A quantitative ethnobotanical study of medicinal plants used to treat skin disorders in Balodabazar-Bhatapara District, Chhattisgarh

Shobhana Koshle, Deepa Biswas

Correspondence

Shobhana Koshle[1], Deepa Biswas[1*]

[1]Department of Botany Kalinga University, Atal Nagar-nava Raipur 492101 Raipur, Chhattisgarh, India

*Corresponding Author: deepa.biswas@kalingauniversity.ac.in

Ethnobotany Research and Applications 35:32 (2026) - http://dx.doi.org/10.32859/era.35.32.1-25
Manuscript received: 12/03/2026 - Revised manuscript received: 13/07/2026 - Published: 14/07/2026

Research

Abstract

Background: The present systematic and quantitative ethnobotanical survey was conducted due to the limited documentation of medicinal plants used for treating skin ailments in the Balodabazar-Bhatapara district of Chhattisgarh, India.

Methods: To gather the ethnobotanical data, semi-structured open interviews were carried out with the participation of local informants who represented different age groups, educational levels, and traditional occupations. To determine the cultural significance and therapeutic relevance of documented species, they were analyzed using various quantitative indices.

Results: Eighty-nine medicinal plant species of 41 families were listed to treat dermatological illness. The most common family was Fabaceae (9 species), with a second place of Combretaceae and Lamiaceae (5 species each). The commonest growth forms were trees (37.08) and herbs (30.34). The most common plant part that was used was the leaves (27.91%), then the bark (15.70%), and the roots (13.95%). The most prevalent ways of preparation were paste (46.48) and poultice (15.49), but the most significant means of administration was topical application (93.66). The most common treated wound-related conditions (54 species) were treated along with infectious, inflammatory, and immune-related skin diseases. The most common species with the highest UV (0.05), RFC (0.03), and FL (100 percent) were five, sixteen, and seven species, respectively. The FIV was highest in Zingiberaceae (10.50%).

Conclusion: The results indicate that there is an experience-based, organized traditional dermatological healthcare system. Although high informant consensus has been endorsing these applications, more phytochemical, pharmacological, and toxicological validation is yet to be done.

Keywords: Ethnobotany; Medicinal Plant; Skin Disorder; Local people; Traditional Medicine.

Background

Plants have been used in disease prevention and treatment since ancient times, and traditional medicinal knowledge is today still an essential part of primary healthcare systems in many countries of the world (Begum & Nath, 2000; Radha 2025; Hao 2026). The treatment of skin disorders takes one of the leading positions among the other traditional areas of therapeutic

activity, since skin issues are one of the most apparent and frequent health disorders that people of all ages tend to deal with (Wagh and Jain, 2020; Singh, 2026). Skin diseases are not only physically uncomfortable but also psychologically, socially, and economically straining, especially in the rural and resource-deficient areas where the use of modern dermatological services is still insufficient. Therefore, the native population has since relied on vegetal treatments in the treatment of wounds, infections, inflammation, and skin diseases (Ahuja 2021; Radha 2025).

Due to its diversified agro-climatic environment, ecological diversities and the traditional practices of indigenous curing systems, including Ayurveda, Siddha, Unani and folk medicine, India has been considered one of the richest regions in the world in terms of medicinal plant diversity (Anand 2022; Devi 2026). Generational ethnobotanical knowledge of skin care has been held by tribal healers, traditional practitioners, and rural communities, who use locally grown plants to treat a broad spectrum of conditions of the skin like Wounds, burns, eczema, psoriasis, fungal infections, boils, ulcers, dermatitis, and allergies (Aziz *et al.* 2018; Kasolang, 2020; Dubey *et al.* 2026). These conventional activities not only imply profound ecological expertise, but also provide a good lead source for the release of new bioactive compounds with skin care uses (Das 2020; Sundari and Jayakumararaj, 2020; Haq 2023; Radha 2025).

Chhattisgarh is commonly known as the Herbal State of India, and it is blessed with extensive forest resources and has a high diversity of medicinal resources (Ahirwar 2024). The Balodabazar-Bhatapara district, which is situated in the central part of the state, boasts a wide range of vegetation types, and it is the home of a range of indigenous and rural communities who still heavily depend on plant-based traditional medicine to meet their primary healthcare requirements (https://balodabazar.gov.in). Despite this rich ethnomedicinal heritage, there is no systematic evidence on medicinal plants used in the specific area for treating skin disorders. Blistering socio-economic shifts, modernization, destruction of habitats, and a lack of interest in traditional healing by younger generations are additional factors that pose a risk to the survival of this precious knowledge (Chandrakar 2024).

Quantitative ethnobotanical methods are very important in the assessment of the quantitative significance of medicinal plants utilized by the local communities. The Use Value (UV), Relative frequency of citation (RFC), and Fidelity Level (FL) are used to identify culturally important species and prioritize those plants that have strong therapeutic potential. These quantitative studies increase the effectiveness of ethnobotanical data and make it easy to draw useful comparisons between various regions and cultural groups (Ahirwar and Gupta, 2024; Radha 2025).

The current research seeks to record this and quantitatively explore medicinal plants that are currently in use as a treatment of skin diseases in the Balodabazar-Bhatapara district of Chhattisgarh. The paper is aimed at determining plant species, their local names, parts of the plants used, preparations, and particular dermatological applications. This study aims to shine light on culturally significant medicinal plants by combining traditional knowledge and quantitative ethnobotanical tools and to help preserve indigenous systems of knowledge. In addition, the results can be used as a good starting point in subsequent phytochemical, pharmacological, and clinical research to create safe and effective plant-based medicine against skin disorders.

Materials and Methods

Study area

The current ethnobotanical survey was conducted in 14 villages of Balodabazar-Bhatapara district of the Chhattisgarh state. Figure. 1 demonstrates the geographical peculiarities of the selected villages. The district lies on the eastern side of the state, and it occupies an area of approximately 3638.70 square kilometers and has a subtropical climate. Its landform predominantly derives from the Chhattisgarh Basin, comprising structural hills and valleys, geomorphologically, brought about through dissected paddy-plain. Big rivers such as Mahanadi, Shivnath, and Jonk are essential in supplying irrigation to the region.

Data collection and authentication

The current ethnobotanical research of the plant species carried out by this study is confined to the ethnobotanical research. The systematic questionnaire consisted of its compilation, keeping in consideration some questions that were sensitive to the traditional consumption of plants as medicinal agents (Jain, 1965; 1986; 1991). The ethnobotanical survey was conducted in 14 randomly selected villages that were within the study area. The interviews were conducted with the help of a prepared questionnaire on 238 informants who have different occupations. The questionnaire had been prepared to gather data regarding the socio-demographic profile of informants, such as age, gender, occupation, and educational level, in addition to ethnomedicinal knowledge on the use. The respondents had to give answers to the question of local names of medicinal plants, parts used, preparations, mode of administration, diseases cured, dose schedules, and source of traditional

knowledge. Further details about the availability of medicinal plants, how they were gathered, and the effectiveness of traditional medicine were also documented during the interviews. The formal and informal interviews were carried out in such a way that all data that was gathered concerning the different age groups was obtained with a special emphasis on the elderly men and women who possess a wealth of knowledge concerning the traditional way.

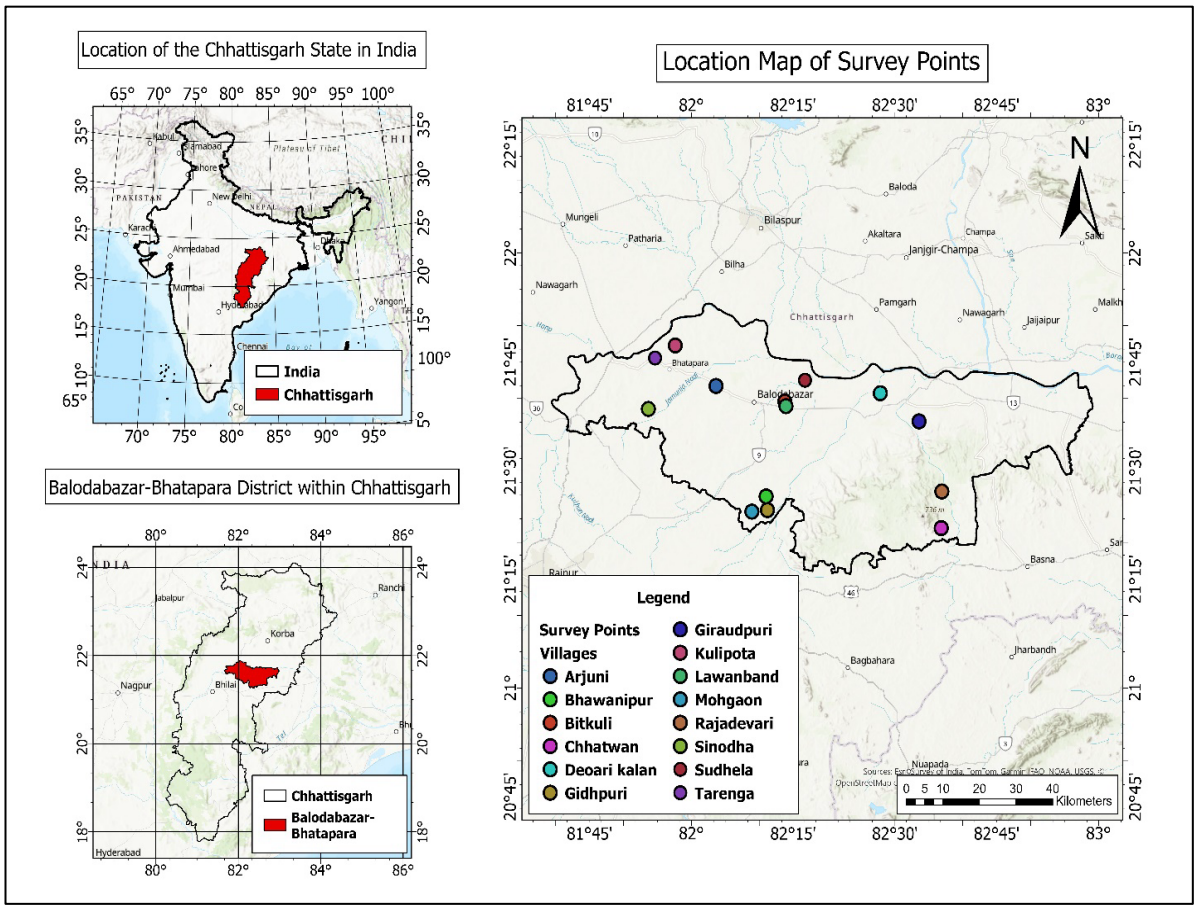

Figure 1. Geographical illustration of the survey locations of the Balodabazar-Bhatapara district of Chhattisgarh state on a map. The map was created with ArcGIS Pro version 3.4.0, using GPS data from field surveys in the study area.

