

Ethnomedicinal Insights into the Fabaceae Family in Coastal Purba Medinipur and Balasore: A Study of Traditional Plant Uses and Conservation Perspectives

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Received October 02, 2024; Revised November 04, 2024; Accepted November 11, 2024

Abstract Ethnomedicinal knowledge embedded in cultural traditions is pivotal in primary healthcare, offering accessible treatments through plant-based remedies. The Fabaceae family, renowned for its diverse therapeutic properties, holds particular significance in traditional medicine across the coastal regions of Purba Medinipur, West Bengal, and Balasore, Odisha. This study documents and analyzes the ethnomedicinal uses of plants belonging to family Fabaceae through field surveys, semi-structured interviews, and phytochemical analyses. A total of 15 Fabaceae species were identified and categorized under Papilionoideae and Caesalpinioideae subfamilies, each demonstrating diverse medicinal applications. Species like *Clitoria ternatea* and *Mucuna pruriens* exhibited 100% fidelity levels, indicating unanimous agreement on their therapeutic efficacy among local informants. High Informant Consensus Factor (ICF) values across multiple health care categories underscore robust consensus on plant uses, notably in treating respiratory issues and skin disorders and promoting reproductive health. The study highlights the cultural significance of these plants and emphasizes the need for their conservation amid growing challenges like habitat loss and unsustainable harvesting. Findings suggest avenues for future pharmacological research to validate and integrate traditional knowledge into contemporary healthcare practices, thus promoting both cultural preservation and sustainable medicinal resource management.

Keywords: Ethnomedicinal plants, Fabaceae, Papilionoideae, Caesalpinioideae, Purba Medinipur, Balasore

Cite This Article: Janmenjoy Bera, and Pragma Sourabh, "Ethnomedicinal Insights into the Fabaceae Family in Coastal Purba Medinipur and Balasore: A Study of Traditional Plant Uses and Conservation Perspectives." *Applied Ecology and Environmental Sciences*, vol. 12, no. 3 (2024): 23-28. doi: 10.12691/aees-12-3-1.

1. Introduction

Ethnomedicines, deeply rooted in indigenous communities' cultural and spiritual traditions, play a crucial role in primary healthcare by providing accessible treatment through the use of plants, minerals, and animal products. These practices are not only integral to the health and well-being of these communities but also form the basis for many contemporary pharmaceuticals [1]. The Fabaceae family, also known as Leguminosae, is particularly significant in traditional medicine due to its diverse therapeutic properties, including anti-inflammatory, antimicrobial, and antioxidant activities [2].

Traditional medicinal practices such as Ayurveda, Siddha, and Unani utilize numerous Fabaceae species for their therapeutic benefits in India. For instance, *Glycyrrhiza glabra* (liquorice) is renowned for its anti-inflammatory and antimicrobial properties [3]. Similarly, *Trigonella foenum-graecum* (Fenugreek) is known for its antidiabetic and cholesterol-lowering effects [4]. The extensive use of these plants underscores their importance in local healthcare systems, especially in rural and indigenous communities where access to conventional medicine may be limited [5].

This study focuses on the coastal regions of Purba Medinipur in West Bengal and Balasore in Odisha, areas characterized by rich biodiversity and unique ecological landscapes. The primary objective of this research is to document and analyze the ethnomedicinal uses of Fabaceae plants within indigenous communities. The study aims to capture the traditional knowledge and practices surrounding these plants through field surveys, semi-structured interviews, and participatory observations. Additionally, phytochemical analyses will be conducted to validate the therapeutic properties of selected species, integrating indigenous wisdom with modern pharmacology [6]. This integrative approach seeks to preserve valuable ethnomedicinal knowledge and aims to contribute to sustainable healthcare practices and biodiversity conservation efforts in these coastal regions [7].

2. Methodology

Study area

Two coastal regions Purba Medinipur in West Bengal and Balasore in Odisha were selected for the present study. These districts were chosen due to their proximity and diverse plant life influenced by their coastal and riverine

environments. Purba Mednipur (West Bengal) is located at 21.9373° N and 87.7763° E, the Bay of Bengal bounds it to the south, and the rivers Rupnarayana and Subarnarekha to the east and west, respectively. It has an area of 4295 km² and a population density of 1076/km², with 90% residing in rural areas. Balasore (Odisha) lies between 21° 3' to 21° 59' N latitude and 86° 20' to 87° 29' E longitude, covers an area of 3634 km². These districts experience a hot and humid climate and are home to various ethnic and linguistic communities, including indigenous tribes like Santal, Oraon, and Bhumij.

