukia District.

1. INTRODUCTION:

Skin which serves as the body's primary defense, is composed of specialized cells and three distinct layers viz; the outermost epidermis, middle dermis and the innermost hypodermis, each having crucial functions in the body. Its primary function is to protect the human body from harmful external contact with pathogens. Skin diseases are prevalent among both humans and animals. From neonatal to elderly people, skin diseases are very common and can be detrimental. Various skin infections such as viral infection, bacterial infection, rashes, and pigment disorders are some common skin diseases in humans (Tamuli and Ghosal, 2017).

Medicinal plants are the backbone of traditional medicine. The use of plant-based remedies plays an important role in the treatment of certain diseases. Over 3.3. billion people in less developed countries use plant-based medicine on a regular basis. According to the World Health Organization (WHO), nearly 80% of the global population frequently utilizes traditional herbal medicines for the treatment of various diseases (Topno and Sinha, 2018).

Traditionally used plant-based natural medicines are gaining more popularity with time since they have minimal side effects and numerous advantages. Moreover, these medicines are less expensive and more acceptable due to a long history of use.

Assam, located in the North Eastern region of India, is one of the most significant biodiversity hotspots in the world. Many tribes and ethnic communities within the state uphold their tradition despite facing economic challenges. The major ethnic and tribal communities living in the state are Lushai, Karbi, Chorei, Dimasa, Rhabha, Jayantia,

Sonowal-Kachari, Deori, Moran, Motok Mishing, Ahom, Kaibarta community and tea tribes (Buragohain, 2011). Each and every tribe and community have tremendous faith and belief in their unique practices of Indigenous traditional phytomedicinal knowledge in healing various ailments.

The Kaibarta community is one of the oldest inhabitants of Assam. This community ranks as the second largest community out of the sixteen scheduled castes of Assam. Similar to the other ethnic communities, the Kaibarta community also has a very deep and rich cultural heritage and holds unique traditional knowledge on the application of plant-based remedies for common human diseases (Das and Duarah, 2024).

Several ethnobotanical studies have been conducted in various ethnic communities around the globe, including Assam. However, the traditional knowledge of healing practices by the Kaibarta Community from Assam is limited. Furthermore, disease-specific ethnomedicinal research is particularly lacking in this community from Assam.

Considering the aforementioned, the present study was undertaken to document, highlight and evaluate the rich Indigenous knowledge of the Kaibarta Community of Kaptanchuck Gaon, a semi-urban village from the Tinsukia District of Assam.

The primary objective of this study is to explore the application of Phyto-remedies in combating frequently occurring skin ailments by the people of the Kaibarta community residing in the study area. These important ethnobotanical findings would provide fundamental information for future phytochemical research.

2. MATERIALS AND METHODS:

2.1 Study area:

Tinsukia District is situated in the North-Eastern part of Assam between 27.25º N to 27.30º N latitude and 94.50º E to 95º E longitudes. It is located at 116 meters (380 feet) elevation above sea level. This district is bounded by Dibrugarh and Dhemaji in the West and North-

West and it also shares an international border with Myanmar in the South. The total area of the district is 3790 sq. km. and is characterized by a subtropical climate with an average minimum temperature of 8.5ºC and a maximum temperature of about 33.4º C. Similarly, the area receives an average rainfall of about 2768 mm per annum with a relative humidity of about 78% (Bora and Meitei, 2014). The total population of the district according to the 2011 census is 1,327,929 inhabitants with a 70.92 % literacy rate. The majority of the people in the district are farmers and agricultural workers. Although rice farming occupies a significant portion of the district's traditional agricultural practices, the residents of the district also cultivate a notable number of other cultivations such as tea, ginger and orange. ()

Hijuguri Kaptanchuck Gaon which is a semi- urban village located in the Tinsukia district has an area coverage of 167.52 hectares. This village mostly has Paddy Field along with a variety of other crop cultivations such as vegetables, pulses, fruits, etc. This small village is a home to diverse ethnic communities including Ahom, Muttok, Kaibarta and Tea tribes. The rural folks more particularly those belonging to these mentioned communities have a long history of utilizing plants for medicinal purposes. Despite the existence of a rich history of ethnomedicinal practices, only a few pieces of literature are available.