The collection and identification of plants were done in accordance with the standard ethnobotanical techniques and literature (Subramanyam, 1974; Jain and Rao, 1977; Jain and Mudgal, 1999; Pal and Jain, 1999). Voucher specimens of collected plants were prepared for correct documentation in the field. The identification of most plant species was done on the spot, and the rest of the plants were later identified in the field with the help of regional floras, given by Verma (1985). All recorded species were additionally checked for their scientific names and nomenclature using the Plants of the World Online database (powo.science.kew.org). The plant identification was further confirmed with support from the taxonomists of the Department of Botany, Kalinga University, Atal Nagar - Nava Raipur 492101, Raipur, Chhattisgarh, India, where the voucher specimens were lodged for future reference in the departmental herbarium. All species documented are listed with voucher specimen numbers in Table 1.

Ethical Considerations

The ethical issues related to ethnobotanical research with human participants and the collection of ethnobotanical specimens were carefully considered during the study. All informants, such as traditional practitioners, tribal healers, and the rural communities, were interviewed, and ethnobotanical data were recorded after obtaining their prior oral informed consent. The study's purpose was understandable and self-explanatory in the local language, and participation was purely voluntary. All participants' confidentiality and anonymity were respected, and indigenous knowledge systems and cultural traditions were given due consideration during the research process.

In the present study, only the documentation of the traditional ethnobotanical knowledge was done by interviewing and field observations, without conducting any clinical investigations, human experimentation, medical interventions, or collecting

personal health data. As a result, no formal institutional ethical approval was needed for conducting the research, as there were applicable research guidelines.

Non-protected and non-restricted parts of the study area were surveyed in the field, and plant specimens were collected. Sampling in protected forests, wildlife sanctuaries, national parks, and other ecologically sensitive areas where special permits are required was not conducted. The fieldwork activities were carried out in collaboration with local administration authorities and local representatives, enabling activities to be carried out before communication. Plant collection, identification, and documentation were conducted in accordance with well-established ethnobotanical and botanical policies and conservation of biodiversity and sustainable harvesting rules.

Ethnobotanical data were cross-checked by repetitive visits to the field and by interviewing several informants to ensure data reliability. When it was found that some information, such as the number of fish tagged, was inconsistent or in question, it was rechecked and removed if it was found to be incorrect. The study was conducted in accordance with ethical issues regarding documentation of TK, conservation of medicinal plant resources, and sustainable use of biodiversity for future generations.

Quantitative ethnobotany study

A quantitative ethnobotany study was conducted on the collected data using several quantitative indices, including Use value (UV), Relative frequency of citation (RFC), fidelity level (FL), and Family importance value (FIV).

Use Value

Use Value (UV) was calculated to evaluate the overall range of uses of each plant species. It provides a quantitative measure of plant citation and reflects the relative importance of locally recognized flora. The UV was analyzed following the method described by Umair *et al.* (2017).

$$UV = \frac{n}{N}$$

where *n* represents the total number of informants reporting different uses of a plant species, and *N* denotes the total number of participants surveyed. The UV approaches (1) when a plant has a higher number of reported uses and approaches (0) when fewer use reports are recorded. However, UV does not provide information on whether a plant species is used for single or multiple purposes, and therefore offers limited insight into the diversity of its applications.

Relative frequency of citation

The Frequency of Citation (FC) was used to determine the most preferred or frequently utilized plant species. The Relative Frequency of Citation (RFC) was calculated to better understand the extent of traditional knowledge regarding the therapeutic use of plant species within the study area. RFC was determined using the formula:

$$RFC = \frac{FC}{N}\ (0 < RFC < 1)$$

where FC represents the number of informants who mentioned a particular plant species, and N denotes the total number of informants surveyed (Kayani *et al.* 2014).

Fidelity level (FL)

To evaluate the most preferred plant species used for the treatment of specific diseases, the Fidelity Level (FL) index was applied following the method described by Yaseen *et al.* (2015). FL reflects the relative importance of a particular species compared to others in treating a specific ailment. It represents the percentage of informants who reported using a given plant species for a particular disease, such as skin disorders. The FL was calculated using the formula:

$$FL\ (\%) = \left(\frac{N_P}{N}\right) x\ 100$$

where Np denotes the number of informants who cited the use of a species for a specific disease, and N represents the total number of informants who reported using medicinal plants for the treatment of any ailment (de Oliveira *et al.* 2017).

Family importance value (FIV)

The relative importance of plant families was assessed using the Family Importance Value (FIV). This index was calculated by determining the percentage of informants who mentioned a particular plant family, using the formula:

$$FIV\ (\%) = \left(\frac{FC}{N}\right) x\ 100$$

FC represents the number of informants who cited the family, while N denotes the total number of informants participating in the study (Ferreira 2009).

Statistical analysis

The above ethnobotanical data were then summarized and compared to assess the diversity, distribution, and relative value of the identified plant species and their use by the tradition. The quantitative statistics were used to tabulate and analyze the data collected with the assistance of informants. The descriptive statistics, such as the frequency, percentages, and proportion of the informants in the sample, have been used to summarize demographic variables such as gender, age, education level, and occupation of the informants. Data were processed in Microsoft Excel 2016 and Sigma Plot 12.0 version through to get graphical representations.

Results and Discussion

Taxonomy and growth forms of medicinal plants

A total of 89 plant species were recorded, which are frequently used by the local community and traditional medicine practitioners in the treatment of different ailments. A total of 41 families, 73 genera, and 89 species of flowering plants were recorded in the ethnobotanical inventory. Table 1 shows detailed data on botanical names, local names, families, growth form, uses, and modes of administration.

The dominant families were Fabaceae (9 species) and Combretaceae (5 species), followed by Lamiaceae (5 species) among the taxonomically recorded species. Four species were present in each of the families Apocynaceae, Euphorbiaceae, Phyllanthaceae, Solanaceae, and Zingiberaceae. Acanthaceae, Malvaceae, Moraceae, Oleaceae, Piperaceae, and Rutaceae had a contribution of 3 species, Annonaceae, Asteraceae, and Poaceae 2 species each. A single species was present in the remaining 23 families. The top 10 dominant families are shown in Fig. 2.

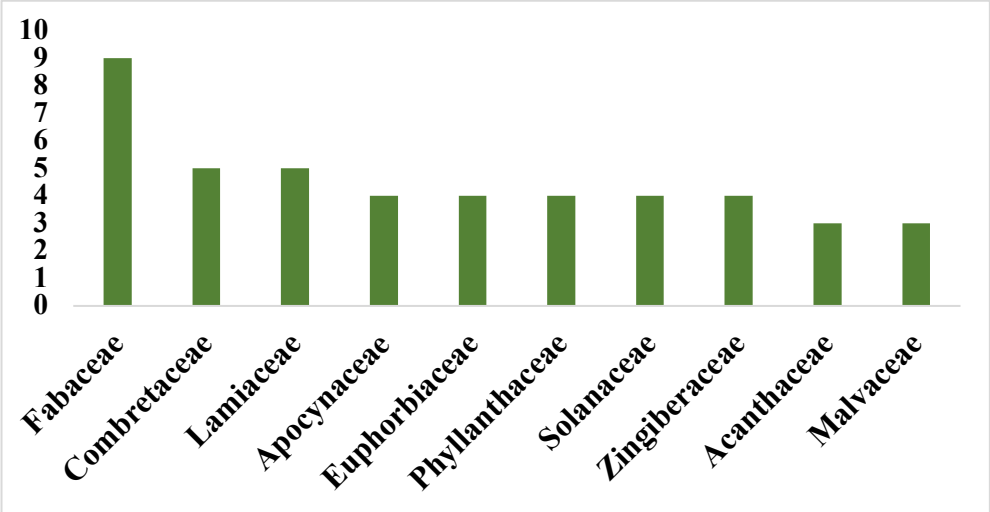

Figure . 2 Top 10 plant families reported with the highest No. of plant species.

The overwhelming representation of Fabaceae and other well-represented families can be related to their wide ecological tolerances and their prevalence in tropical and subtropical habitats of the study area. In many species in these families, their wide distribution and availability make them more readily available to indigenous communities and thus are more likely to be used in traditional medicine. Furthermore, it has been reported that a number of dominant families like Fabaceae, Lamiaceae, Euphorbiaceae, and Apocynaceae contain a wide variety of secondary metabolites, including flavonoids, alkaloids, tannins, terpenoids, and phenolic compounds with antimicrobial, anti-inflammatory, antifungal, and wound-

healing properties. Their continued preference for skin-related disorders and other ailments may be because of these bioactive constituents (Fabricant and Farnsworth, 2001; Ahirwar and Bhoi, 2025; Dubey *et al.* 2026). The transplantation of these families across generations is also an example of high ethnopharmacological trust built over a long period of time and handed down through generations of empirical observation and cultural learning.

The same result has been found in the previous ethnobotanical studies in the Achanakmar and Jashpur area, in which the same therapeutically important families, Fabaceae, Apocynaceae, Euphorbiaceae, and Lamiaceae, are species-rich (Patra and Sharma, 2022; Shriwas, 2023; Ahirwar and Bhoi, 2025). These families are repeated in various ethnomedicinal reports, indicating that there is a strong association and interdependence between floristic availability, cultural familiarity, and perceived medicinal value. Their continued use in traditional dermatology remedies also demonstrates the importance of indigenous health systems on certain plant families that have therapeutic activities and are readily available in the local community.

There was also significant diversity in the growth form of the ethnomedicinal plants recorded (Fig. 3). The most common growth habit was trees (37.08%), followed by herbs (30.34%), shrubs (17.98%), and climbers (13.48%). The lowest percentage of flora was succulents (1.12%) (Table 1). Notably, trees and herbs dominate, suggesting their key role in the traditional medicine systems of the region, perhaps because they are easily accessible, abundant, and have multiple medicinal uses.

Tree dominance may be attributed to the trees being perennial and year-round, thus providing access to medicinal products like latex, leaves, and fruits that are frequently used for chronic skin diseases and wound care. In addition, trees are ecologically significant in the forest and are also culturally significant to the indigenous people for their continued use in ethnomedicine (Jain, 1986; Ahirwar and Bhoi, 2025; Dubey *et al.* 2026). Herbs are often preferred as they grow quickly, are readily harvested, and have a high content of biopharmaceuticals, both in the aerial and underground parts (Fabricant and Farnsworth, 2001; Ahuja *et al.* 2021; Anand *et al.* 2022). They are easily accessible and are relatively renewable for medicinal use due to their short life cycles and ability to regenerate (Jain and Rao, 1977; Roy and Janbandhu, 2020). Shrubs and climbers, though less abundant, are important sources of special remedies for local treatments (Bhat *et al.* 2014; Patra and Sharma, 2022; Radha *et al.* 2025).

