Int. J. Agriworld, Vol. 7[1] January 2026

Online ISSN: 2582-7537
Journal's URL:http://www.svpss.in/ijaw
DOI: https://doi.org/10.51470/IJAW.2026.07.01.43
Received 15.12.2025 Revised 05.01.2026 Accepted 15.01.2026
ORIGINAL ARTICLE OPEN ACCESS

Exploration of Ethnomycological Knowledge on Wild Edible Mushrooms in Jalpaiguri District of West Bengal, India

Mallika Mazumder* and Deepmala Pathak
Department of Botany, Mansarovar Global University, Sehore, Madhya Pradesh, India
***Corresponding E. mail:** mallika.flk@gmail.com

Abstract

In the absence of systematic ethnomycological documentation within contemporary academic discourse, traditional knowledge of edible mushrooms risks disappearing and surviving only as fragmented vernacular memory passes inconsistently across younger generations. Globally the dissemination of ethnomycological knowledge progresses at a more measured tempo compared to other types of indigenous information. Thus, there is a real need of ethnomycological survey in all corners of the globe. The Jalpaiguri district of West Bengal, India, is one of the biodiversity rich regions situated at the Himalayan foot-hill regions and it was inhabited by a huge number of indigenous communities. In the present communication we have tried to explore ethnomycological knowledge from the region. Multiple variety of under-researched edible and toxic mushrooms were observed in the study sites. A total of 14 mushrooms were reported to have significant utilization as food.

Keywords: *Mushroom, Ethnomycology, Indigenous Knowledge, Jalpaiguri, Use Value*.

Introduction

Mushrooms are classified within the Fungi Kingdom and represent the fruiting structures of Basidiomycetes and certain Ascomycetes (Mazumder *et al.,* 2023). They represent one of the most diverse groups of organisms on Earth, with an estimated 500,000 species, of which only 10% have been scientifically classified. Mushrooms are extensively consumed globally, and their economic impact improves rural livelihoods (Mazumder and Sarkar, 2023). Edible mushrooms are food sources and are regarded as one of the most delectable foods globally. The collection of mushrooms is a prevalent activity among ethnic communities in areas where they flourish. Several wild edible mushrooms were reported from several corner of the globe through ethnomycological studies. Wild mushrooms constitute a significant natural resource for sustenance and revenue for numerous indigenous populations around (Semwal *et al.,* 2014; Borah *et al.,* 2018). Since few decades deforestation and urbanization endanger various organism groups, including macro-fungi, leading to the erosion of traditional knowledge regarding their usage, accumulated over centuries of environmental experience and understanding (Devi, 2017; Jaman *et al.,* 2022; Das *et al.,* 2022). Knowledge about wild edible and medicinal mushrooms is transmitted between generations within local groups, serving as one of the few fragile yet efficient methods of knowledge preservation. Documenting ethnomycological data is essential for validating or rectifying specimen identification and preserving these natural resources with cultivation potential, hence enhancing their consumption and application for medicinal purposes (Kaul *et al.,* 2019; Mustafaev *et al.,* 2024). Precise identification of ethno-mycologically recognized mushrooms is essential, as the absence of appropriate identification precludes the exploration of traditional knowledge of wild mushrooms (Debnath *et al.,* 2019). Mushrooms are a minor yet vital component of local dietary customs and play a crucial role in the biodiversity of any region.

Ethnomycological surveys enhance our understanding of local practices related to macro-fungi and provide improved valuation of their applications (Guissou *et al.,* 2014). Technically ethnomycology is an emerging field of study that examines the relationship between fungi and indigenous communities. Ethnomycological investigations assist in determining the most suitable fungal species for cultivation by providing insights into their benefits to local populations, revealing cultural variances among

communities concerning species utilization, and significantly contributing to management and conservation strategies that engage local stakeholders in species preservation (Garibay-Orijel *et al.,* 2007). In spite of this ethnomycological knowledge has garnered insufficient attention from natural resource scientists and is frequently neglected in the documenting of traditional ecological knowledge concerning wild edible flora and fauna. Nonetheless, it is pivotal in rural lives, enhancing food security, nutrition, and health. Numerous types of indigenous wild mushrooms are harvested for direct human consumption, while many others are employed for medicinal purposes. In present communication ethnomycological investigation was conducted in Jalpaiguri district of West Bengal, India.