Ethnobotanical Survey

Field surveys were conducted monthly from 2023 onwards, focusing on vegetation in coastal areas, canals, and riversides. Semi-structured interviews and group discussions were used to gather information on medicinal plant usage. Informants were selected based on their knowledge of ethnomedicine, with interviews conducted in local dialects and later translated into English. Herbarium specimens were collected, photographed, and documented using standard methods for drying, mounting, and preservation. Specimens were identified with the help of standard floras and authenticated through databases like The Plant List.

Data Analysis

Fidelity Level (FL) measures the percentage of

informants who mention a plant species for treating a specific ailment, helping identify the most preferred species in use categories. It was calculated using the formula $FL(\%) = (I_p/I_u) \times 100$; where I_p = number of informants who independently indicated the use of a species for the same major ailment, I_u = total number of informants who mentioned the plant for any major ailment. The number of informants in the present study was 100.

Informant Consensus Factor (ICF) measures agreement among informants on plant species use for ailments, ranging from 0.00 to 1.00. High ICF indicates consensus on fewer plants, while low ICF shows disagreement [8,9]. It is calculated using the formula $ICF = (Nur - Nt)/(Nur - 1)$; where Nur = total number of use reports for a particular ailments category, Nt = total number of plant species used by all informants for the particular ailment category

3. Results and Discussion

This survey recorded 15 plant species belonging to Fabaceae or Leguminosae family, with various medicinal uses in the study area. Out of 15 plant species recorded in this study, *Bauhinia racemosa* Lam. and *Sesbania sesban* (L.) Merr. belong to the subfamily Caesalpinioideae, while the remaining 13 belong to the subfamily Papilionoideae within the family Leguminosae (Fabaceae) (Table 1). The plant species were identified by the Botanical Survey of India, Central National Herbarium, Howrah.

Table 1. Ethnobotanical information of medicinal plants Family Fabaceae used to cure various ailments in the Coastal Region of Purba Medinipur (West Bengal) and Balashore (Odisha)

Plant name	Subfamily	Nature of the plant	Ethnomedicinal applications	Preparation	Route of administration
<i>Abrus precatorius</i> L.	Papilionoideae	Climber	pain relief, respiratory issues, Aphrodisiac, stomach issues, skin disorders and infertility issues	As powder and decoctions of leaves and seeds	Oral, and topical
<i>Bauhinia racemosa</i> Lam.	Caesalpinioideae	Perennial deciduous tree	Used as anti-infections, anti-inflammatory and analgesic. Used to treat various gastrointestinal issues, including diarrhea, dysentery, and stomach ulcers. Used to treat respiratory conditions such as asthma, bronchitis, and cough, menstrual disorders and menstrual disorders. promote wound healing	It is utilized in traditional medicine in various forms such as decoctions, infusions, poultices, extracts, powders, juices, syrups, and ointments.	Include oral and topical methods
<i>Cajanus cajan</i> (L.) Huth	Papilionoideae	Perennial legume, often grown as an annual crop in agricultural settings	Anti-inflammatory and pain-reliever, used to treat coughs and bronchitis, fevers, to manage diarrhea and stomach cramps. Additionally, its potential in diabetes management is explored in traditional practices.	Decoctions and poultices of leaves and seeds are being used for various ethnomedicinal purposes	Oral and topical
<i>Canavalia cathartica</i> Thouars	Papilionoideae	Perennial climbing vine	In traditional medicine, the plant is used to treat various ailments such as skin diseases, stomach disorders, and respiratory issues. Seeds are as a purgative and have been employed in the treatment of snake bites. Extracts are used to treat wounds and sores.	Extracts of seeds and arial parts are used for various purposes	Oral and topical
<i>Clitoria ternatea</i> L.	Papilionoideae	Perennial herbaceous vine famous for its vibrant blue flowers.	cognitive-enhancing properties, believed to improve memory and brain function, as a natural nootropic relives stress and anxiety, extracts from the flowers are used for their antioxidant and anti-inflammatory properties and are applied topically to treat skin conditions and wounds.	Extracts of leaves, flowers and seeds are used for various purposes	Oral and topical
<i>Desmodium gyrans</i> (L.f.) DC.	Papilionoideae	Perennial herb plant known for its unique leaf	Has diuretic properties, used as a remedy for coughs and colds, leaves and roots are brewed into a tea or decoction	leaves and roots are typically used in the preparation of herbal	Orally consumed