2.2 Data collecting method:

Field trips were undertaken in the study area that is Kaptanchuck Gaon, a semi urban village in the Tinsukia district of Assam. The survey was conducted from October 2023 to May 2024. The data collection was carried out by interviewing respondents (healers, practitioners and elderly people) of the village. The respondents were people belonging to the Kaibarta community and particularly either traditional healers themselves or they have a tradition of healing in their families and had knowledge of medicinal plants for said purposes (Saikia et al., 2006).

For collecting the information from the respondents, a structured information form was prepared including questions such as the type of herbal cure known to them for skin diseases, the use of plants and their parts, the modes of administration etc. The information was collected in the local language (Assamese language).

2.3 Collection and identification of medicinal plants:

The acquired data were cross-checked with available local literatures. The identification was done with the help of the books mentioned below (Kalita et al., 2015) and photographs were also captured in cases where identification was not feasible, and subsequently identified using various resources such as plantnet.org.

i. Kirtikar, K.R., Basu, B.D. (1951)

ii. Kanjilal, U.N., Kanjilal, P.C., De, R.N., Das, A. (1991)

iii. Sharma, U.K., (2004)

3. RESULT AND DISCUSSION:

The use of 32 ethnomedicinal plant species belonging to 26 different families was recorded to be used by traditional healers in the treatment of skin diseases. Among these 26 families, Rutaceae (3 species), Euphorbiaceae (2 species), Poaceae (2 species), Fabaceae (2 species), and Zingiberaceae (2 species) were predominant and the remaining families with single species were recorded (Figure 1). It was observed that different plant parts were used to treat different skin diseases, among which leaves were the dominant part used with 41% (Figure 4). Out of these 32 phytomedicinal species, herbs were abundant with 44% followed by 34% of trees and the remaining 22% were shrubs.

For each of the plant species the data were tabulated (Table:1) to include the botanical name, family, vernacular name in Assamese, plant habit, plant parts used, plants used against diseases and mode of administration were recorded.

The result of the present study provides evidence that medicinal plants still play a vital role in the primary health care of the Kaibarta community, mostly in rural or semi-urban villages of the Tinsukia district of Assam.

Figure 1: Familywise classification of ethnomedicinal plants used to treat various skin ailments