Material and Methods

Study sites

The district Jalpaiguri of West Bengal, India is one of the rich biodiversity regions, which is located almost northern end of the state. It is very close to the foothills of Eastern Himalaya. The Jalpaiguri district is situated between latitudes 26°15′47″ N and 26°59′34″ N, and longitudes 88°23′2″ E and 89°7′30″ E (Dey et al., 2025). It includes altitudinal ranges from 100 ft to 3000 ft above sea level, with an annual average precipitation of 3000 mm. It has international boundaries with Bhutan to the north and Bangladesh to the south, and is surrounded by the Darjeeling Hills to the west and northwest, as well as the Alipurduar and Cooch Behar districts to the east. The northernmost hill tracts of West Bengal, India, are home to numerous vibrant ethnic communities, contributing to the ethnic variety of Jalpaiguri District (Sarkar *et al.,* 2018). Similar to other ethnic groups, the indigenous communities in the research area had extensive traditional knowledge concerning mushrooms, with several species foraged from forests. Ethnomycological research in comparable environments of the adjacent Kashmir Himalayas (Ullah *et al.,* 2022) and the Darjeeling District (Chowdhury *et al.,* 2022) has recorded analogous habits among several ethnic groups. However, the adjacent areas of Jalpaiguri have not garnered any interest. The current work aimed to address this information gap. Jalpaiguri District was chosen for field data collecting due to its excellent diversity of ecosystem and ethnic diversity.

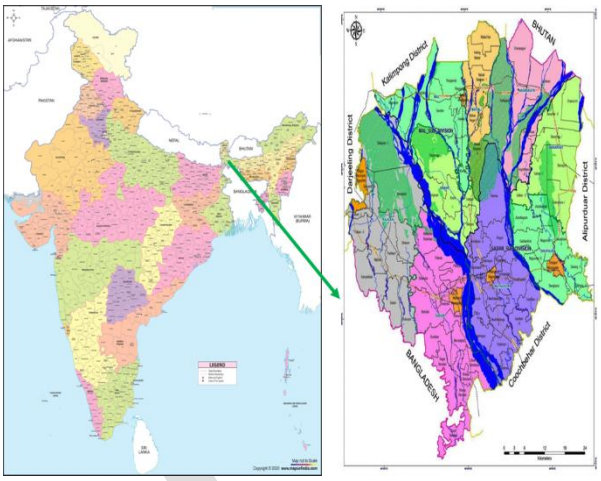

Fig. 1: Location of the study sites, i.e., Jalpaiguri in India

Methodology

The ethnomycological research was conducted from July 2023 to December 2025. The areas were randomly selected for the study, which covers all types of ecosystems, including forested areas, tea garden areas, rural areas, semi-urban areas and urban areas. One hundred fifty informants from indigenous ethnic groups, rural people, urban people and local mushrooms sellers were interviewed. Data were gathered semi-structured interviews. All informants were interviewed a minimum of three times to gather information on historical background, edibility status, traditional usage, preservation methods, commercial significance of fleshy fungi, and potential factors contributing to the reduced diversity of wild edible fungi in the region. All interviews and conversations were conducted in various local dialects, including Santal, Munda, Rava, and Oraon. The verification of macrofungal species occurred during the rainy season, and informants were asked to accompany us on the field visit to validate the species and associated information. The obtained macrofungal samples were meticulously analyzed in the laboratory for accurate identification and edibility, utilizing standard literature (Pegler, 1973; Pegler, 1987; Senthilarasu and Kumaresan, 2018; Gunasekara et al., 2021; Kiran and Sharma, 2025). The assistance of identifiable specimens and existing pictures was also utilized. All information was collected including morphological characters, habitat, collection time, preparation methods, and name in local dialect.

Data Analysis

Each mushroom species was elucidated for ethnomycological parameters such as Relative frequency citation (RFC) and Use value index (UV) as

per the methodology given by Yaseen *et al.,* (2015). Frequency citation (FC) of a species simply refers to the number of respondents reporting the ethnomycological use of that species.

Relative frequency citation was calculated as:

RFC = FC/ N

Where "**N**" represents the total number of respondents.

Finally, the use-value of each mushroom species was calculated by the formula

UV= U/n,

Where, **U**= the number of citations of each species; and **n**= number of informants

Result

The current ethnomycological survey indicated that the ethnic people of Jalpaiguri typically cook traditional mushroom meals utilizing spices and mustard oil. It was also apparent that certain wild mushrooms from this region are effectively utilized by traditional people to fulfil their nutritional requirement and health protection. 14 macrofungal species were reported as edible food. Among them *Termitomyces clypeatus R. Heim*., *Lentinus squarrosulus* Mont., *Pleurotus ostreatus* (Jacq.) *P. Kumm*., *Termitomyces heimii* Natarajan, *Agaricus bisporus* (Lange) Imbach, *Agaricus campestris* L. etc., were abundantly consumed in the study sites.