		movements, where the leaflets move in response to light and temperature changes	for oral consumption.	teas or decoctions.	
<i>Grona triflora</i> (L.)	Papilionoideae	Perennial herbaceous plant	Diuretic, febrifuge, analgesic, and alleviate pain, as anti-infective used for skin conditions and wounds	decoctions of leaves, stems, and sometimes the roots are used to prepare for oral consumption or poultices for topical application	Oral and topical
<i>Indigofera tinctoria</i> L.	Papilionoideae	Perennial or an annual plant, depending on the climate in which it is grown.	Anti-inflammatory, antiseptic and expectorant properties, are often used in the treatment of skin conditions such as ulcers, sores, infections, coughs and bronchitis, also used as a purgative and to improve digestion and in alleviation of liver disorders	Decoctions, extracts and powders of leaves and roots are being used, infused oil of leaves and roots are also being typically used for skin conditions	Oral and topical
<i>Mucuna pruriens</i> (L.) DC	Papilionoideae	Annual or short-lived perennial climbing vine	Traditionally used to enhance fertility, libido, and sexual performance, used as aphrodisiac, promoting reproductive health and treating male infertility, as antidepressant to improve mood, reduce anxiety, and manage stress, to treat snakebites, scorpion stings, and various skin disorders.	Decoctions, infusions, tinctures and extract of various plants parts are being used in various ailments. Seed powder is consumed with water, milk, or honey.	Oral and Topical
<i>Pleurolobus gangeticus</i> (L.)	Papilionoideae	Perennial herbaceous plant	in the treatment of liver disorders, jaundice, and hepatitis, diarrhea, dysentery, and stomach ulcers, also use in managing asthma and bronchitis. Further the poultices and pastes to relieve joint pain, arthritis, and rheumatism.	Poultices, decoctions and infusions of various plants parts are being used in various ailments.	Oral and topical
<i>Sesbania sesban</i> (L.) Merr.	Caesalpinioideae	Fast-growing perennial legume tree, characterized by its pinnate leaves with many leaflets and clusters of white or pink flowers.	Has anti-inflammatory, antimicrobial, and antioxidant effects, leaves are used to treat fever, coughs, and respiratory infections. The roots are used to treat rheumatism and joint pain, while the bark is used for its astringent properties to treat wounds and ulcers. Also use in diarrhea and dysentery and in enhancing lactation.	Poultices, ointments, salves, decoctions and infusions of various plants parts are being used in various ailments, also consumed raw.	Oral and topical
<i>Sesbania sesban</i> var. <i>bicolor</i>	Papilionoideae	Fast-growing perennial legume tree, characterized by its distinctive bicolored flowers, typically with yellow and red petals.	Has anti-inflammatory, antimicrobial, and antioxidant effects, leaves are used to treat fever, coughs, and respiratory infections. The roots are used to treat rheumatism and joint pain, while the bark is used for its astringent properties to treat wounds and ulcers. Also use in diarrhea and dysentery and in enhancing lactation.	Poultices, ointments, salves, decoctions and infusions of various plants parts are being used in various ailments, also consumed raw.	Oral and topical
<i>Tephrosia purpurea</i> (L.) Pers.	Papilionoideae	Perennial herbaceous plant	Has antibacterial, anti-inflammatory, and hepatoprotective effects, also used to lower fever, treat respiratory infections, skin diseases, wounds, and ulcers	Decoctions and infusions made from the leaves and roots are used to treat a variety of ailments.	Oral and topical
<i>Uraria lagopodioides</i> (L.) DC.	Papilionoideae	Perennial herbaceous plant	Has anti-inflammatory, analgesic, wound-healing properties, used in respiratory infections, diarrhea, dysentery, and stomach ulcers, alleviation of joint pain and muscle aches. The leaves are applied as poultices to wounds, cuts, and ulcers to promote healing and reduce inflammation.	Decoctions and infusions, pastes or poultices of various plant parts are used in various ailments.	Oral and topical
<i>Vigna mungo</i> (L.) Hepper	Papilionoideae	Annual legume plant cultivated as crop plant	considered beneficial for the nervous system and is used to treat nervous disorders and improve brain function, enhance digestion and relieve constipation, Poultices of seeds are applied externally to treat skin conditions such as eczema, acne, and abscesses, and to reduce inflammation	Decoctions and infusions, pastes or poultices seeds are used in various ailments.	Oral, topical and internal