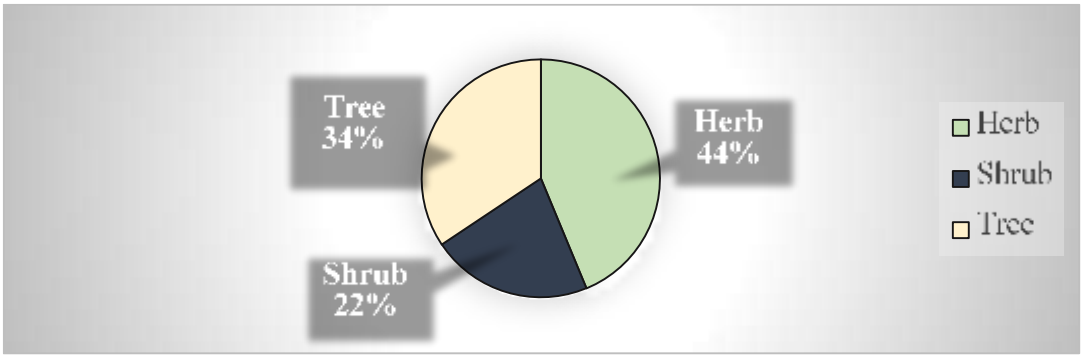

Figure 2: Percentages of different habits of the phytomedicinal species used

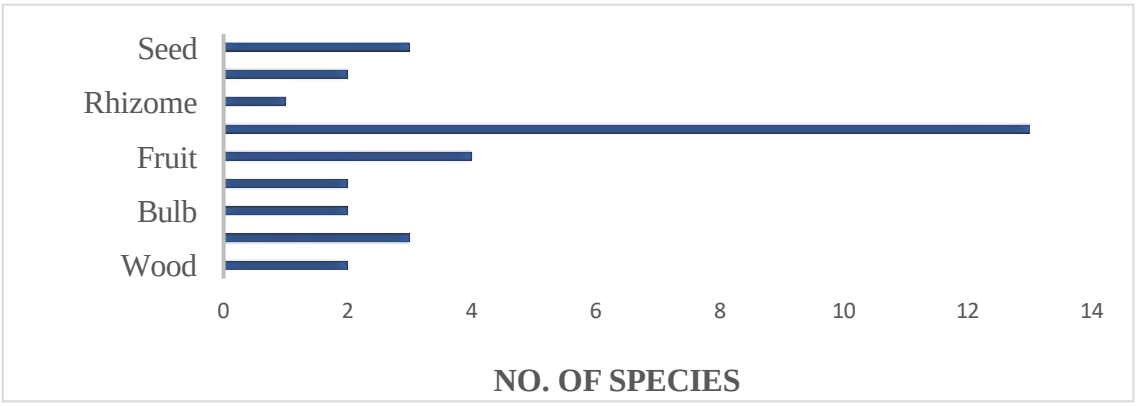

Figure 3: Number of medicinal plant species and their parts used

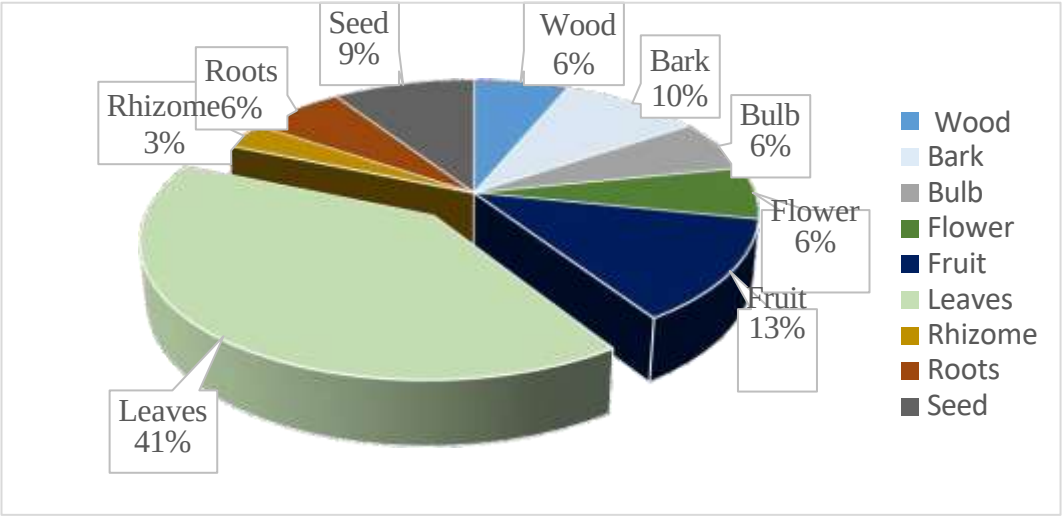

Figure 4: Percentages of plant parts used to treat skin ailments

Table 1: Medicinal plants used for healing various skin ailments by the Kaibarta Community of Kaptanchuck Gaon in Tinsukia District of Assam

Sl. No	Scientific name	Common name	Family	Habit	Parts used	Skin Ailments
1	*Aegle marmelos (L.) Corr.*	Bel	Rutaceae	Tree	Leaves	Abscess, vitiligo, redness, itching, skin rashes
2	*Allium cepa L.*	Piyaj	Liliaceae	Herb	Bulb	Pediculosis
3	*Allium sativum L.*	Naharu	Alliaceae	herb	Bulb	Urticaria
4	*Aloe barbadensis Mill.*	Saalkuwori	Asphodelaceae	Herb	leaves	Skin Burn, Eczema
5	*Alstonia scholaris (L.) R. Br.*	Satiyana	Aocynaceae	Tree	Bark	Toe crack
6	*Aquilaria agallocha Roxb*	Agaru	Thymelaeaxeae	Tree	wood	Leprosy
7	*Azadirachta indica A. Juss.*	Neem	Meliaceae	Tree	seeds, leaves	Eczema, prevent acne, ringworm, itching
8	*Bryophyllum pimmatum (Lam.) Kurz*	Dupar Tenga	Crassulacease	Herb	Leaves	Abscess
9	*Cassia fistula L.*	sunaru	Caesalpiniaceae	Tree	Leaves	Ringworm, skin burn
10	*Centella asiatica (L.) Urb.*	Manimuni	Apiaceae	Herb	Leaves	Carbuncles, Abscess

