



# Review on an ethnomedicinal practices of wild mushrooms by the local tribes of India

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## ABSTRACT

Ethnic tribes use wild mushrooms as their traditional medicine as well as food items from ancient times throughout the world and its diverse uses will be helpful to prove different medicinal characterization. The main motive for documentation of this review work is to focus the ethnomedicinally important wild mushrooms of India, which are used by the tribal or local people of India along with their traditional names, various uses and preparation techniques for medical treatments. This review work out to display that there are almost 18 research reports on traditional use of wild mushrooms as medicine from 14 states of India. This documentation implied that at present there are 100 species of macrofungi which are belonged to 56 genera are used by the tribes or local people of India and they use them for common illness, various scared diseases, private diseases and also use as herbal medicines. Present findings exhibit that there are almost 24 modes of preparation for different ethnomedicinal uses. Therefore, there is an urgent necessity to document indigenous knowledge about wild medicinal mushrooms which are used by the tribal peoples belonging to different states of India as well as all over the world.

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## INTRODUCTION

Mushrooms have been well known to us as an ingredient of gourmet cuisine; chiefly, for their particular flavor as well as various traditional practices and have been valued by humankind as a culinary wonder. Regarding the diversity of fungi, [Hawksworth \(2001\)](#) estimated the occurrence of approximately 1.5 million species worldwide. Ethnomycology is the study of wild macrofungi in folklore and rituals, from prehistoric times to that time ([Charaya and Mehrotra, 1999](#)) with their morphometric identification by the tribe along with documentation of nutritional properties and indigenous knowledge regarding their uses as food, medicine and in some other cultural traditional uses also. Edible and medicinal practices of mushrooms in India is quite common, some of which dates back to 1700–1100 BC ([Wasson, 1971](#)). India is a diverse country which

belongs to different types of tribal people or ethnic groups and each group has own management practices of natural resources for their daily uses. The eastern countries of Asia documented the traditional information on the utilization of cooked and therapeutic mushrooms had been accepted on generation to generation but it was not so much in India ([Panda and Tayung, 2015](#)). Traditional knowledge of wild edible and medicinal mushrooms might have lost all over the world due to lack of documentation. Traditional information of Indian tribal communities has demonstrated to be broad and profound, consuming nearly 283 species of wild macrofungi out of 2,000 species documented world over ([Purkayastha and Chandra, 1985](#)). Indigenous communities have been utilizing non-timber forest products by using their ethnomycological knowledge of wild mushrooms collection, preparations with food items and consuming since time immemorial for their different daily uses, i.e., edible, medicinal and have been considered as the secondary food resources ([Boa, 2004](#)). Ethnomycological studies revealed that wild edible mushrooms have been reported from Odisha, West Bengal, Assam, Manipur, Nagaland and Arunachal Pradesh of India ([Baruah et al., 1971](#); [Sarua et al., 2010](#); [Sing and Sing, 1993](#); [Sing et al., 2002](#); [Tanti et al., 2011](#)). The North Eastern Himalayan Region of India

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is a biodiversity hotspot which covers eight states, *viz.*, Arunachal Pradesh, Manipur, Assam, Meghalaya, Nagaland, Mizoram, Tripura and Sikkim (Myers, 2003) but very less amount of research have been carried out from different parts of the Northeastern states of India. The negative site of various traditional knowledge is proper identification, addressing poisoning, various utilization process, spreading of traditional knowledge and market value for selling wild mushrooms due to which many people died in various part of the world (Agrahar-Murugkar and Subbulakshmi, 2005; Basumatary and Gogoi, 2016; Khaund and Joshi, 2014; Sarma *et al.*, 2010; Singh and Chhetry, 2010; Paul *et al.*, 2015). In ancient time, the alertness of wild edible macrofungi and their significance to people of the developing countries have often been ignored but it is only in recent years that initiatives on non-wood forest products have begun to clarify their action use and functions in livelihoods (Devi, 2017; Kumar *et al.*, 2014). Systematics of wild macrofungi has accepted more awareness than other endangered aspects like conservation (Kumar *et al.*, 2014).