In the present study, most of the local respondents did not come out with a good deal of descriptive vocabulary with respect to morphology, growth, and habit of macro-fungi. After taxonomic identification two quantitative ethnobotanical indices were determined for each species, viz., Relative frequency and Use Value Index. Relative frequency citation was found to be highest for *Termitomyces clypeatus* R. Heim. (RFC= 0.92) and lowest for *Phallus indusiatus* Vent. ex Pers (RFC= 0.34), as presented in Table 2. Likewise Use value index was found to be highest at the value of 0.980 for *Termitomyces clypeatus* R. Heim., and lowest value at 0.313 for *Phallus indusiatus* Vent. ex Pers. Good use value index was also reported for *Pleurotus ostreatus* (Jacq.) P. Kumm., *Termitomyces heimii* Natarajan. and *Ganoderma lucidum* (Curtis) P. Karst (Table 2).

Discussion

The ethnomycological applications of mushrooms differ among regions and even communities within the same locality (Taofiq *et al.,* 2020). Till date several mushrooms were reported to have medicinal and nutritional significance (Debnath *et al.,* 2019; Mazumder *et al.,* 2023; Sarkar and Mazumder, 2024). Research on ethnomycological knowledge in Jalpaiguri District, West Bengal, uncovers a complex and varied system of local nomenclature and categorization, reflecting a level of taxonomic awareness and closeness to formal taxonomic understanding. A total of 14 distinct ethno-mycologically significant wild macro-fungi were documented in this region. The wild edible fungi consumed by the ethnic communities of Jalpiguri district in West Bengal, India, comprise *Agaricus bisporus*, *Pleurotus ostreatus*, *Lentinus squarosulus*, *Termitomyces heimii*, and *Termitomyces clypeatus*. On the other hand, *Ganoderma lucidum*, *Lentinula edodes*, and *Phallus indusiatus* were utilized in medicine to treat various disorders and enhance immunity. The three most prevalent macro-fungi, namely *Agaricus bisporus*, *Pleurotus ostreatus*, *Termitomyces heimii*, *Agaricus campestris*, and *Lentinus squarrosulus*, were the most often consumed in this location and were also observed for sale in local markets.

Knowledge transmission transpires via various avenues, including autonomous learning, social interaction, expert observation, and religious consultations. The distribution of ethnomycological knowledge in the research region is uneven. Despite extensive awareness of both edible and hazardous species, the overall count of recognized edible and wild mushroom species remains inferior compared to adjacent regions, as does the understanding of their alternative use. The disparity in mycological knowledge is significant, with women primarily limited to identifying regionally recognized edible mushrooms, while men have access to a broader array of edible species with associated vernacular names. Knowledge acquisition typically transpires among boys and young men, often leveraging supplementary cultural contexts. Cultural exchanges and environmental alterations impact knowledge retention and mushroom availability in Jalpaiguri, whereas certain cultural domains are diminishing in importance. Some of the species exhibit significant market value and substantial production in the areas analyzed in current study. The expertise in mushroom selection has typically been transmitted over generations of indigenous people. Additionally, several collectors possess personal mental maps to locate specific sites where mushrooms, particularly valuable species, emerge annually. This information is typically retained within their families to prevent others from harvesting, which could adversely impact their familial revenue.

Local inhabitants of some areas of Jalpaiguri preserved mushrooms through drying, pickling, and frying; yet, they prefer consuming fresh mushrooms. Mushroom nomenclature in this region is very underdeveloped among the tribes and rural peoples, evidenced by the absence of particular local names for many mushroom species, including edible varieties, which are instead referred to by a generic phrase like "Chatu" or "Kukri".

While the indigenous knowledge is transmitted across generations and has led to significant advancements, the influence of urban trends on the socio-demographic lifestyles of rural and indigenous populations is a primary factor contributing to the concerning status of native mushrooms and the traditional therapeutic systems linked to them (Das *et al.,* 2022). In several areas of Jalpaiguri and adjoining areas, wild edible mushrooms are marketed in a restricted capacity, either in their fresh or dried states. Examples of these species are *Pleurotus ostreatus Agaricus sp., Termitomyces sp.* etc. At local markets, various types of wild edible mushrooms are available for purchase at prices ranging from 100 to 350 INR each packet. Consequently, the export of wild edible mushrooms or mushroom based food has become a vital component of the economy in rural regions.