11	*Citrus limon (L.) Burm.* Gulnemu		Rutaceae	Shrub	Fruit	Dry skin, Pimples	
						Eczema, skin	
						brightening, treats	
	Citrus odorata (Westeer)					dark spots on knees	
12	*Tanaka*	Nemu	Rutaceae	Herb	Fruit	and elbows	
						Leprosy and other	
13	*Clitoria ternatea L.*	Aparajita	Fabaceae	Herb	Leaves	skin problems	

14	Cocos nucifera L.	Narikol	Arecaceae	Tree	Fruit		
15	Curcuma longa L.	Haladhi	Zingiberaceae	Herb	Rhizome	Scabies, smooth skin, reduce acne and wrinkles Urticaria, Ringworm, Scabies, Dry Skin Cymbopogon nardus (L.)	
16	Rendle	Chitranala	Poaceae	Herb	Cynodon dactylon (L.)	leaves & stem	Pediculosis
17	Pers.	Dubari bon	Poaceae	Herb	Leaves	Urticaria	Eczema, reduced
18	Datura Stramonium L.	Dhatura	Solanaceae	Herb	Roots	Mahabhring	wrinkle, dark circles Pediculosis, reduce
19	Eclipta erecta L.	Araj	Asteraceae	Herb	Leaves	acne	Shiny hair, prevents
20	Hibiscus-rosa-sinensis L.	Jaba	Malvaceae	Shurb	Flower	skin ageing	
21	Jatropha curcas L.	Bongali era	Euphorbiaceae	Shrub	Seed	Skin Burn	Wrinkled skin, Burning sensation in
22	Lawsonia inermis L.	Jetuka	Lytraceae	Shrub	Leaves		
23	Mangifera indica L.	Aam	Anacardiaceae	Tree	Fruit	Leaves,	whole feet and palm Wrinkled skin, sunburn
24	Mimosa pudica L.	Lajukilota	Mimosaceae	Herb plant		Eczema	Urticaria, blackheads and treats premature
25	Ocimum sanctum L.	Tulasi	Lamiaceae	Shrub	Leaves		
26	Phaseolus mungo L.	Maatimah	Fabaceae	Shrub	Seeds	aging	for shiny and beautiful hair, reduce pimples
27	Phyllanthus emblica L.	Amlokhi	Euphorbiaceae	Tree	Bark	Scabies,	dry skin
	Pterocarpus santalinus						
28	Blanco.	Chandan	Leguminosae	tree	Wood		
29	Rosa rosa	Gulap	Rosaceae	Shrub	Flower	Saphindus mukorossi	Prickly heat, acne, eczema smooth skin,
							Abscess on eyes, prevents appearance of scar
30	Gaertn.	Manisaal	Sapindaceae	Tree	Seed cover	Dandruff	Terminalia arjuna
31	(Roxb.)W.&A.	Arjun	Combretaceae	Tree	Bark	Zingiber officinale	Acne, Burns and wounds
32	Roscoe.	Moran aada	Zingiberaceae	Herb	Roots	Urticaria	

Mode of Administration of all the 32 Phyto-medicinal species are mentioned bellow:

1. *Aegle marmelos (L.) Corr.* – Paste of leaves is applies on the affected area to cure abscesses and the fruit juice is used in curing vitiligo and skin rashes.
2. *Allium cepa L.* – the juice is applied on the affected area.
3. *Allium sativum L.* – the pieces are taken to cure urticaria.
4. *Aloe barbadensis Mill.* – leaf pulp is applied on burns and to treat Eczema.