Mushrooms have been used as an important food items, and it also contain different medicine properties in all over the world because they contains different active constituents, such as polysaccharides, dietary fibers, selenium oligosaccharides, triterpenoids, peptides, proteins, alcohol, phenols, amino acids and mineral elements (Chang and Buswell, 1996; Chang and Miles, 2002; Lakhanpal *et al.*, 2010; Wani *et al.*, 2010; Wasser, 2010). The World Health Organization (WHO) released a report on ethnomedicine, which has maintained its attractiveness all over the world, and its diverse uses, such as traditional therapies and therapeutic techniques, with Chinese, Ayurveda, Arabic, Unani and native medicine which are speedily growing in the industrialized countries (WHO, 2002–2005). Therapeutic applications of macrofungi have been documented in China, Japan, and Korea for centuries, where fungi have been used by tradition for their medicinal properties. Medicinal application of wild mushrooms to maintain human health was recorded as early as 100 AD in China. The ecological data available on some of the taxa are still not enough and they need to be explored from all over the world. The specific goals of this review work are to document the ethnomedicinal wild mushrooms of India, which were used by the local people of India along with their vernacular names, uses and methods of preparation.

## RECORDS OF ETHNOMEDICINAL USES OF MUSHROOMS

The present review work established that people of the various parts of the world collect the mushrooms from the wild condition and consume various types of edible mushrooms as food or prepare with other food items and also use them for treatment of various human diseases. These wild medicinal mushrooms are edible, medicinal, poisonous, edible with medicinal properties and poisonous with medicinal activity and these mushrooms play a considerable role in sustaining the livelihood of the rural people. Chauhan *et al.*, (2014) recorded twelve wild edible macrofungi, *viz.*, *Agaricus campestris*, *Helvella compressa*, *Morchella conica*, *Morchella esculenta*, *Morchella deliciosa*, *Ramaria botrytis*, *Lactarius deliciosus*, *Rhizopogon vulgaris*, *Sparassis crispa*, *Gyromitra* sp. *Hygrophorus* sp. and *Lycoperdon* sp. which were used by the local tribes of Kinnaur district, Himachal Pradesh,

India as food by various modes of preparation. Dutta and Acharya, (2014) found 34 macrofungal species from West Bengal, India which were eat up or used by the locals and tribals peoples among which 31 macrofungi species were found to be edible and 5 were used as traditional medicine, while some of them were used for both the purposes. Srivastava *et al.* (2011) conducted an ethnobotanical survey for use of *Termitomyces* species in Gorakhpur forest division of Uttar Pradesh, India and they found that tribal people and forest dwellers use *Termitomyces* species as food as well as medicinal purposes but other uses were not clearly known. Earlier findings revealed that macrofungi were used as food supplements and also important due to their healing capacities used by the traditional people (Valverde *et al.*, 2015). Hernández-Santiago *et al.*, (2016) documented a sum of 106 macrofungal species which were growing in oak and pine forest, grassland, deciduous tropical forest, among the identified macrofungi 26 species consumed, 18 recorded as toxic, 6 having ludic application, left over 56 species not individually used but 56 species used as food and 28 species as medicine from Southeastern Mexico. Adhikari *et al.* (2005) also worked on ethnomedicinal knowledge of wild mushrooms from the vicinities of Lumle and Kathmandu valley of Nepal. They found a total of 24 species of which 18 macrofungi were used as culinary, 8 for various medicinal uses and 3 for their other reasons.