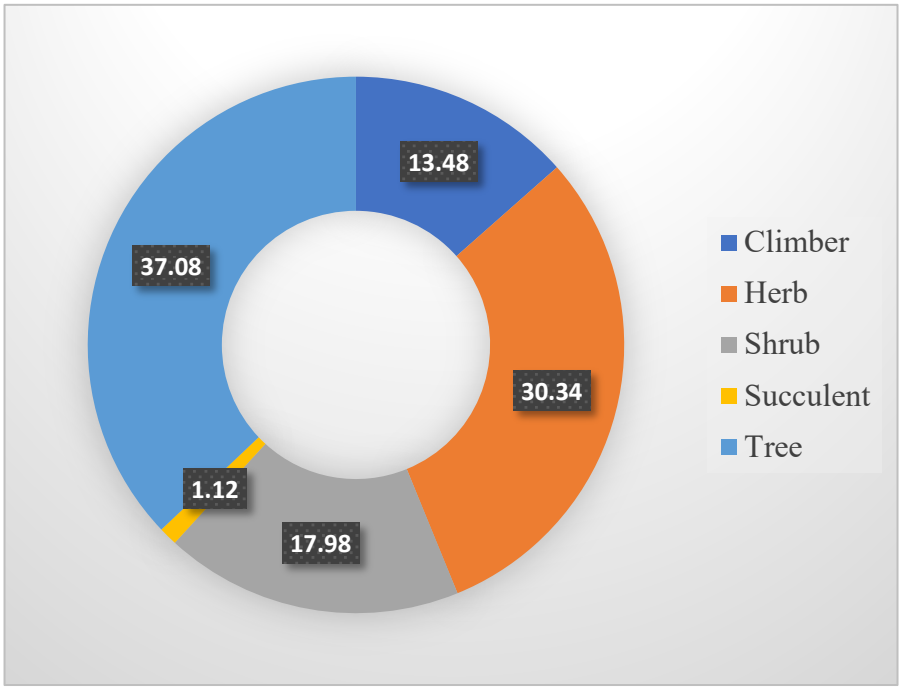

Figure 3. Plant Habit percentage of reported medicinal plants used to treat skin disorders in Balodabazar-Bhatapara District, Chhattisgarh.

Similar growth-form trends have been noticed elsewhere in ethnobotanical studies from middle and north-eastern India, where herbs and trees are prevalent in the traditional medical inventories because of their abundance and versatility in their medicinal applications (Bhat, 2014; Shriwas, 2023; Gangurde, 2025). The popularity of specific growth forms in the present

study could be related to availability, accessibility, tradition, or perceived efficacy. The patterns may represent the long-term relationship of the indigenous people with the plant resources in their surroundings, but further ecological and ethnographical studies are needed to understand the selection processes and harvesting practices.

Plant part application

In the order of plant part utilization in the treatment of skin disorders, leaves were the most frequently utilized (27.91%), underscoring their primary role in traditional dermatological practices. Bark (15.70%), roots (13.95%), and fruit and fruit peels (11.05) were also commonly used, particularly for chronic and inflammatory skin conditions. Seeds (6.98%) and whole plant (5.81%) demonstrated notable application, while latex (4.65%), flowers (4.07%), and both rhizome and stem (2.91%) were moderately employed for specific therapeutic purposes. Tuber (1.74%), bark gum (1.16%), spines and trichomes (0.58%) were used less frequently, indicating minimal ethnomedicinal significance in the region (Fig. 4). The predominance of leaves, bark, and roots underscores their ethnopharmacological significance in traditional skin care and reflects the extensive indigenous knowledge that supports the use of medicinal plants for dermatological disorders.

The present study shows the pattern of usage of plant parts, which indicates their role in traditional medicine for dermal application. Leaves were the most commonly used plant part, followed by bark and roots, which is consistent with previous ethnobotanical studies conducted in various parts of India (Vijayakumar, 2015; Subba, 2024; Radha, 2025). This leafy nature could be attributed to the high concentration of flavonoids, tannins, phenolics and essential oils, which have antimicrobial, antioxidant, anti-inflammatory and wound-healing properties (Fabricant and Farnsworth, 2001; Ahuja *et al.* 2021; Anand *et al.* 2022; Bhoi and Ahirwar, 2025a). They are also accessible and can be harvested without damaging the crop, making them ideal for local harvesting and use in topical remedies.

Wounds, ulcers, and chronic skin infections were often treated with bark and roots, possibly because they concentrated bioactive compounds with antimicrobial and anti-inflammatory properties. But over-harvesting of these parts can cause the survival of the plants as the practices are destructive (Gangurde, 2025). The occasional use of whole plants might be a reflection of traditional beliefs based on a very well-established notion of the synergism between the various parts of the plants, but it needs further pharmacological and ethnographic studies to secure scientific validation.

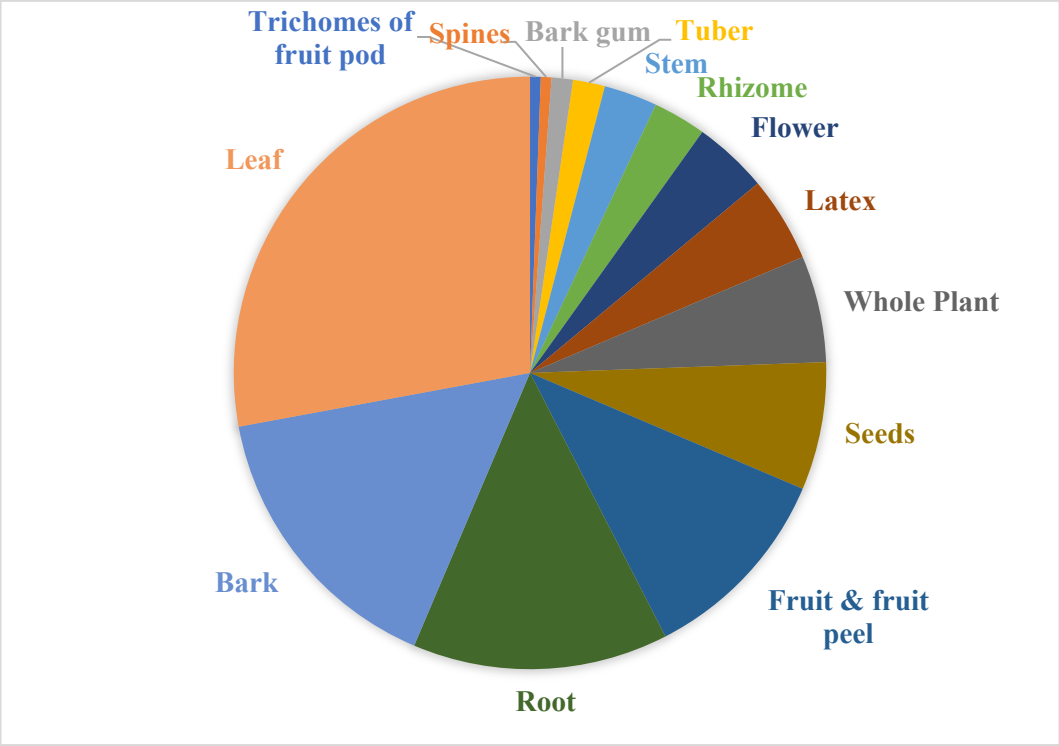

Figure 4. Plant part utilization percentage of medicinal plants used in the treatment of skin disorders in Balodabazar-Bhatapara District, Chhattisgarh.

Preparation of remedies

The preparation of the herbal remedies used to treat skin disorders was done using various traditional methods (Fig. 5). Of these, the most common technique was preparing paste (46.48%), which provokes to suggest that it is used in topical administration to treat dermatological diseases most of the time. This was then succeeded by the preparation of a poultice (15.49%), which is usually applied to the affected parts of the skin to achieve healing and decrease inflammation. As a way of treating their cultures, latex (12.68%), juice, and decoction (6.34%) were also common and a significant part of the use of internal and external medicinal methods. Oil-based preparations (7.75%), which are typically used on chronic skin conditions and massage treatments, were also used moderately, with less frequently used powder (2.82%), extract (1.41%), and infusion (0.70%).

The prevalence of paste and poultice preparations indicates the great tendency toward topical treatment in skin disorders. The same preference in formulation has been found in Mizoram and Odisha, where direct application is claimed to be an effective method for wounds, infections and inflammatory diseases (Ralte 2024). The additional applications of decoctions and juices suggest a selective internal application, which may have been done to respond to systemic aspects in improving skin health. Such a correspondence in the type of formulation, nature of disease, and route of administration identifies the pragmatic and experience-driven nature of indigenous practice in treating the illness (Gangurde 2025).

Route of administration

In this study, the route of administration of remedies to treat skin ailments was mainly topical (93.66%), with only 6.34% being orally given. Wounds, infections, inflammation, and other skin disorders were treated using most remedies directly to the affected zone as pastes, poultices, oils, decoctions, powders, or latex. The selective use of the oral preparations, primarily in the form of juices or decoctions, indicates the choice of localized therapy in order to achieve quick action and reduce the systemic impact. This trend underlines the high traditionalism of topical therapy in the treatment of skin disorders in the research region.

The excessive usage of topical administration witnessed in this research supports the localized form of treatment previously embraced with regard to dermatological problems. Similar developments are noted elsewhere in Chhattisgarh and eastern India and highlight the fact that the community prefers targeted treatment with minimal exposure to the systemic compartment (Shriwas 2023; Bhoi and Ahirwar, 2025a).