Mushroom poisoning is a significant worry that is growing as a global epidemiological issue. In the Indian subcontinent including the study sites, these poisonings frequently occur in areas where individuals rely significantly on wild resources for sustenance. In the absence of a uniform criterion to distinguish toxic mushrooms from edible varieties, myco-philic societies, albeit informed by their traditional and indigenous expertise in foraging for wild edible mushrooms, are often deceived by their dangerous counterparts.

Conclusion

This ethnomycological study examined the possible use of wild mushrooms, highlighting their significant economic significance as income sources for numerous tribal households, thereby enhancing the socio-economic status of the region. This work may yield valuable insights for subsequent research and the identification of novel medicinal molecules to address escalating health issues. The ethnomedicinal applications of 14 mushroom species were recorded, warranting future investigation into additional qualities that could be utilized for human benefit on a substantial scale. The knowledge acquired throughout the study can be transmitted to younger generations of local residents and forest occupants, thereby familiarizing them with this diminishing reservoir of traditional wisdom.

Table 1: Ethno-mycologically significant wild mushrooms reported from Jalpaiguri

Scientific Name	Family	Folk Name	Fruiting	Ecological association	Utility
Agaricus bisporus (Lange) Imbach	Agaricaceae	Chata	May-October	Saprobic	Fruit body is cooked as vegetables with mustard oil and spices; Anti-diabetic activity.
Agaricus campestris L.	Agaricaceae	Chhatu/ Chhata	June-September	Saprobic	Fruit body is cooked with Mustard oil and spices
Armillaria mellea (Vahl) P. Kumm.	Marasmiaceae	Modhu Chhatu	July-September	Saprobic	Fruitbody is cooked with mustard oil and spices.
Auricularia auricula L.	Auriculariaceae	Kan Chatka	July-September	Saprobic	Fried with noodles; Used as soup; Fruitbody is cooked with mustard oil and spices.
Flammulina velutipes (Curtis) Singer	Physalacriaceae	Jhuppey Chhtu	June-October	Saprobic	Used as salad or in soup preparation.
Ganoderma lucidum (Curtis) P. Karst.	Ganodermataceae	Shukna chhatu	June-November	Saprobic	Grind and mixed with warm water and taken as tonic

Grifola frondosa (Dicks.) Gray	Grifolaceae	Thakre Chiyaou	June-November	Saprobic	Fruitbody is cooked with mustard oil and spices.
Lentinula edodes (Berk.) Pegler	Marasmiaceae	Kath Chhatu	June-September	Saprobic	Immuno-boosting tonic is made by boiling in water.
Lentinus squarrosulus Mont.	Polyporaceae	Kath Chhatu	June-September	Saprobic	Fruitbody is cooked with mustard oil and spices.
Phallus indusiatus Vent. ex Pers.	Phallaceae	Basket Chhatu	April-October	Mycorrhizal	Fruit body is used in preparing of soup or tonic
Pleurotus ostreatus (Jacq.) P. Kumm.	Pleurotaceae	Jhinuk chhatu	June-September	Saprobic	Fruitbody is cooked with mustard oil and spices.
Termitomyces clypeatus R. Heim.	Lyophyllaceae	Parabana/Ada chhatu	June-September	Saprobic	Fruit body is cooked with mustard oil and spices
Termitomyces heimii Natarajan	Lyophyllaceae	Durga chhatu / Sik chhatu	June-October	Saprobic	Fruit body is cooked as vegetables with mustard oil and spices
Volvariella volvacea (Bull.) Singer	Volvaceae	Khar Chhatu	May-September	Saprobic	Fruitbody is cooked with mustard oil and spices

Table 2: Relative Frequency Citation and Use value Index of recorded wild edible mushrooms