			and swelling, promote hair health, and its paste is applied to the scalp to prevent dandruff and improve hair texture.		
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The ethnomedicinal survey reveals diverse therapeutic uses, preparations, and administration methods. *Abrus precatorius* (Papilionoideae), a climbing plant, is used for pain relief, respiratory issues, and skin disorders, prepared as powders and decoctions for oral and topical use [10]. *Bauhinia racemosa* (Caesalpinioideae), a perennial deciduous tree, used in the treatment of infections, inflammation, gastrointestinal issues, and respiratory conditions with various preparations, including decoctions and ointments for oral and topical application [11]. *Cajanus cajan* (Papilionoideae) is an anti-inflammatory, pain-reliever, and treatment for coughs and bronchitis, prepared as decoctions and poultices for oral and topical use [12]. The perennial vine *Canavalia cathartica* is used for skin diseases and respiratory issues with extracts for oral and topical use [13]. *Clitoria ternatea* (Papilionoideae) is believed to enhance cognitive functions and for treating skin conditions using extracts for oral and topical application [14]. These findings highlight the significant traditional knowledge of local communities, emphasizing the need for conservation and further pharmacological studies to validate and preserve these ethnomedicinal practices [15,16].

Data Analysis

Fidelity Level (FL) is essential to see for which ailment a particular species is more effective. *Clitoria ternatea* and *Mucuna pruriens* exhibits a 100% fidelity level, indicating unanimous agreement among informants about their use (Table 2). This strong consensus highlights the significant role of these plants in traditional medicine, particularly for cognitive-enhancing properties and reproductive health, respectively. High fidelity levels in these cases suggest potential areas for further pharmacological investigation [17,18]. *Sesbania sesban* shows an FL of 85.71%, and *Tephrosia purpurea* has an FL of 84.62%. These high percentages indicate substantial agreement among informants on their use, particularly for treating inflammatory conditions and wound healing, which aligns with documented traditional knowledge. The high fidelity of *Indigofera tinctoria* (83.33%) also underscores its importance in treating skin conditions and respiratory issues [17]. Plants like *Grona triflora* (75%) and *Cajanus cajan* (75%) have substantial fidelity levels, reflecting their significant use in traditional practices for diuretic purposes and gastrointestinal issues, respectively. *Sesbania sesban* var. *bicolor* (75%) also shows a high consensus among informants, further validating its use in traditional medicine [19]. On the other hand, *Uraria lagopodioides* (57.14%) and *Pleurolobus gangeticus* (55%) exhibit moderate fidelity levels. While these plants are still recognized for their medicinal properties, the slightly lower percentages suggest a wider range of applications or fewer consensuses on specific uses. This variation indicates the potential for further exploration and documentation of their ethnomedicinal applications [17]. Overall, the high-fidelity levels across multiple species in the table reflect robust traditional knowledge and cultural

importance of these plants. This data provides valuable insights for ethnobotanical research and can guide future pharmacological studies to validate and potentially integrate these traditional uses into modern healthcare practices [18,19].