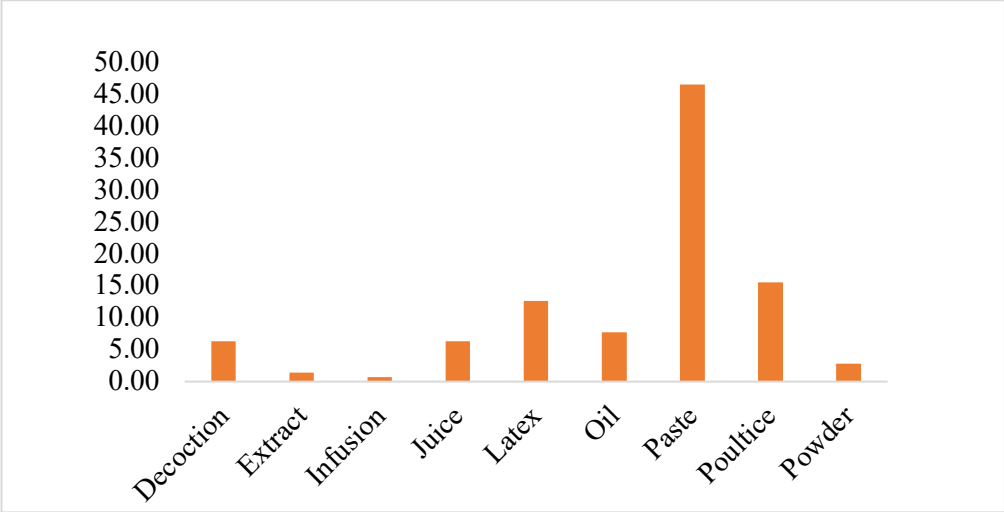

Figure 5. Preparation of remedies to treat skin disorders from medicinal plants in Balodabazar-Bhatapara District, Chhattisgarh.

Categories of Skin Disorders Treated

The classification of skin-related disorders into the various categories was not done based on any formal dermatological classification, but rather on ethnomedicinal usage patterns reported by the informants as well as on the previously published ethnobotanical studies. In the current investigation, the categories of skin-related illness were classified into 8 broad disease conditions depending on their therapeutic utility and customary patterns of usage (Table 1). Wound-related conditions were the largest among them; 54 species of plants were reported to be used to treat wounds. This was accompanied by infectious skin diseases (20 species) and skin inflammation-related diseases (36 species). In this order, 15-15 plant species were also

recorded to treat ulcers and boils categories, while 8 species were reported for pigmentation & cosmetic dermatology, and 7 species were reported to treat leprosy & depigmentary disorders. The least number of plants, i.e., 7 species, was reported for the general skin disorders/miscellaneous category. In general, the pattern of plant species distribution in disease categories indicates a high emphasis on wound management and infection-related diseases in traditional healthcare in the study area.

ç

The analysis of the categories of diseases showed that the wound-related conditions were highly emphasized, with the subsequent focus on the infectious, inflammatory, and immune-related skin disorders. This trend indicates that occupational exposures and environmental factors are likely to be the cause of injuries, infections, and the prevalence of chronic inflammatory conditions in the area, as the primary healthcare issues. Previous ethnobotanical studies have reported similar prioritization of dermatological disorders, with high informant agreement suggesting strong cultural consensus and community reliance on herbal remedies for treating skin-related conditions (Malik 2019; Mandal and Rahaman 2022).

Quantitative study of ethnobotanical survey

Use value (UV)

The UV values of the identified plant species ranged from 0.00 to 0.05. The highest UV (0.05) was observed for *Terminalia arjuna, Euphorbia hirta, Ocimum tenuiflorum, Azadirachta indica,* and *Curcuma longa,* which meant that they were the most often mentioned by the informants and had the highest traditional use values. Both of these species are known to possess antimicrobial, anti-inflammatory, and wound-healing activity in traditional dermatology. Earlier, ethnobotanic studies from other parts of India have also documented similar high use values for *Azadirachta indica, Curcuma longa and Ocimum tenuiflorum*, supporting their wide therapeutic uses and cultural relevance in traditional medicine practices (Malik, 2019; Mandal and Rahaman, 2022; Gangurde, 2025).

Eight of these species have relatively high UV values (0.03), which include *Acorus calamus, Terminalia bellirica, Diospyros melanoxylon, Pongamia pinnata, Ficus benghalensis, Nyctanthes arbor-tristis, Phyllanthus emblica,* and *Zingiber officinale.* The use values indicated are high, which suggests that these species are familiar and are frequently used in local ethnomedicinal treatments for skin diseases.

In addition, 28 plant species had moderate UV values (0.02), indicating that there was some use by the local communities, but not as prevalent. By contrast, 23 species had lower UV values (0.01), meaning that they were not used that frequently, and 25 species had UV values close to 0 (0.00), suggesting that they are cited infrequently or only by certain informants. There may be variations in the UV patterns as compared with other ethnobotanical studies, which could be linked with the difference in ecological availability, cultural preferences, availability of medicinal flora and regionally developed ethnomedicinal traditions (Subba, 2024; Ahirwar and Bhoi, 2025). Overall, based on the UV analysis, it was concluded that only a few species of plants are used in traditional dermatological care in the study area, while others are used selectively. Complete UV data for all recorded species are given in Table 1.

Relative frequency of citation (RFC)

The range for the medicinal plant species in the area surveyed was between 0.0 and 0.03 for their respective RFVs. The highest RFC value (0.03) was recorded for 16 species: *Hygrophila auriculata, Acorus calamus, Achyranthes aspera*, *Polyalthia longifolia, Alstonia scholaris, Euphorbia hirta, Bauhinia variegata, Butea monosperma, Ocimum tenuiflorum, Ficus racemosa, Phyllanthus emblica, Phyllanthus niruri, Piper betle, Piper nigrum, Curcuma longa,* and *Zingiber roseum*. These plants are used traditionally to heal wounds, infections, inflammatory skin diseases, and other dermatology disorders. The widespread reporting of their use by informants might be related to their well-documented pharmacological properties, including antimicrobial, anti-inflammatory, antioxidant, and wound-healing activities reported in previous studies. For instance, *Curcuma longa* has been reported to contain curcumin, a bio-component which has several anti-inflammatory and wound-healing properties, and *Azadirachta indica* and *Ocimum tenuiflorum* have been extensively studied for their antimicrobial and antifungal properties against skin infections (Subba 2024; Dubey *et al.* 2026). Likewise, *Piper betle* and *Euphorbia hirta* have been known to have antiseptic and soothing effects on the skin in traditional medicine.

Eleven species had moderate recognition factors (0.02), such as *Annona squamosa, Terminalia paniculata, Terminalia tomentosa, Woodfordia fruticosa, Michelia champaca, Bombax ceiba, Sida cordifolia, Sida rhombifolia, Azadirachta indica, Tinospora cordifolia,* and *Phyllanthus amarus*. However, 28 plant species had RFC values of 0.01, and 34 species had RFC values of 0.00, denoting comparatively low or infrequent usage in local ethnomedicinal practices. The overall analysis of the results of the RF indicated that only a few medicinal plants of cultural significance are predominant in the traditional

dermatological health care system, while many others are limited to specific or less frequently passed down traditional knowledge (Table 1).

Fidelity level (FL)

Specificity in plant use for a specific skin ailment in the study area was determined by calculating FL values. The values recorded were from 2.86% to 100.00% and were classified into four groups. The maximum range (75.00-100.00%) has 12 species, with 7 species having 100% FL; these species are *Calotropis procera, Terminalia arjuna, Terminalia chebula, Euphorbia hirta, Nyctanthes arbor-tristis, Rubia cordifolia, Curcuma longa*. These species were consistently used to treat specific skin ailments and are much trusted by the local informants, which also shows a high level of ethnomedicinal consensus (100% FL).

Pharmacological properties are well documented in these species and may be related to the high fidelity of these species. For example, curcumin—a component of *Curcuma longa* is known for its strong anti-inflammatory, anti-oxidant and wound healing properties (Ahuja *et al.* 2021; Anand *et al.* 2022; Fabricant and Farnsworth, 2001). *Azadirachta indica* and *Euphorbia hirta* possess antimicrobial and antifungal activity important in skin infectious diseases (Begum and Nath, 2000; Malik *et al.* 2019; Wagh and Jain, 2020). *Terminalia arjuna* and *Terminalia chebula* have high antioxidant and tissue-regenerative activities that can be useful in wound repair (Anand *et al.* 2022; Ahuja *et al.* 2021; Radha *et al.* 2025). *Rubia cordifolia* and *Nyctanthes arbor-tristis* have also been documented as having anti-inflammatory and wound-healing properties, highlighting their significant therapeutic potential in dermatological disorders (Malik, 2019; Pandey, 2021; Patra and Sharma, 2022; Mandal and Rahaman, 2022).

Eighteen species were found in the moderate FL range (50.00-71.43%), representing relatively specific but less dominant use. Occasional or non-specific uses in skin-related treatments were found in 31 species in the lower range (20.00-44.44%) and 28 species in the lowest range (2.86-18.88%). In general, the FL analysis indicates that there are only a few plant species of cultural importance that are the basis of dermatological ethnomedicine in the study area, whereas the others are opportunistically used or used less specifically due to availability and knowledge.

Family Importance Value (FIV)

There was substantial variation among the plant families documented as reflected by their Family Importance Value (FIV) (Table 2). The families with the highest FIV values were Zingiberaceae (10.50%), Myrtaceae (9.24%), Meliaceae, Rhamnaceae, and Fabaceae (5.46%). The plant families with the highest FIV were Combretaceae and Vitaceae (5.04%), Caricaceae (4.20%), Euphorbiaceae and Menispermaceae (3.78%) (Figure 6).

There was substantial variation among the plant families documented as reflected by their Family Importance Value (FIV) (Table 2). The families with the highest FIV values were Zingiberaceae (10.50%), Myrtaceae (9.24%), Meliaceae, Rhamnaceae, and Fabaceae (5.46%). The plant families with the highest FIV were Combretaceae and Vitaceae (5.04%), Caricaceae (4.20%), Euphorbiaceae and Menispermaceae (3.78%).

The predominance of these families has a good correlation with their known ethnopharmacological relevance for dermatological care. Curcuma longa and Zingiber officinale (Zingiberaceae) are known for their potent anti-inflammatory, antimicrobial and wound-healing properties, which are attributed to curcuminoids and bioactive essential oils (Anand *et al.* 2022; Wagh and Jain, 2020; Radha *et al.* 2025). Likewise, various members of the genus Myrtaceae, like Syzygium cumini, have antioxidant and antimicrobial properties that are useful in protecting skin and preventing infections (Begum and Nath, 2000; Haq *et al.* 2023). The anti-inflammatory and wound healing properties of members of the Fabaceae have been reported and reported to be the reasons for their common use in the study area for wound healing and inflammatory skin ailments (Bhat *et al.* 2014; Sundari and Jayakumararaj, 2020).

Azadirachta indica, which is the most representative species of the family Meliaceae, is well known for its broad-spectrum antimicrobial and antifungal activity, which is also highly relevant for the treatment of infectious skin diseases (Anand *et al.* 2022; Ahuja *et al.* 2021; Das, 2020). Other species that have been traditionally used for medicinal purposes, including wound healing and anti-inflammatory agents, belong to the families of Rhamnaceae and Combretaceae, thus reinforcing their ethnomedicinal value (Malik *et al.* 2019; Haq *et al.* 2023; Wagh and Jain, 2020). The high FIV values of these families are thus indicative of their therapeutic versatility and close connection with dermatological applications as reported in traditional healthcare systems.