Okigbo and Nwatu, (2015) reported six different species of macrofungi which were used by the people of Anambra State, Nigeria for various purposes, such as *Daldinia concentrica* in cure of stomach upset, *Auricularia auricular-judae* and *Lentinus squarrosulus* in medication of infertility and anaemia, *Trichobatrachus robustus* in remedies of Anaemia and high blood pressure, *Termitomyces* sp. for curing Anaemia, weakness, and high blood pressure and *V. volvacea* only used for the cure of Anaemia. Ethnomycological study of the use of mushrooms in North central Nigeria reveals that the majority of citizens consume macrofungi mainly due to their nutritional, palatability and medicinal characteristics (Ayodele *et al.*, 2009). Kimn and Song (2014) reported 38 species of wild mushrooms belonging 33 genera, 22 families by the traditional knowledge recorded from the tribal communities and 158 types of practices were classified and ideal families were Tricholomataceae, Pleurotaceae, Polyporaceae and Hymenochaetaceae. This result revealed 24 methods of preparation for the cooked mushrooms, such as soups, teas, simmered and roasted along with different medicinal uses. Each tribe of India use their own methods for preparation of traditional medicine, such as some fungus or fungal spores used directly, some of them are used in powdered form, mixed with water, milk, tea, sugar, butter, chili, egg and oil, mixed with other plant parts and vegetables for various remedies (Table 1).

The various vernacular names, uses and techniques of preparation of wild mushrooms by the various tribes of India as well as other parts of the world were also recorded. They used a vernacular name for each fungus and these names varied among the different tribes. Present data revealed that wild mushroom species from different parts of India are used as food and traditional medicine by the tribal community and this wide diversity of mushroom species may be due to the existence of diverse vegetations and climatic conditions of India. In this review work, we have found that there are almost 18 reports about the traditional use of wild mushrooms as medicine from

**Table 1.** Ethnomedicinally used wild mushrooms collected by different tribe or local people of India along with their vernacular name, used for, methods of preparation for use, name of the states of India from where it was collected and references.

Sl.No.	Mushroom names	Vernacular names	Name of tribe or local people	Used as	Preparations for use	Reported from India	References
1.	<i>Daldinia concentrica</i> (Bolton) Ces. and De Not	Kath chhatu	NM	Getting relief from burning, itching and healing minor skin infections.	Powdered fruitbody is mixed with coconut oil and applied to skin.	West Bengal	Dutta and Achariya, 2014
2.		King Alfred's Cake	Paliyar Tribes	Curing skin irritations and wound healing.	Used in the form of dried powder and applied topically for any wound.	Tamilnadu	Thangaraj <i>et al.</i> , 2017