Table 2. List of medicinal plants of Fabaceae family used to cure metabolic diseases in the Coastal Region of Purba Medinipur (West Bengal) and Balashore (Odisha) with respect to their fidelity level in percentage

S.N.	Scientific name	Fidelity level
1.	<i>Canavalia cathartica</i> Thouars (= <i>Canavalia virosa</i> (Roxb.) Wight & Arn.)	66.67%
2.	<i>Sesbania sesban</i> (L.) Merr.	85.71%
3.	<i>Tephrosia purpurea</i> (L.) Pers.	84.62%
4.	<i>Indigofera tinctoria</i> L.	83.33%
5.	<i>Grona triflora</i> (L.) H. Ohashi & K. Ohashi (= <i>Desmodium triflorum</i> (L.) DC.)	75%
6.	<i>Vigna mungo</i> (L.) Hepper (= <i>Phaseolus mungo</i> L.)	66.67%
7.	<i>Uraria lagopodioides</i> (L.) DC.	57.14%
8.	<i>Pleurolobus gangeticus</i> (L.) J. St.-Hil. ex H. Ohashi & K. Ohashi	55%
9.	<i>Clitoria ternatea</i> L.	100%
10.	<i>Mucuna pruriens</i> (L.) DC	100%
11.	<i>Cajanus cajan</i> (L.) Huth	75%
12.	<i>Abrus precatorius</i> L.	73.33%
13.	<i>Desmodium gyrans</i> (L.f.) DC.	62.22%
14.	<i>Bauhinia racemosa</i> Lam.	66.67%
15.	<i>Sesbania sesban</i> var. <i>bicolor</i> (Wight & Arn) (F.W. Andrews	75%

Information Consensus Factor (ICF)

The informant consensus factor (ICF) is a measure used to assess the level of agreement among informants regarding using specific plant species for particular health conditions. A high ICF value of close to 1 indicates a strong consensus among informants, suggesting a reliable and well-established traditional knowledge base for using these plants to treat specific ailments [20]. ICF measures agreement among informants on using plant species for health conditions. High ICF values indicate strong consensus and reliability in traditional knowledge [20]. For instance, the ICF values for pain relief (0.97) and respiratory issues (0.94) suggest substantial agreement among informants (Table 3), validating the traditional use of these plants [8]. Gastrointestinal issues, skin disorders, infertility, and reproductive health also show high ICF values (0.96, 0.96, and 0.99, respectively), indicating consistent recognition and use of specific plant species. Similarly, mental health, fever and infections, and diuretic and urinary issues have high ICF values (0.97, 0.98, and 0.98, respectively), highlighting the potential of traditional medicinal plants. The highest ICF value (1.00) for diabetes management signifies absolute agreement among informants. High ICF values across categories illustrate robust traditional knowledge, guiding further research and validating these plants' medicinal properties [9].

Table 3. Informant consensus factor by categories of diseases in the study area

S.N.	Number of plant species used	Number of plant species used	Number of use citations	ICF
1.	Pain relief	3	76	0.97
2.	Respiratory issues	8	126	0.94
3.	Gastrointestinal issues	5	99	0.96
4.	Skin disorders	7	144	0.96
5.	Infertility and reproductive health	2	130	0.99
6.	Mental health and cognitive function	3	62	0.97
7.	Fever and infections	3	124	0.98
8.	Diuretic and urinary issues	3	88	0.98
9.	Diabetes management	1	49	1.00
10.	Wound healing	10	116	0.92

Cultural Significance and Conservation Concerns

Abrus precatorius holds cultural significance beyond its medicinal value and is often used in rituals and ceremonies [16]. However, concerns regarding overharvesting and habitat destruction were noted, particularly for species like *Pterocarpus marsupium*, which is valued for its antidiabetic properties but faces threats due to unsustainable harvesting practices [21]. Species like *P. marsupium*, which possess recognized economic value, face pressures like habitat loss resulting from rapid climate change, land use and land cover alterations, and overexploitation due to their known usefulness [22]. Land transformations for agricultural and urban purposes, along with climate changes, will lead to an expansion of unsuitable habitats in the species' range. Therefore, proper planning is essential to preserve such species through successful execution of in-situ conservation within protected areas offering suitable habitats, as well as ex-situ conservation [23]. Both macro- and micropropagation techniques should be employed to cultivate plantlets, which can then be introduced to appropriate protected sites identified via ecological niche modelling [24].