Table 1. A detail on the Medicinal plants utilized to treat skin disorders in the study area of Baloda-Bazar district, Chhattisgarh

Family	Botanical Name/Vernacular name/Voucher no.	Habitat	Plant Habit	Part used	Skin disease treated	Mode of utilization	Mode of Preparation	UV	RFC	FL
Acanthaceae	*Adhatoda zeylanica* Nees Adusa KU/BOT/ACAN/2025/003	W/C	Shrub	Leaf	Wound	Paste	Dry leaf powder paste prepared with lemon juice to apply externally on the skin	0.02	0.00	20.00
	Andrographis paniculata (Burm.f.) Wall. ex Nees Bhui Neem KU/BOT/ACAN/2025/008	W/C	Herb	Leaf	Fungal infection	Juice	A cup of juice is given to the patient three times a day	0.02	0.00	20.00
	Hygrophila auriculata (Schumach.) Heine Mokhala Kanta KU/BOT/AQUI/2025/053	W/C	Herb	Leaf, Roots	Psoriasis, dermatitis, eczema, elephantiasis, and dropsy	Paste	Bark paste applied on the infected skin topically	0.01	0.03	14.29
Acoraceae	*Acorus calamus* L. Ghor-Bach KU/BOT/ACOR/2025/002	Cultivated	Herb	Rhizome	Wound	Paste	paste of rhizomes is directly applied to the skin twice a day	0.03	0.03	18.18
Amaranthaceae	*Achyranthes aspera* L. Chirchita KU/BOT/AMAR/2025/001	Wild	Herb	Leaf, Roots, Fruits	Infectious wounds	Poultice	A poultice of leaves is directly applied to wounds	0.00	0.03	50.00
	Amaranthus viridis L. Chaulai KU/BOT/AMAR/2025/007	Cultivated	Herb	Leaf	Wound, scabies, eczema, and psoriasis	Paste	Fresh leaf paste applied once a day on the skin for treatment	0.00	0.00	20.00
Annonaceae	*Annona squamosa* L. Sitafal KU/BOT/ANNO/2025/009	Cultivated	Tree	Leaf	Wound, chronic ulcer, eczema	Paste	Paste of fresh leaf applied on the wounds twice daily	0.02	0.02	12.50
	Polyalthia longifolia (Sonn.) Thwaites Ashok KU/BOT/ANNO/2025/076	Cultivated	Tree	Bark	Anti-aging, skin hydration	Paste, Powder, Decoction	Paste applied topically, Powder and decoction taken orally	0.02	0.03	60.00

	Alstonia scholaris (L.) R.Br. Saptparni KU/BOT/APOC/2025/006	W/C	Tree	Bark	Cuts, wounds, and burns	paste	Old plant bark paste used topically	0.02	0.03	37.50
	Calotropis procera (Aiton) W.T.Aiton Aank KU/BOT/APOC/2025/018	W/C	Shrub	Latex	wounds, dermatitis, itching, rashes, and even leucoderma	Latex	Directly applied to the infected area of skin	0.02	0.01	100.00
Apocynaceae	*Carissa carandas* L. Karaunda KU/BOT/APOC/2025/020	W/C	Shrub	Leaf, Root, Fruit	eczema, ringworm, swelling, wounds, and general itching	Paste, Poultice, Juice	Paste of leaf applied on the minor wound, Poultice of root applied on the pruritus, Fruit juice applied on the infected wound topically	0.00	0.01	14.29
	Cascabela thevetia (L.) Lippold Pila Kaner KU/BOT/APOC/2025/021	W/C	Tree	Root, Leaves	Psoriasis, to destroy pediculi (lice)	Poultice	Poultice applied on the cuts daily until they heal	0.01	0.01	66.67
	Rauvolfia serpentina (L.) Benth. ex Kurz Sarpgandha KU/BOT/APOC/2025/080	W/C	Herb	Root	Infectious wounds	Paste, Powder, Latex	Paste directly applied on the wound, Powder with oils applied topically, latex directly applied on the infected skin	0.02	0.01	16.67
Asparagaceae	*Asparagus racemosus* Willd. Satavari KU/BOT/ASPA/2025/011	W/C	Climber	Tubers	dermatitis, psoriasis, skin ulcers, insect-infested wounds, itchy skin.	Paste, Fresh roots	Paste Applied on the skin, Direct edible	0.02	0.00	50.00
Asphodelaceae	*Aloe vera* (L.) Burm. f. Guarpatha KU/BOT/ASPHO/2025/005	Cultivated	Succulent	Seeds	Wounds	Paste	Seed paste with oil used externally	0.02	0.00	33.33
Asteraceae	*Tagetes erecta* L. Genda KU/BOT/ASTE/2025/092	W/C	Herb	Leaf, Whole plant, Root, Flower	Inflammatory wound	Paste	Bark powder with cow's ghee applied on the skin	0.00	0.00	33.33

	Tridax procumbens L. Ghamara KU/BOT/ASTE/2025/100	Wild	Herb	Leaf	ulcers, leucoderma, scabies, carbuncles	Poultice, Oil	Directly applied to the skin for treatment	0.01	0.01	50.00
Burseraceae	*Commiphora wightii* (Arn.) Bhandari Guggul KU/BOT/BURS/2025/031	W/C	Shrub	Bark gum	Minor and major Wounds	Lotion	Gum mixed with oil and applied to the wound as an antiseptic agent	0.01	0.00	75.00
Caricaceae	*Carica papaya* L. Papita KU/BOT/CARI/2025/019	Cultivated	Herb	Latex	cuts, wounds, and infections	Latex	Directly applied to the area of infected wounds	0.01	0.00	60.00
Cleomaceae	*Cleome viscosa* L. Hurhur KU/BOT/CLEO/2025/028	Wild	Herb	Seeds	Wound	Oil	Seed oil is applied to the wounds to prevent infections	0.00	0.00	9.09
Combretaceae	*Terminalia arjuna* (Roxb. ex DC.) Wight & Arn. Arjun KU/BOT/COMB/2025/094	Cultivated	Tree	Bark	Cosmetic/skin tone; Pigmentation disorders (lightening); General skin tonic/skin health	Paste	Applied directly to the skin	0.05	0.00	100.00
	Terminalia bellirica (Gaertn.) Roxb. Baheda KU/BOT/COMB/2025/095	Cultivated	Tree	Bark, Fruit	sun exposure, insect bites, or chemical treatments	Juice, Paste	Juice and paste of fresh leaves are directly applied to the wounds for quick healing	0.03	0.00	10.00
	Terminalia chebula Retz. Harra KU/BOT/COMB/2025/096	Cultivated	Tree	Bark, Fruits	Inflammatory wounds and soothing agent	Paste, Poultice, Decoction	Paste directly applied on the wounds, Juice of the whole plant applied on the insect-infested wounds topically, Decoction massaged on the itchy skin with oil	0.00	0.01	100.00
	Terminalia paniculata Roth Kinjal KU/BOT/COMB/2025/097	Cultivated	Tree	Bark	ringworm, eczema, sores,	Paste	Bark paste used in oozing of eczema, Leaf	0.00	0.02	28.57

					allergies, psoriasis, wounds		paste used to stop blood from a wound			
	Terminalia tomentosa Wight & Arn. Saja KU/BOT/COMB/2025/098	Cultivated	Tree	Bark	Boils	Paste, Oil	Paste of roots directly applied to the skin disease, root-extracted oil used in skin complexion treatment	0.01	0.02	66.67
Ebenaceae	*Diospyros melanoxylon* Roxb. Tendu KU/BOT/EBEN/2025/039	W/C	Tree	Dry Bark, Seed	Wounds	Paste	Paste of bark powder and coconut oil used to treat skin pigmentation	0.03	0.01	40.00
	Euphorbia hirta L. Dudhi KU/BOT/EUPH/2025/041	W/C	Herb	Latex, Whole Plant	Skin infections	Latex	Latex applied directly to wounds	0.05	0.03	100.00
	Euphorbia neriifolia L. Sehund KU/BOT/EUPH/2025/042	W/C	Shrub	Latex	Nail Wounds	Latex	Latex applied directly to wounds	0.01	0.00	60.00
	Jatropha curcas L. Ratanjot KU/BOT/EUPH/2025/057	W/C	Shrub	Bark	Eczema	Paste	Paste prepared with warm water or honey to apply on the skin for related problems	0.01	0.00	83.33
Euphorbiaceae	*Ricinus communis* L. Arand KU/BOT/EUPH/2025/081	W/C	Shrub	Seeds, Leaves	Skin glowing, sun care, anti-aging, wounds	Extract, Paste	Topically applied to the infected area of skin	0.02	0.00	25.00
	Bauhinia variegata L. Bohar bhaji KU/BOT/FABA/2025/014	W/C	Tree	Bark	Wounds, sores, boils, and inflammation	Poultice	Applied to the nail and closed with a bandage	0.01	0.03	44.44
	Butea monosperma (Lam.) Taub. Parsa KU/BOT/FABA/2025/016	W/C	Tree	Root, Flower	wounds, burns, ulcers, eczema, sores, and inflammation,	Decoction	Root decoction is used in skin diseases	0.02	0.03	22.22
Fabaceae	*Caesalpinia bonduc* (L.) Roxb. Gataran	W/C	Climber	Bark, Seeds, Roots	eczema, dermatitis,	Decoction	Plant material is mixed with different herbs	0.00	0.00	10.00