3.	<i>Schizophyllum commune</i> Fr.	Pakha chhatu	NM	Used as Tonic.	Fruitbody is pasted and mixed with water to make soup.	West Bengal	Dutta and Achariya, 2014
4.		Bali chhatu/ Kalunge	NM	Used for the treatment of pox.	Fruitbody is pasted and applied to the affected area.	West Bengal	Dutta and Achariya, 2014
5.	<i>Termitomyces clypeatus</i> R. Heim	Orto Onth	Santal, Lodha, and Dhangar	Used for the treatments of anthelmintic and chicken pox.	NM	Eastern Lateritic Part of India	Manna <i>et al.</i> 2014
6.		Yarsagumba/ Jeeban booti	NM	Used for the treatment of aphrodisiac, invigorative, revitaliser and anti-aging.	Powdered fruitbody is taken in tea or soups.	West Bengal	Dutta and Achariya, 2014
7.	<i>Cordyceps sinensis</i> (Berk.) Sacc.	Yarsa gumba	Bhutia community	Remedies of various diseases like, diabetes and other wasting diseases, cancer, sexual potency and desire, etc.	People of both sexes usually take one piece of <i>C. Sinensis</i> with a cup of milk to enhance their sexual potency and desire. The Bhutia community put one piece of <i>C. sinensis</i> in a cup of local-made alcohol (chang), leave it for 1 hour, and drink it morning and evening as a tonic. Some use hot water instead of alcohol. Some folk healers use <i>C. Sinensis</i> for diabetes and other wasting diseases. It is used for cancer mixed with texus leaf and Ginseng root decoction.	North Sikkim	Panda and Swain, 2011
8.		Sonajhuri chhatu/ Bomb chhatu	NM	Getting relief from burning, itching and healing minor skin infections.	Powdered fruitbody is mixed with coconut oil and applied to skin.	West Bengal	Dutta and Achariya, 2014
9.	<i>Pisolithus arhizus</i> (Scop.) Rauschert	Tumbe Onth	Santal, Lodha, and Dhangar	Yellow-colored spores are used as medicine for the treatment of wounds.	NM	Eastern Lateritic Part of India	Manna <i>et al.</i> , 2014
10.		Sonajhuri Chhatu	NM	Used to cure skin to relieve burning, itching and healing minor infections	After being dried and powdered is mixed with coconut oil.	West Bengal	Dutta and Achariya, 2014
11.	<i>Calvatia gigantean</i> (Batsch ex Pers.) Lloyd	NM	Paliyar tribes	Curing stomach upset and to cure stomach pains in woman during menstruation.	NM	Tamilnadu	Thangaraj <i>et al.</i> , 2017
12.		NM	Paliyar tribes	To treat male infertility and male visceral organ infections.	NM	Tamilnadu	Thangaraj <i>et al.</i> , 2017
13.	<i>Termitomyces microcarpus</i> (Berk. & Broome) R.Heim	Bhoroan Pihiri /Doda	Baiga and Bharia.	The Baiga tribes in cases of partial paralysis and also used as tonic for weakness.	A preparation is made by grinding up sun-dried fruit-bodies, leaves of <i>Oscium sp.</i> , black pepper and salt. This is taken either as a powder or in pea-sized tablets, three times a day with a glass of cow's milk, for three months. The Bharia boil this fungus and take a tablespoonful of the extract twice a day before meals.	Jabalpur, Madhya Pradesh.	Rai <i>et al.</i> , 1993
14.		Sita-adim (small adim)	Dangi people	It is consumed to attain good health specifically during the monsoon or during convalescence.	NM	Gujarat	Lahiri <i>et al.</i> 2010