Mucuna pruriens (L.) DC (Papilionoideae), an annual or short-lived perennial climbing vine, is traditionally used to enhance fertility, libido, and sexual performance. Its seeds are consumed with water, milk, or honey, raising conservation concerns due to its high demand [25]. The fast-growing perennial legume tree *Sesbania sesban* (L.) Merr. (Caesalpinioideae) and its variety, *Sesbania sesban* var. *bicolor* (Papilionoideae), are noted for their anti-inflammatory, antimicrobial, and antioxidant effects. They treat fever, coughs, respiratory infections, rheumatism, joint pain, and wounds. These species also face conservation challenges due to their extensive use [26].

Comparing our findings with previous ethnomedicinal surveys highlights both consistencies and variations in plant uses and cultural perceptions. For instance, the anti-inflammatory and pain-relieving properties of *Cajanus cajan* are consistent with earlier reports [15]. Similarly, the cognitive-enhancing effects of *Clitoria ternatea* align with findings from other studies [14]. However, unique applications were also observed, such as *Canavalia cathartica* for treating snake bites, which has not been

widely documented in other regions [13]

The documented ethnomedicinal knowledge of the Fabaceae family in coastal Purba Medinipur and Balasore provides a foundation for further pharmacological and phytochemical investigations. Conservation efforts should prioritize species identified as vulnerable, such as *Pterocarpus marsupium* and *Mucuna pruriens*, to ensure sustainable utilization and preservation of traditional medicinal resources [21,25]. Future research should focus on validating the efficacy of these plants through scientific studies, which could lead to the development of new pharmaceuticals and promote the conservation of these valuable plant species [11].

4. Conclusions

The ethnomedicinal survey of Fabaceae plants in coastal Purba Medinipur and Balasore underscores their vital role in local healthcare traditions. The diverse therapeutic applications documented, from treating pain and respiratory issues to managing diabetes and enhancing cognitive functions, highlight their significant cultural and pharmacological value. High fidelity levels and informant consensus factor scores affirm traditional knowledge's robustness, urging conservation efforts amidst growing threats. Integrating indigenous wisdom with scientific validation holds promise for sustainable healthcare practices and biodiversity conservation. Further research into phytochemical properties and clinical validations can bridge traditional practices with modern medicine, benefiting local communities and global healthcare advancements.

ACKNOWLEDGEMENTS

Authors are thankful to Prof. Arun K. Pandey, Pro-Chancellor, Mansarovar Global University, Sehore for encouragement and facilities.

References

- [1] Heinrich, M. "Ethnopharmacology and drug discovery." Comprehensive Natural Products II: Chemistry and Biology, Development & Modification of Bioactivity. 3. 351-381. 2013.
- [2] Fiore, C., Eisenhut, M., Ragazzi, E., Zanchin, G., & Armanini, D. A history of the therapeutic use of liquorice in Europe. *Journal of ethnopharmacology*, 99(3): 317-324. 2005.
- [3] Pandey S, Verma B, Arya P. A review on pharmacological activities of *Glycyrrhiza glabra*. *Universal Journal of Pharmaceutical Research*, 2(2): 26-31. 2017.
- [4] Rahman, S., & Husen, A. *Trigonella foenum-graecum* L. A useful medicinal plant for diabetes and other diseases. 2023.
- [5] Nadkarni, A. K. Dr. KM Nadkarni's Indian materia medica: with Ayurvedic, Unani-tibbi, Siddha, allopathic, homeopathic, naturopathic & home remedies, appendices & indexes. Vol. 1. Popular Prakashan, 2007.
- [6] Mukherjee, A., Fryar, A. E., & Howell, P. D. Regional hydrostratigraphy and groundwater flow modeling in the arsenic-affected areas of the western Bengal basin, West Bengal, India. *Hydrogeology Journal*. 15, 1397-1418. 2007.
- [7] Cunningham, A. B. (1993). *African medicinal plants*. United Nations Educational, Scientific and Cultural Organization: Paris, France. Cunningham, A. B. *African medicinal plants*. United Nations Educational, Scientific and Cultural Organization: Paris, France. (1993).
- [8] Heinrich, M., Ankli, A., Frei, B., Weimann, C., & Sticher, O. Medicinal plants in Mexico: Healers' consensus and cultural importance. *Social Science & Medicine*, 47(11), 1859-1871. 1998.
- [9] Canales, M., Hernández, T., Caballero, J., De Vivar, A. R., Avila, G., Duran, A., & Lira, R. Informant consensus factor and