KU/BOT/FABA/2025/017				wounds, and burns		and used for skin troubles and allergy			
Mucuna pruriens (L.) DC. Kewanch KU/BOT/FABA/2025/065	W/C	Climber	Leaf, Root, Trichomes of fruit pod	Itching, burning sensations, ulcers, and wounds	Paste, Decoction, Root bark Oil	Applied directly on the skin, topically, to heal	0.00	0.00	13.33
Phanera vahlii (Wight & Arn.) Benth. Bohar bhaji KU/BOT/FABA/2025/068	W/C	Climber	Leaf, Root	Psoriasis, acne, ringworm, and leprosy	Juice, paste	Juice taken 1-2 times a day, Paste directly applied on the skin topically	0.00	0.00	25.00
Pongamia pinnata (L.) Pierre Karanj KU/BOT/FABA/2025/077	W/C	Tree	Bark, Fruit, and Fruit peel	Fungal and ringworm infection	Paste	Powdered root applied as a paste on the skin top	0.03	0.00	14.29
Pterocarpus marsupium Roxb. Bija KU/BOT/FABA/2025/078	W/C	Tree	Bark and Leaf	scabies, and itching	Decoction	Decoction intake to purify the blood and reduce skin issues	0.00	0.01	10.00
Senna alata (L.) Roxb. Hinglaj KU/BOT/FABA/2025/084	W/C	Shrub	Leaf	Dermatitis, acne, boils, inflammation	Paste, Juice, Decoction	Leaf paste applied on wounds and ringworm infection topically, Decoction used for eczema, Seed Paste used for psoriasis	0.02	0.01	20.00
Vachellia nilotica (L.) P.J.H. Hurter & Mabb. Babool KU/BOT/FABA/2025/101	W/C	Tree	Bark, Leaf	wounds, reduce inflammation, soothe itching, and treat conditions like leprosy, ulcers	Paste	Boiled leaf paste is applied to skin diseases.	0.00	0.01	28.57
Clerodendrum indicum (L.) Kuntze Bharangi KU/BOT/LAMI/2025/029	W/C	Shrub	Bark, Root	Infectious Wounds	Decoction	Washed the infected skin with bark decoction	0.02	0.00	14.29

	Lawsonia inermis L. Mehandi KU/BOT/LAMI/2025/059	Cultivated	Shrub	Leaf	boils, ulcers, wounds, and infections	Paste	Directly applied to the wounds	0.02	0.01	16.67
Lamiaceae	*Ocimum tenuiflorum* L. Tulsi KU/BOT/LAMI/2025/067	Cultivated	Herb	Leaf, Whole plant, Root, Flower	boils, wounds, skin rashes, and swellings	Paste	Directly applied to the skin to treat minor wounds	0.05	0.03	25.00
	Tectona grandis L.f. Sagon KU/BOT/LAMI/2025/093	Cultivated	Tree	Leaf	Minor cuts	Paste	Topically applied	0.00	0.01	41.67
	Vitex negundo L. Ningur KU/BOT/LAMI/2025/103	W/C	Shrub	Leaf, Seed oil	ringworm and athlete's foot	Paste	Externally applied to the scar	0.02	0.00	83.33
Lauraceae	*Cinnamomum tamala* (Buch.-Ham.) T.Nees & C.H.Seeman Dalchini KU/BOT/LAUR/2025/023	W/C	Tree	Leaf	Acne, eczema, psoriasis, and itching	Oil	Direct application on the infected skin area	0.00	0.00	42.86
Lythraceae	*Woodfordia fruticosa* (L.) Kurz Dhawai KU/BOT/LYTH/2025/106	Cultivated	Shrub	Flower	Wound	Paste, Poultice	Applied topically for the treatment	0.02	0.02	11.11
Magnoliaceae	*Michelia champaca* L. Champa KU/BOT/MAGN/2025/062	W/C	Tree	Flower, Seeds	Wound	Paste, Poultice, Powder	Applied topically on the infected area for treatment	0.00	0.02	12.50
	Bombax ceiba L. Semhar KU/BOT/MALV/2025/015	W/C	Tree	Latex, Spines	Cosmetic, Anti-aging	Latex	Directly applied to boils	0.00	0.02	7.14
	Sida cordifolia L. Bisiripi KU/BOT/MALV/2025/085	W/C	Herb	Leaf	Acne, psoriasis, and skin pigmentation	Paste	Applied on the skin topically	0.00	0.02	16.67
Malvaceae	*Sida rhombifolia* L. Barela KU/BOT/MALV/2025/086	Wild	Herb	Leaf, Root, Stem	Fungal infection	Paste	Paste of detoxified seeds with turmeric and lemon juice applied on the skin	0.01	0.02	66.67
Meliaceae	*Azadirachta indica* A.Juss. Neem	Cultivated	Tree	Bark, Leaf, Fruit, Seed oil	Ulcers, itching, and leucoderma	Paste, Juice, Oil	Paste of leaves applied directly	0.05	0.02	83.33

	KU/BOT/MELI/2025/012						to the wounds, cuts, and boils. A cup of juice from fresh leaves is given to the patient twice a day. Oil is directly applied to the infected area of the skin.			
Menispermaceae	*Tinospora cordifolia* (Willd.) Hook.f. & Thomson Giloy KU/BOT/MENI/2025/099	W/C	Climber	Stem	Eczema, psoriasis, dermatitis, itching, and inflammation	Paste	Applied topically for the treatment	0.01	0.02	40.00
Molluginaceae	*Glinus oppositifolius* (L.) Aug.DC. Pita bhaji KU/BOT/MOLL/2025/048	W/C	Herb	Stem, Tubers	Wounds	Paste	Paste applied on normal cut wounds directly	0.01	0.00	16.67
Moraceae	*Ficus benghalensis* L. Bargad KU/BOT/MORO/2025/044	W/C	Tree	Latex, Young leaves	Burn wounds	Latex	Latex applied to boil wounds directly	0.03	0.00	10.00
	Ficus racemosa L. Dumar KU/BOT/MORO/2025/045	W/C	Tree	Small Leaves, Fruit	Minor wounds	Poultice	Poultice applied to cut wounds directly	0.02	0.03	14.29
	Ficus religiosa L. Pipal KU/BOT/MORO/2025/046	W/C	Tree	Latex, Bark	Eczema, psoriasis, fungal infections, acne, and wounds	Latex	Latex applied to boil wounds directly	0.01	0.01	12.50
Moringaceae	*Moringa oleifera* Lam. Munga KU/BOT/MORI/2025/064	Cultivated	Tree	Bark, Leaf, Fruit, Latex	wounds and ulcers to reduce discharge, bleeding	Paste	Directly applied to the skin for treatment	0.01	0.01	16.67
Myrsinaceae	*Embelia ribes* Burm.f. Baibidang KU/BOT/MYRS/2025/040	W/C	Climber	Fruit, Seed	Eczema, wounds, burns, ringworm, and parasitic skin issues	Oil, Powder	Seed oil used externally on infected skin, Powder taken with honey to detox the body	0.00	0.01	16.67
Myrtaceae	*Syzygium cumini* (L.) Skeels Jamun KU/BOT/MYRT/2025/091	Cultivated	Tree	Bark, Leaf, Fruit	Chronic skin issues	Paste	Bark powder with sesame oil is used	0.01	0.00	66.67

							externally on the skin			
Nyctaginaceae	*Mirabilis jalapa* L. Gulabbas KU/BOT/NYCT/2025/063	W/C	Herb	Leaf	Inflammation, Boils, Burn, Ringworm infection	Paste	Directly applied to the infected area for treatment	0.01	0.00	71.43
Oleaceae	*Jasminum grandiflorum* L. Chameli KU/BOT/OLAC/2025/055	W/C	Climber	Flower, Root	Skin Complexion	Paste, Poultice	Applied on the skin directly to reduce inflammation and aid in the healing of cuts	0.02	0.00	12.50
	Jasminum sambac (L.) Aiton Mogra KU/BOT/OLAC/2025/056	W/C	Shrub	Leaf	Wounds	Paste, Poultice	Directly applied to the infected skin area	0.00	0.01	42.86
	Nyctanthes arbor-tristis L. Paarijaat KU/BOT/NYCT/2025/066	W/C	Tree	Leaf, Bark	Boils	Paste	Fresh leaf paste is applied topically	0.03	0.01	100.00
	Cleistanthus collinus (Roxb.) Benth. ex Hook.f. Karra KU/BOT/PHYL/2025/027	W/C	Tree	Root, Bark	Infective and Poisonous Wounds	Paste	Paste prepared with coconut oil from dry root powder and applied to the cuts	0.01	0.01	87.50
Phyllanthaceae	*Phyllanthus amarus* Schumach. & Thonn. Bhui Amla KU/BOT/PHYL/2025/069	W/C	Herb	Leaf, Whole Plant	Wounds, inflammation	Infusion	Infusion of berries in coconut oil is applied to the infected skin	0.00	0.02	42.86
	Phyllanthus emblica L. Amla KU/BOT/PHYL/2025/070	W/C	Tree	Fruit	Boil wounds	Paste	Directly applied to the skin to treat wounds	0.03	0.03	50.00
	Phyllanthus niruri L. Bhui Amla KU/BOT/PHYL/2025/071	W/C	Herb	Whole plant	Cut wounds	Paste	Topical application	0.00	0.03	62.50
Piperaceae	*Piper betle* L. Paan KU/BOT/PIPR/2025/072	Cultivated	Climber	Leaf	Boil wounds	Paste, Poultice	Paste Applied topically on the skin, Poultice prepared with	0.02	0.03	57.14

							ghee applied on the skin top			
	Piper longum L. Peepri mool KU/BOT/PIPR/2025/073	Cultivated	Climber	Leaf	Wound and skin infections	Juice, Paste, Decoction	Juice taken orally, paste, and Decoction used to treat skin problems topically	0.02	0.00	25.00
	Piper nigrum L. Kaali mirch KU/BOT/PIPR/2025/074	Cultivated	Climber	Root, Leaf, Stem	Acne, aging, and for clear skin	Paste	Fresh leaves paste applied directly to the skin infection area	0.02	0.03	25.00
Plantaginaceae	*Bacopa monnieri* (L.) Wettst. Gotu kola KU/BOT/PLAN/2025/013	W/C	Herb	Leaf, Whole plant	Psoriasis	Paste, Poultice	Directly applied to the skin for treatment	0.00	0.00	20.00
Plumbaginaceae	*Plumbago zeylanica* L. Chitrak KU/BOT/PLUM/2025/075	W/C	Herb	Leaf, Root, Bark, Whole plant	Leprosy, Inflammation, skin whitening, Wounds, burns	Paste, Poultice	Directly applied to the skin to treat infections	0.02	0.01	62.50
Poaceae	*Cynodon dactylon* (L.) Pers. Doobi Ghas KU/BOT/POAC/2025/036	W/C	Herb	Whole plant, Leaf	Skin swellings, boils, and furuncles,	Paste	Paste is applied to keep cool, wounded area	0.02	0.01	16.67
Poaceae	*Vetiveria zizanioides* (L.) Nash Khas ghas KU/BOT/POAC/2025/102	W/C	Herb	Root	Wound	Extract, Oil	Externally applied to the skin for treatment	0.02	0.01	57.14
Rhamnaceae	*Ziziphus mauritiana* Lam. Boir KU/BOT/RHAM/2025/110	Wild	Tree	Leaf	Sores, boils, and itching	Paste, Poultice	Externally applied to the scar	0.01	0.01	66.67
Rubiaceae	*Rubia cordifolia* L. Manjistha KU/BOT/RUBI/2025/082	Cultivated	Climber	Bark	Wounds	Paste	Paste of dry flower is prepared with goat milk and applied to the dark skin	0.01	0.01	100.00
	Aegle marmelos (L.) Corrêa Bel	W/C	Tree	Leaf	Allergic conditions and infections	Paste	Paste of leaves is directly applied to wounds	0.02	0.01	57.14