Scientific Name	Relative Frequency Citation (RFC)	Use Value (UV)
Agaricus bisporus (Lange) Imbach	0.733	0.773
Agaricus campestris L.	0.706	0.646
Armillaria mellea (Vahl) P. Kumm.	0.506	0.666
Auricularia auricula L.	0.453	0.606
Flammulina velutipes (Curtis) Singer	0.486	0.486
Ganoderma lucidum (Curtis) P. Karst.	0.773	0.740
Grifola frondosa (Dicks.) Gray	0.546	0.726
Lentinula edodes (Berk.) Pegler	0.726	0.446
Lentinus squarrosulus Mont.	0.713	0.780
Phallus indusiatus Vent. ex Pers.	0.340	0.313
Pleurotus ostreatus (Jacq.) P. Kumm.	0.720	0.946
Termitomyces clypeatus R. Heim.	0.926	0.980
Termitomyces heimii Natarajan	0.806	0.973
Volvariella volvacea (Bull.) Singer	0.646	0.646

Figure 2: Edible and medicinally recognized mushrooms of the study sites. (A) *Termitomyces heimii* Natarajan (B) *Agaricus campestris* L. (C) *Lentinus squarrosulus* Mont. (D) *Ganoderma lucidum* (Curtis) P. Karst. (E) *Termitomyces clypeatus* R. Heim. (F) *Phallus indusiatus* Vent. ex Pers.

Figure 3: (A) A Villager of study sites collecting edible mushrooms; (B-D) Several local markets of study sites where villagers sell the edible mushrooms

REFERENCE

Borah, N., Semwal, R.L. and Garkoti, S.C. (2018). Ethnomycological knowledge of three indigenous communities of Assam, India. *Indian Journal of Traditional Knowledge*.17(2): 327-35.

Bose, D., Roy, J.G., Das Mahapatra (Sarkar) S., Datta, T., Das Mahapatra, S. and Biswas, H.

(2015) Medicinal plants used by tribals in Jalpaiguri district, West Bengal, India. *Journal of Medicinal Plants Studies*. 3(3): 15-21

Das, B., Mandal, S., Sarkar, K., Mazumdar, I., Kundu, S., and Sarkar, A.K. (2022). Contribution of Ethnic and Indigenous people in the Conservation of Plant Biodiversity in India. *Adv. Biores.,* 13(3): 209-229.

Debnath, S., Debnath, B., Das, P., and Saha, A.K. (2019). Review on an ethnomedicinal practices of wild mushrooms by the local tribes of India. *J Appl Pharm Sci.* 9(08):144–156.

Devi, K. (2017). Ethnomycological Studies Of Some Wild Edible and Medicinal Mushrooms in Kamrup District of Assam, India. *International Journal of Current Advanced Research.* 06(05): 3954-3959. http://dx.doi.org/10.24327/ijcar.2017.3959.0405

Dey, M., Soni, A.K., Ahmed S.S., and Sarkar A.K. (2025). Checklist of pteridophytes from the district Jalpaiguri, West Bengal, India. *J App Biol Biotech.* 13(1):62-74. https://doi.org/10.7324/JABB.2024.197655

Garibay-Orijel, R., Caballero, J., Estrada-Torres, A. et al. (2007). Understanding cultural significance the edible mushrooms case. *J Ethnobiology Ethnomedicine*. 3:4. https://doi.org/10.1186/1746-4269-3-4

Guissou, M.L., Guelly, A.K., and Lamga, D. (2014). Biodiversity and sustainable use of wild edible fungi in the Sudanian centre of endemism: A plea for valorisation. *Ectomycorrhizal symbioses in tropical and neotropical forests* 241.

Gunasekara, N.W., Nanayakkara, C.M., Karunarathna, S.C. and Wijesundera, R.L.C. (2021) Nutritional Aspects of Three Termitomyces and Four Other Wild Edible Mushroom Species from Sri Lanka. *Chiang Mai Journal of Science*. 48(5): 1236-1246.

Ilyor, M.M., Olim, K.K., Dilovar, T.K., Malika, M.I., Zoirjon, S.I., Jamila, P.S. (2025). Exploring edible and medicinal mushrooms: Ethnomycological insights from Samarkand, Jizzakh and Kashkadarya regions of Uzbekistan. *Plant Science Today*. 12(2): 1-10. https://doi.org/10.14719/pst.3571

Jaman, A., Mazumdar, I. and Sarkar, A.K. (2022). Innovation and Sustainability through Urban Agroforestry and House yard Garden. *Int. J. Agriworld*. 3 (1): 1-11.

Kaul, S., Choudhary, M., Gupta, S., Agrawal, D.C., Dhar, and M.K. (2019). Diversity and Medicinal Value of Mushrooms from the Himalayan Region, India. In: Agrawal, D., Dhanasekaran, M. (eds) Medicinal Mushrooms. Springer, Singapore. https://doi.org/10.1007/978-981-13-6382-5_15

Kiran, G. and Sharma, R. (2025). Survey and collection of wild edible mushrooms on different forest regions of West Bengal, India. *International Journal of Research in Agronomy*. 8(11): 901-907.