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Sl.No.	Mushroom names	Vernacular names	Name of tribe or local people	Used as	Preparations for use	Reported from India	References
15.	<i>Podaxis pistillaris</i> (L.) Fr.	NM	Paliyar tribes	To cure skin diseases and skin burns.	NM	Tamilnadu	Thangaraj <i>et al.</i> , 2017
16.		Put- puta/ Roogda (some-thing that burst)	Scheduled Caste, Brahmin, Kshatriya and Nepali	Spore mass used as burn remedy.	Spore mass is used directly at the affected area.	Chakrata, Dehradun.	Kumar <i>et al.</i> , 2017
17.	<i>Astraeus hygrometricus</i> [Pers.] Morgan	Savan Putpura	Baiga and Bharia.	An ointment for burn cases.	The spore mass mixed 1:1 with mustard seed oil ( <i>Brassica campestris</i> ).	Jabalpur, Madhya Pradesh.	Rai <i>et al.</i> , 1993
18.		Mati tara	Kharia, Mankidi, Santal, Kolha, Munda, Bhumija, Bhuyan, Bathudi, Kudumi, Ho, Mankidia and Birhor,	The spore mass is blended with mustard seed oil, and used as a salve against burns. Act as a haemostatic agent	NM	Northern Odisha.	Panda and Tayung, 2015
19.	<i>Auricularia auricula-judae</i> (Bull.) Quél.	Kanode/ Kanchatta (Ear mushroom)	Scheduled Caste, Brahmin, Kshatriya and Nepali	The ear puss.	The mushroom is dried and ground and mixed in some liquid.	Chakrata, Dehradun.	Kumar <i>et al.</i> , 2017
20.		Rudh Papad.	Local people of Kashmir	Locally used for colds, sore throats, sore eyes, hypertension and jaundice.	NM	Kashmir Himalayas, India	Pala <i>et al.</i> , 2013
21.		NM	Scheduled Caste, Brahmin, Kshatriya and Nepali	Enhancing the milk secretion.	The mushroom is dried and powdered. The powder is consumed orally with hot water.	Chakrata, Dehradun	Kumar <i>et al.</i> , 2017
22.	<i>Ganoderma lucidum</i> (Curtis) P. Karst.	NM	Mokokchung	Herbal medicine to cure asthma.	NM	Nagaland, North East India	Kumar <i>et al.</i> , 2014
23.		Heand	Local people of Jammu and Kashmir	Used for recovering from prolonged illness.	As tea against multiple ailments.	Northern Districts of Jammu and Kashmir.	Malik <i>et al.</i> , 2017
24.	<i>Hypsizygus tessellates</i> (Bull.) Singer	NM	Mokokchung	Herbal medicine to cure skin diseases.	NM	Nagaland, North East India	Kumar <i>et al.</i> , 2014
25.	<i>Entoloma bloxami</i> (Berk. & Broome) Sacc.	NM	Mokokchung	Herbal medicine to cure skin diseases.	NM	Nagaland, North East India	Kumar <i>et al.</i> , 2014
26.	<i>Geastrum triplex</i> Jungh.	NM	Scheduled Caste, Brahmin, Kshatriya and Nepali.	Spore mass for burn remedy.	They appear to be quite effective when applied with stored rain water.	Chakrata, Dehradun	Kumar <i>et al.</i> , 2017
27.		Phut phuta	Scheduled Caste, Brahmin, Kshatriya and Nepali.	Spore mass for burn remedy.	They appear to be quite effective when applied with stored rain water.	Chakrata, Dehradun	Kumar <i>et al.</i> , 2017
28.	<i>Lycoperdon perlatum</i> Pers	Nilnass	Local people of Kashmir	Used to dress wounds for quick healing and by bee keepers to intoxicate the honey bees and spores are sprinkled on wounds to stop bleeding.	NM	Kashmir Himalayas	Pala <i>et al.</i> , 2013
29.		Shale saes	Local people of Jammu and Kashmir	Used for healing of wounds and frost bites.	NM	Northern Districts of Jammu and Kashmir.	Malik <i>et al.</i> , 2017
30.		Phut phuta	Scheduled Caste, Brahmin, Kshatriya and Nepali.	Spore mass for burn remedy.	They appear to be quite effective when applied with stored rain water.	Chakrata, Dehradun	Kumar <i>et al.</i> , 2017
31.	<i>Lycoperdon pyriforme</i> Schaeff.	Shale saes	Local people of Jammu and Kashmir	Used for healing of wounds and frost bites.	NM	Northern Districts of Jammu and Kashmir.	Malik <i>et al.</i> , 2017
32.		Nilnass	Local people of Kashmir	Used it for treatment of frostbite and sprinkle spores on wounds to stop bleeding.	NM	Kashmir Himalayas	Pala <i>et al.</i> , 2013