	KU/BOT/RUTA/2025/004									
	Citrus × limon (L.) Osbeck Nimbu KU/BOT/RUTA/2025/026	Cultivated	Tree	Leaf and Fruit	Iron cuts	Paste, Poultice, Juice	Juice of fruit intake to treat skin aging and lightening, Leaf paste used to treat boils, Fruit peel infusion used to wash the face skin for a glow	0.00	0.00	20.00
Rutaceae										
	Zanthoxylum armatum DC. Tejbal KU/BOT/RUTA/2025/107	Cultivated	Tree	Fruit and seeds	Wound	Paste, Poultice	Directly applied to the skin for treatment	0.00	0.01	11.11
Sapotaceae	*Madhuca longifolia* (L.) J.F.Macbr. Mahua KU/BOT/SAPI/2025/061	W/C	Tree	Seed oil, flower juice, bark, and leaves	Skin disorder	Paste, Poultice	Directly applied to the skin for treatment	0.01	0.01	25.00
	Datura metel L. Dhatura KU/BOT/SOLA/2025/037	W/C	Shrub	Seeds, Leaf	Pigmentation disorders	Paste	Leaf is applied to boils	0.01	0.01	20.00
	Solanum nigrum L. Makoi KU/BOT/SOLA/2025/087	W/C	Herb	Leaf, Root, Bark, Whole plant	Eczema, boils, non-healing sores, and for general itching	Paste, Poultice	Both are directly applied to the skin for treatment	0.01	0.01	33.33
Solanaceae										
	Solanum virginianum L. Bhaskati KU/BOT/SOLA/2025/088	W/C	Shrub	Leaf, Whole plant, Root	Inflammatory Wounds	Paste	Topically applied	0.01	0.00	44.44
	Withania somnifera (L.) Dunal Ashgandh KU/BOT/SOLA/2025/105	Cultivated	Shrub	Leaf	Sores, boils, and itching	Paste, Poultice	Direct applied on the skin	0.00	0.00	40.00
Vitaceae	*Cissus quadrangularis* L. Hadjod KU/BOT/VITAC/2025/025	W/C	Climber	Stem, Root	Boils and wounds	Paste	Fine paste is applied to the skin	0.02	0.00	33.33
	Curcuma caesia Roxb. Kali haldi KU/BOT/ZING/2025/034	Cultivated	Herb	Rhizome	infantile eczema, diaper rash, and general skin eruptions	Paste	Rhizome paste is directly applied to the minor wounds	0.02	0.00	2.86

Zingiberaceae	*Curcuma longa* L. Haldi KU/BOT/ZING/2025/035	Cultivated	Herb	Rhizome	vitiligo, various skin disorders, ulcers, herpes, scaly skin diseases	Paste	Rhizome paste is directly applied to the minor wounds	0.05	0.03	100.00
	Zingiber officinale Roscoe Aadaa KU/BOT/ZING/2025/108	Cultivated	Herb	Rhizome	Wound	Paste, Poultice	Boiled leaf paste is applied to skin diseases.	0.03	0.00	33.33
	Zingiber roseum (Roxb.) Roscoe Jangali Adrak KU/BOT/ZING/2025/109	Cultivated	Herb	Rhizome	Wound	Paste, Poultice	Externally applied to the skin for treatment	0.02	0.03	14.29

Abbreviations: UV; Use Value, RFC; Relative frequency of citations, FL; Fidelity level, W/C; Wild/Cultivated

The study's findings align with previous ethnobotanical studies in central India, which found that bioactive compounds and cultural usage of these plants led to their preference for treating skin-related conditions (Ahirwar, 2024; Subba, 2024; Radha, 2025). Overall, the results of the FIV analysis indicate that the dominance of certain categories of plant families is not accidental but rather related to their therapeutic relevance, ecological abundance, and traditional use related to the treatment of skin diseases.

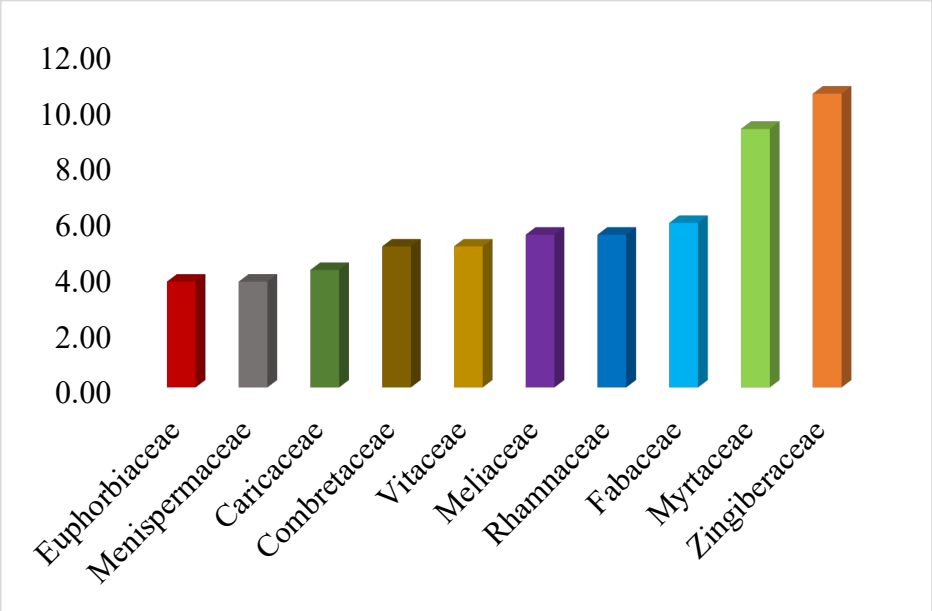

Figure 6. Top ten plant families ranked by Family Importance Value (FIV) based on informant citations for skin disorder treatment in Balodabazar-Bhatapara District, Chhattisgarh.

The present research is the first systematic and quantitative ethnobotanical document of the medicinal plants used to treat skin diseases in the Balodabazar-Bhatapara district of Chhattisgarh. Although previous work by the state has described general ethnomedicinal practices or an area adjacent to the state, dermatological healthcare traditions of this district have been minimally documented. The detection of 89 medicinal plant species on 8 dermatological disease categories with quantitative indices, including Use Value, Relative Frequency of Citation, Fidelity Level, and Family Importance Value, gives evidence of the importance of plants and treatment measures in a particular district. The prevalence of wound-based treatments, the intensive usage of topical treatments, and the high amount of informant agreement about the choice of the species are the symptoms of the local therapeutic priorities due to the environmental factors and the traditional livelihoods. In general, this research provides a baseline ethnodermatological data of Balodabazar-Bhatapara that can be used as a reference when pharmacologic validation is required in the future, for conservation priorities, and protection of indigenous medicine knowledge in an area of central India.

In general, the results of the current research highlight the depth and cohesiveness of the traditional dermatological knowledge in the research territory. Although high informant consensus and repeated use confer useful hints on the therapeutic potential, the ethnomedicinal affirmations need to be read as hypotheses that ought to be subjected to systematic phytochemical, toxicological, and pharmacological tests. The documentation of ethnobotanical use is an initial step, as highlighted in the previous studies on the region, and there is no conclusive clinical evidence (Bhoi and Ahirwar, 2025a; Radha 2025).

Conclusion

This research reports and quantifies the ethnomedicinal value of plants employed for curing skin diseases in the Balodabazar-Bhatapara district of Chhattisgarh. The results suggest a strong focus on a few culturally significant species, especially for wounds and infections, which are used to treat inflammatory skin diseases. The quantitative ethnobotanical indices (UV, RFC, FL, and FIV) clearly pointed out a small number of species that are generally cited and trusted by informants, and many other species are cited and trusted in a more restricted way.

The results indicate that certain families, like Zingiberaceae, Fabaceae, Meliaceae, and Myrtaceae, among others, play an important role in the medical use of plants for dermatological purposes because they have known therapeutic properties. An overall conclusion is that cultural agreement and ecological availability are important factors to consider in plant choice to manage skin disease. The results give an indication of the relative importance of species suitable for pharmacological validation and the documentation and conservation of TK before it is lost because of socio-cultural changes.

Table 2. Family-wise distribution of medicinal plants employed for the treatment of skin disorders in the Balodabazar district of Chhattisgarh.

Family	Number of Genera	% of Contribution	Number of Species	% of Contribution	FIV %
Acanthaceae	3	4.11	3	3.37	3.36
Acoraceae	1	1.37	1	1.12	2.52
Amaranthaceae	2	2.74	2	2.25	1.26
Annonaceae	2	2.74	2	2.25	0.42
Apocynaceae	5	6.85	5	5.62	1.26
Asparagaceae	1	1.37	1	1.12	2.10
Asphodelaceae	1	1.37	1	1.12	1.68
Asteraceae	2	2.74	2	2.25	2.94
Burseraceae	1	1.37	1	1.12	0.42
Caricaceae	1	1.37	1	1.12	4.20
Cleomaceae	1	1.37	1	1.12	2.94
Combretaceae	1	1.37	5	5.62	5.04
Ebenaceae	1	1.37	1	1.12	0.42
Euphorbiaceae	3	4.11	4	4.49	3.78
Fabaceae	9	12.33	9	10.11	5.88
Lamiaceae	5	6.85	5	5.62	0.84
Lauraceae	1	1.37	1	1.12	0.42
Lythraceae	1	1.37	1	1.12	0.42
Magnoliaceae	1	1.37	1	1.12	0.84
Malvaceae	2	2.74	3	3.37	0.42
Meliaceae	1	1.37	1	1.12	5.46
Menispermaceae	1	1.37	1	1.12	3.78
Molluginaceae	1	1.37	1	1.12	0.42
Moraceae	1	1.37	3	3.37	1.68
Moringaceae	1	1.37	1	1.12	0.42
Myrsinaceae	1	1.37	1	1.12	0.84
Myrtaceae	1	1.37	1	1.12	9.24
Nyctaginaceae	1	1.37	1	1.12	0.42
Oleaceae	2	2.74	3	3.37	1.26
Phyllanthaceae	2	2.74	4	4.49	2.52
Piperaceae	1	1.37	3	3.37	2.52
Plantaginaceae	1	1.37	1	1.12	3.36
Plumbaginaceae	1	1.37	1	1.12	2.52
Poaceae	2	2.74	2	2.25	0.42
Rhamnaceae	1	1.37	1	1.12	5.46
Rubiaceae	1	1.37	1	1.12	1.26
Rutaceae	3	4.11	3	3.37	0.42
Sapotaceae	1	1.37	1	1.12	0.84
Solanaceae	3	4.11	4	4.49	0.42
Vitaceae	1	1.37	1	1.12	5.04
Zingiberaceae	2	2.74	4	4.49	10.50

Declarations

Ethics approval and consent to participate: The informed oral consent of all participants in the interview process was obtained.