Mazumder, M. and Sarkar, A.K. (2019). Ethnobotanical survey of indigenous leafy vegetables consumed in rural areas of Terai-Dooars region of West Bengal, India. *Journal of Threatened Taxa* 11(12): 14612–14618. https://doi.org/10.11609/jott.5039.11.12.14612-14618

Mazumder, M., and Sarkar, A.K. (2023). Mushrooms as a source of Enzyme Inhibitor. In Goyal M.R. and Malik J.A. (Eds.) Enzyme Inactivation in food processing: Technologies, Materials and Applications. *Apple Academic Press*. 339-360.

Mazumder, M., Roy, S., Parvin, S., Das, B., Sarkar, A.K. (2023). Nanotechnological Approaches Against Fungal Pathogens of Economically Important Crop Plants. In: Malik, J.A., Sadiq Mohamed, M.J. (Eds.) *Modern Nanotechnology. Springer, Cham*. https://doi.org/10.1007/978-3-031-31111-6_22

Pegler, D.N. (1977). A Preliminary Agaric Flora of East Africa. London: Royal Botanic Gardens, Kew, *Kew Bulletin Additional Series VI*.

Pegler, D.N. (1983). Agaric Flora of the Lesser Antilles. London: Royal Botanic Gardens, Kew, *Kew Bulletin Additional Series IX*.

Raj, A.J., Biswakarma, S., Pala, N.A. et al. (2018). Indigenous uses of ethnomedicinal plants among forest-dependent communities of Northern Bengal, India. *J Ethnobiology Ethnomedicine* 14: 8. https://doi.org/10.1186/s13002-018-0208-9

Sarkar, A.K., and Mazumder, M. (2024). Potential Therapeutics of Cultivated and Wild Mushrooms Against Diabetes. In Goyal, M.R., Junaid Ahmad Malik, J.A., Kumari, A. (Eds.) The Functional Foods. *Apple Academic Press*. 151-186.

Sarkar, A.K., Dey, M. and Mazumder, M. (2017). Ecological status of medicinal plants of Chalsa forest range under Jalpaiguri division, West Bengal, India. *International Journal of Herbal Medicine*. 5(5): 196-215.

Sarkar, A.K., Dey, M., and Mazumder, M. (2018). Impact of non-timber forest products on

Forest and in Livelihood Economy of the People of Adjoining Areas of Jalpaiguri Forest Division, West Bengal, India. *Int J Life Sci.* 6(2):365-385.

Semwal, K.C., Stephenson, S.L., Bhatt, V.K. and Bhatt, R.P. (2014). Edible mushrooms of the Northwestern Himalaya, India: a study of indigenous knowledge, distribution and diversity. *Mycosphere*. 5(3): 440-461.

Senthilarasu, G. and Kumaresan, V. (2018). Mushroom Characterization: Part I – Illustrated Morphological Characteristics. Current Research in Environmental & Applied Mycology. *Journal of Fungal Biology*. 8(5): 501–555.

Taofiq, O., Barreiro, M.F., Ferreira, I.C. (2020). The role of bioactive compounds and other metabolites from mushrooms against skin disorders—a systematic review assessing their cosmeceutical and nutricosmetic outcomes. *Curr Med Chem.* 27(41):6926–6965.

Trotter, R.T. and Logan, M.H. (1986). Informant consensus: a new approach for identifying potentially effective medicinal plants. In Etkin, N. L. (Eds.) Plants in Indigenous Medicine and Diet: Biobehavioral Approaches. *Redgrave Publishing Company, New York*. 91-112.

Ullah, T. S., Firdous, S.S., Shier, W.T., Hussain, J., Shaheen, H., Usman, M., Akram, M., and Khalid, A.N. (2022). Diversity and ethnomycological importance of mushrooms from Western Himalayas, Kashmir. *Journal of ethnobiology and ethnomedicine*. 18(1):32. https://doi.org/10.1186/s13002-022-00527-7

CITATION OF THIS ARTICLE

Mazumder, M. and Pathak, D. (2026). Exploration of Ethnomycological Knowledge on Wild Edible Mushrooms in Jalpaiguri District of West Bengal, India, *Int. J. Agriworld*, 7 [1]: 43-50.