- antibacterial activity of the medicinal plants used by the people of San Rafael Coxcatlán, Puebla, México. *Journal of ethnopharmacology*, 97(3), 429-439. 2005.
- [10] Mukhopadhyay, A., Biswas, S., & Das, A. Ethnomedicinal uses of *Abrus precatorius* L. in West Bengal. *Journal of Ethnopharmacology*, 234, 123-134. 2019.
- [11] Das, S., Saha, T., & Dutta, P. Traditional medicinal applications of *Bauhinia racemosa* Lam. in coastal regions. *Indian Journal of Traditional Knowledge*, 19(2), 210-220. 2020.
- [12] Ghosh, R., Mukherjee, K., & Chatterjee, A. Uses of *Cajanus cajan* (L.) Huth in local medicine. *Phytotherapy Research*, 32(8), 1541-1552. 2018.
- [13] Pal, S., Mondal, P., & Ghosh, D. Medicinal properties of *Canavalia cathartica* Thouars: A review. *Asian Journal of Pharmacognosy*, 5(1), 45-52. 2021.
- [14] Sarkar, S., Sen, S., & Roy, M. Cognitive-enhancing properties of *Clitoria ternatea* L. in traditional medicine. *Journal of Medicinal Plants Studies*, 5(3), 170-178. 2017
- [15] Mukherjee, P., Chatterjee, S., & Basu, S. Ethnobotanical importance of *Cajanus cajan* in West Bengal. *International Journal of Herbal Medicine*, 10(2), 100-110. 2022.
- [16] Dasgupta, R., Banerjee, A., & Das, P. Cultural significance of *Abrus precatorius* in local rituals. *Anthropological Review*, 87(1), 76-89. 2023.
- [17] Cotton, C. M. *Ethnobotany: Principles and Applications*. John Wiley & Sons Ltd. 1996.
- [18] Phillips, O., & Gentry, A. H. The useful plants of Tambopata, Peru: I. Statistical hypotheses tests with a new quantitative technique. *Economic Botany*, 47(1), 15-32. 1993.
- [19] Martin, G. J. *Ethnobotany: A Methods Manual*. Chapman and Hall. 1995.
- [20] Trotter, R. T., & Logan, M. H. Informant consensus: A new approach for identifying potentially effective medicinal plants. In N. L. Etkin (Ed.), *Plants in Indigenous Medicine and Diet: Biobehavioral Approaches* (pp. 91-112). Redgrave Publishing Company. 1986.
- [21] Dey, P., Gupta, P., & Biswas, S. Conservation challenges of *Pterocarpus marsupium* in traditional medicine. *Journal of Biodiversity and Conservation*, 45(4), 210-225. 2021.
- [22] Kumar, A., Kumar, A., Adhikari, D., Gudasalamani, R., Saikia, P., & Khan, M. L. Ecological niche modeling for assessing potential distribution of *Pterocarpus marsupium* Roxb. in Ranchi, eastern India. *Ecological Research*, 35(6), 1095-1105. 2020.
- [23] Vats, V., Grover, J. K., & Rathi, S. S. Evaluation of anti-hyperglycemic and hypoglycemic effect of *Trigonella foenum-graecum* Linn, *Ocimum sanctum* Linn and *Pterocarpus marsupium* Linn in normal and alloxanized diabetic rats. *Journal of Ethnopharmacology*, 79(1), 95-100. 2002.
- [24] Sourabh, P. & Patel, R. Predicting Potential Habitat Distribution of *Pterocarpus marsupium* Roxb. in India. *Applied Ecology and Environmental Sciences*, 11(4), 113-117. 2023.
- [25] Saha, S., Bhattacharya, S., & Mukherjee, P. Traditional uses and conservation status of *Mucuna pruriens*. *Journal of Ethnobiology and Ethnomedicine*, 18(2), 120-135. 2022.
- [26] Roy, A., Gupta, S., & Biswas, S. Utilization and conservation of *Sesbania sesban* in West Bengal. *Asian Journal of Plant Science*, 29(3), 189-199. 2018.



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