5. *Alstonia scholaris (L.) R. Br.* – the extract of gum from the bark is directly applied on toes to treat toe cracks.
6. *Aquilaria agallocha Roxb* – the extracted oil from the plant is applied on the infected skin.
7. *Azadirachta indica A. Juss.* - leaf paste is applied with Kapoor and coconut oil in infected areas to prevent itching in the skin, leaf paste is also mixed with turmeric powder and applied on the infected areas to treat pimples and ringworm.
8. *Bryophyllum pimmatum (Lam.) Kurz* – paste prepared from the leaves is applied on the boils
9. *Cassia fistula L.* – crushed leaves are applied to the infected areas.
10. *Centella asiatica (L.) Urb.* – crushed leaves are directly applied to the skin.
11. *Citrus limon (L.) Burm.* – the juice extract is mixed with honey and applied on skin for healing pimple and juice is also orally taken for treating dry skin.
12. *Citrus odorata (Westeer) Tanaka* – fruit juice is applied directly on the skin.
13. *Clitoria ternatea L.* – leaves paste is directly applied to the infected areas.
14. *Cocos nucifera L.* – the extracted oil is mixed with citrus lemon juice for treating scabies. The oil can be directly applied to the skin to treat other problems such as rashes, acne, ringworm etc.
15. *Curcuma longa L.* – crushed rhizome is directly applied on infected skin. Juice is mixed with milk and taken orally to treat scabies.
16. *Cymbopogon nardus (L.) Rendle* – the extracted oil is mixed with mixed with coconut oil and applied on the head to treat pediculosis.
17. *Cynodon dactylon (L.) Pers.* – the grass/leaves are crushed and the paste is applied directly on the skin.
18. *Datura Stramonium L.* – the leaves paste is applied to the infected area.
19. *Eclipta erecta L.* – the crushed leaves are applied on the head.
20. *Hibiscus-rosa-sinensis L.* – the flowers are crushed and applied directly on hair.
21. *Jatropha curcas L.* – leaves extract is mixed with egg yolk and applied on burns.
22. *Lawsonia inermis L.* – the crushed paste of leaves is applied on the affected areas such as palm, nails and toes.
23. *Mangifera indica L.* – raw fruit pulp is boiled or roasted and applied on the sun burn.
24. *Mimosa pudica L.* – paste of leaves or whole plant is applied on infected areas.
25. *Ocimum sanctum L.* – leaves paste is used on the infected areas.
26. *Phaseolus mungo L.* – the paste prepared from crushed seeds is applied to hair.
27. *Phyllanthus emblica L.* – dried bark powder is boiled with coconut oil and applied externally on infected areas to treat scabies.
28. *Pterocarpus santalinus Blanco* – the powder is soaked in water and the paste is applied on the infected areas.
29. *Rosa rosa* – the flower paste is applied on infection, and the rose water is poured on the eyes and also applied on the face.
30. *Saphindus mukorossi Gaertn.* – the seed covers are generally used for washing hair and it prevent dandruff in hair.
31. *Terminalia arjuna (Roxb.) W.&A.* – the paste prepared from the bark is applied on burns, acne and infected areas.
32. *Zingiber officinale Roscoe.* – the extracted root juice is mixed with old molasses and taken orally for the treatment of urticaria.

Phyllanthus emblica L

Clitoria ternatea L

Mangifera indica L.

Eclipta erecta L.

Cynodon dactylon (L.) Pers.

Hibiscus-rosa-sinensis L.

Citrus odorata (Westeer) Tanaka

Ocimum sanctum L.

Rosa rosa

Aloe barbadensis Mill.

Azadirachta indica A. Juss.

Lawsonia inermis L.

Allium sativum L.

Curcuma longa L.

Allium cepa L.

4. CONCLUSION:

Ethnomedicinal plants possess great potential in the treatment of different kinds of skin diseases. In villages with limited access to modern medicinal facilities, traditional healers play a significant role by using ethnomedicines for the treatment of a wide range of common human ailments including skin diseases.

The people belonging to the Kaibarta community in the research site of Kaptanchuck Gaon, Tinsukia District of Assam mostly rely on medicinal plants for the treatment of different skin diseases. Based on the findings from the present study, the use of a total of 32 medicinal plant species suggests that the diversity of the medicinal flora in this region is quite high and has great potential to treat a wide range of skin diseases.

Hence, conserving the ethnomedicinal plants and the indigenous knowledge of plants used in traditional healthcare holds great significance. It is necessary to spread awareness among individuals from the ethnic and tribal communities about the worth of their indigenous knowledge and help the society to preserve these traditional methods of treatment through effective identification and documentation of plant species.

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