Consent for publication: Not applicable.

Competing interests: The authors assert that they do not have any competing interests.

Funding: Not applicable.

Availability of data and materials: The information was not uploaded in the open repositories but can be obtained from the respective author on request.

Author contributions: K. Shobhana gathered data, analyzed it, drafted, and developed the manuscript. B. Deepa served as a supervisor and gave consent to the final manuscript.

Acknowledgements

We would also like to express our gratitude to every healer who took part in this research and provided information.

Literature Cited

Ahirwar RK, Bhoi DK. 2025. Ethnobotanical secrets of the Baiga tribe in Chhattisgarh, Central India. Scientific Reports 15(1):38130.

Ahirwar RK, Gupta V. 2024. Quantitative ethnomedicinal investigation of medicinal plants used by traditional healers to treat various diseases in the district Dindori, Madhya Pradesh, India. Ethnobotany Research and Applications 28:1-31.

Ahuja A, Gupta J, Gupta R. 2021. Miracles of herbal phytomedicines in treatment of skin disorders: Natural healthcare perspective. Infectious Disorders-Drug Targets 21(3):328-338.

Anand U, Tudu CK, Nandy S, Sunita K, Tripathi V, Loake GJ, Proćków J. 2022. Ethnodermatological use of medicinal plants in India: From ayurvedic formulations to clinical perspectives-A review. Journal of Ethnopharmacology 284:114744.

Aziz MA, Khan AH, Adnan M, Ullah H. 2018. Traditional uses of medicinal plants used by Indigenous communities for veterinary practices at Bajaur Agency, Pakistan. Journal of Ethnobiology and Ethnomedicine 14(1):11.

Balamurugan S, Vijayakumar S, Prabhu S, Yabesh JM. 2018. Traditional plants used for the treatment of gynaecological disorders in Vedaranyam taluk, South India—An ethnomedicinal survey. Journal of Traditional and Complementary Medicine 8(2):308-323.

Begum D, Nath SC. 2000. Ethnobotanical review of medicinal plants used for skin diseases and related problems in Northeastern India. Journal of Herbs, Spices & Medicinal Plants 7(3):55-93.

Bhat P, Hegde GR, Hegde G, Mulgund GS. 2014. Ethnomedicinal plants to cure skin diseases—an account of the traditional knowledge in the coastal parts of the Central Western Ghats, Karnataka, India. Journal of Ethnopharmacology 151(1):493-502.

Bhoi DK, Ahirwar RK. 2025a. Ethnopharmacological survey and GC-MS profiling of medicinal plants in Surguja district, Chhattisgarh: Bridging traditional knowledge and bioactive compound discovery. Pharmacological Research-Natural Products 6:100188. https://doi.org/10.1016/j.prenap.2025.100188

Das K. 2020. Application of Indian medicinal herbs for skin problems following safety measures against COVID-19. Iranian Journal of Dermatology 23(Suppl. COVID-19):24-37.

de Oliveira PC, Braga J. 2017. Ethnobotany of Borari-Arapiuns indigenous people, Amazon, Brazil. Journal of Medicinal Plants 5(1):164-170.

Devi S, Bishist R, Dutt B, Gupta S, Gautam KL, Kishore K, Singh I. 2026. Utilization of plant resources by migratory gaddi shepherds: applying traditional knowledge for animal health care in Northwestern Himalayas. Genetic Resources and Crop Evolution 73(1):37.

Dubey S, Pani A, Chauhan NS, Shah K, Singh A, Vinodia S, Dixit AK. 2026. Quantitative ethnomedicinal survey of indigenous communities in Chhattisgarh, India. Genetic Resources and Crop Evolution 73(1):53.

Fabricant DS, Farnsworth NR. 2001. The value of plants used in traditional medicine for drug discovery. Environmental Health Perspectives 109(Suppl 1):69-76.

Ferreira FS, Brito SV, Ribeiro SC, Almeida WO, Alves RR. 2009. Zootherapeutics utilized by residents of the community Poco Dantas, Crato-CE, Brazil. Journal of Ethnobiology and Ethnomedicine 5:1-10.

Gangurde VV, Kalarikkal VW, Rahangdale DY, Krishna N, Nagayya S, Bandi V, Acharya R. 2025. Traditional medicinal plants used by ethnic communities in Senapati and Kangpokpi districts of Manipur, India: A quantitative assessment. Discover Plants 2(1):82.

Hao DC, Wang Y, Chen ZD, Lu LM, Xiao PG. 2026. Spatial phylogenetics and biocultural conservation of medicinal plants in ethnic minority communities of China: implications for environmental sustainability. Biodiversity and Conservation 35(1):18.

Haq SM, Khoja AA, Lone FA, Waheed M, Bussmann RW, Casini R, Elansary HO. 2023. Keeping healthy in your skin—plants and fungi used by indigenous Himalayan communities to treat dermatological ailments. Plants 12(7):1575.

https://balodabazar.gov.in

Jain SK. 1965. Medicinal plant lore of the tribals of Bastar. Economic Botany 19:236-250.

Jain SK. 1986. Ethnobotany. Interdisciplinary Science Reviews 11(3):285-292.

Jain SK. 1991. Dictionary of Indian Folk Medicine and Ethnobotany. Deep Publications, New Delhi.

Jain SK, Rao RR. 1977. A handbook of field and herbarium methods. Today and Tomorrow, New Delhi.

Jain SK, Mudgal V. 1999. A handbook of ethnobotany. Bishen Singh Mahendra Pal Singh.

Kasolang S, Adlina WA, Rahman NA, Nik NR. 2020. Common skin disorders: a review. Jurnal Tribologi 25:59-82.

Kayani S, Ahmad M, Zafar M, Sultana S, Khan MPZ, Ashraf MA, Hussain J, Yaseen G. 2014. Ethnobotanical uses of medicinal plants for respiratory disorders among the inhabitants of Gallies-Abbottabad, northern Pakistan. Journal of Ethnopharmacology 156:47-60.

Malik K, Ahmad M, Zafar M, Ullah R, Mahmood HM, Parveen B. 2019. An ethnobotanical study of medicinal plants used to treat skin diseases in northern Pakistan. BMC Complementary and Alternative Medicine 19:210.

Mandal SK, Rahaman CH. 2022. Inventorization and consensus analysis of ethnoveterinary medicinal knowledge among the local people in Eastern India: perception, cultural significance, and resilience. Frontiers in Pharmacology 13:861577.

Mir TA, Jan M, Khare RK. 2022. Ethnomedicinal practices and conservation status of medicinal plants in the Bandipora District of Kashmir Himalaya. Journal of Herbs, Spices & Medicinal Plants 28(2):125-142.

Pal DC, Jain SK. 1999. Tribal Medicine. Naya Prakash, Calcutta.

Pandey AK. 2021. An ethnobotanical study of medicinal plants in Atal Nagar (New Raipur) of Chhattisgarh, India. International Research Journal of Plant Science 12(1):1-18.

Patra S, Sharma S. 2022. Contemporary ethnomedicinal practices among the Gond tribe of Bilaspur District, Chhattisgarh, India. Journal of Herbs, Spices & Medicinal Plants 28(1):1-14.

Radha P, Udhayavani C, Nagaraj R, Sivaranjani K. 2025. Medico-ethnobotanical survey of medicinal plants used in the treatment of skin diseases in Tiruppur District, Tamil Nadu, India. Phytomedicine Plus 5(1):100692.

Ralte L, Sailo H, Singh YT. 2024. Ethnobotanical study of medicinal plants used by the indigenous community of the western region of Mizoram, India. Journal of Ethnobiology and Ethnomedicine 20(1):2.

Roy A, Janbandhu S. 2020. An ethnobotanical analysis on flora-medicine continuum among tribal inhabitants of Ratnagiri and Palghar district, Maharashtra, India. Ethnobotany Research and Applications 20:1-23.

Sharma A, Adhikari D, Wagh VV. 2024. Ethnobotanical investigation of medicinal plants used among rural communities in northeastern Madhya Pradesh, India. Plant Biosystems 158(5):1160-1181.

Shriwas JK, Sharma L, Acharya CK. 2023. Exploration of ethnomedicinal herbs and their practices by indigenous people of Achanakmar region of Chhattisgarh. IJERR 3:195-202.

Singh N. 2026. Bridging ancient wisdom and modern science: nanoparticles from ayurvedic medicinal plants. South African Journal of Botany 189:324-340.

Subba Y, Hazra S, Rahaman CH. 2024. Quantitative ethnobotany of medicinal plants from Darjeeling District of West Bengal, India. Plants 13(24):3505.

Subramanyam K. 1974. A handbook of field and herbarium methods. Nelumbo 16(1-4):174-174.

Sundari A, Jayakumararaj R. 2020. Herbal remedies used to treat skin disorders in Arasankulam region of Tamil Nadu, India. Journal of Drug Delivery & Therapeutics 10(5).

Umair M, Altaf M, Abbasi AM. 2017. Ethnobotanical survey of medicinal plants in Hafizabad district, Pakistan. PLoS One 12(6):e0177912.

Usman M, Ditta A, Ibrahim FH, Murtaza G, Rajpar MN, Mehmood S, Khan WR. 2021. Quantitative ethnobotanical analysis of medicinal plants of high-temperature areas of Southern Punjab, Pakistan. Plants 10(10):1974.

Verma DM, Pant PC, Hanfi MI. 1985. Flora of Raipur, Durg and Rajnandgaon. Botanical Survey of India, Calcutta.

Vijayakumar S, Yabesh JM, Prabhu S, Manikandan R, Muralidharan B. 2015. Quantitative ethnomedicinal study of plants used in the Nelliyampathy hills of Kerala, India. Journal of Ethnopharmacology 161:238-254.

Wagh VV, Jain AK. 2020. Ethnopharmacological survey of plants used by Bhil and Bhilala ethnic community in dermatological disorders in Western Madhya Pradesh, India. Journal of Herbal Medicine 19:100234.

Yaseen G, Ahmad M, Sultana S, Alharrasi AS, Hussain J, Zafar M. 2015. Ethnobotany of medicinal plants in the Thar Desert (Sindh), Pakistan. Journal of Ethnopharmacology 163:43-59.