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33.	<i>Phallus</i> sp.	Stinkhorn	Scheduled Caste, Brahmin, Kshatriya and Nepali.	Aphrodisiac.	NM	Chakrata, Dehradun	Kumar <i>et al.</i> , 2017
34.	<i>Stereum</i> sp.	NM	Scheduled Caste, Brahmin, Kshatriya and Nepali.	Healing wounds.	Dried fruitbodies of the mushroom is turned into powdered form and paste is prepared.	Chakrata, Dehradun	Kumar <i>et al.</i> , 2017
35.	Truffle ( <i>Tuber</i> sp.)	Jhanda	Scheduled Caste, Brahmin, Kshatriya and Nepali	Mouth freshener.	NM	Chakrata, Dehradun	Kumar <i>et al.</i> , 2017
36.	<i>Agaricus</i> sp.	Gobari Pihiri	Baiga	Remedy for goitres.	Baiga people hang sundried fruit-bodies of this mushroom round the neck.	Jabalpur, Madhya Pradesh.	Rai <i>et al.</i> , 1993
37.	<i>Bovista pusilla</i> (Batsch) Pers.	Phusphush	Baiga	Staunch bleeding of cuts.	NM	Jabalpur, Madhya Pradesh.	Rai <i>et al.</i> , 1993
38.	<i>Calvatia cyathiformis</i> (Bosc) Morgan	Dharti Phool	Baiga and Bharia.	Healing wounds and to check pus formation.	NM	Jabalpur, Madhya Pradesh	Rai <i>et al.</i> , 1993
39.	<i>Cyathus stercoreus</i> (Schw.) de Toni	Nirghunti	Baiga.	Sore (pain, redness, conjunctivitis) eyes.	The peridioles are ground up with water, filtered through cotton, and used as eye-drops, two drops twice a day.	Jabalpur, Madhya Pradesh	Rai <i>et al.</i> , 1993
40.	<i>Cyathus limbatus</i> Tul.	Kulhari	Bharia.	Soothing eye disorders (pain, redness, conjunctivitis).	The peridioles are ground up with water, filtered through cotton, and used as eye-drops, two drops twice a day	Jabalpur, Madhya Pradesh	Rai <i>et al.</i> , 1993
41.	<i>Microporus xanthopus</i> (Fr.) Kuntze		Baiga and Bharia.	A remedy against fever and vomiting, and for the relief of earache.	Ground up with the gum of <i>Pterocarpum marsupium</i> , one teaspoonful with a glass of water, three times a day.		Rai <i>et al.</i> , 1993
		Saja Pihiri			The Bharia people grind it with water and filter it.	Jabalpur, Madhya Pradesh.	
42.	<i>Phallus rubicundus</i> (Bosc.) Fr	Jhiri Pihiri	Baiga and Bharia	Against typhoid and for the relief of labour pain.	The fungus is ground up and mixed with old sugar-cake. One full teaspoonful three times a day.	Jabalpur, Madhya Pradesh.	Rai <i>et al.</i> , 1993
43.	<i>Xylaria polymorpha</i> [Pers.] Grev.	Phoot Dooth	Baiga and Bharia.	To induce lactation.	The fungus is ground to a fine powder, mixed 1:1 with old sugar-cake, and formed into pea-sized tablets. These are taken twice a day before meals for five days with a glass of cow's milk.	Jabalpur, Madhya Pradesh.	Rai <i>et al.</i> , 1993
44.	<i>Volvariella</i> sp.	Kuta Chatu	Kharia, Mankidi, Santal, Kolha, Munda, Bhumija, Bhuyan, Bathudi, Kudumi, Ho, Mankidia and Birhor	Lowering high blood pressure.	NM	Northern Odisha.	Panda and Tayung, 2015
45.	<i>Geastrum</i> sp.	Mati tara	Kharia, Mankidi, Santal, Kolha, Munda, Bhumija, Bhuyan, Bathudi, Kudumi, Ho, Mankidia and Birhor,	Reduce staunch bleeding and reduce swelling	NM	Northern Odisha.	Panda and Tayung, 2015
46.	<i>Termitomyces reticulatus</i> Van der Westh. & Eicker	Parabana, Ada chatu	Kharia, Mankidi, Santal, Kolha, Munda, Bhumija, Bhuyan, Bathudi, Kudumi, Ho, Mankidia and Birhor,	Rheumatism and lowering high blood pressure.	NM	Northern Odisha.	Panda and Tayung, 2015
47.	<i>Lactarius</i> sp.	Pitha	Kharia, Mankidi, Santal, Kolha, Munda, Bhumija, Bhuyan, Bathudi, Kudumi, Ho, Mankidia and Birhor	Lower high blood pressure.	NM	Northern Odisha.	Panda and Tayung, 2015

Continued

Sl.No.	Mushroom names	Vernacular names	Name of tribe or local people	Used as	Preparations for use	Reported from India	References
48.	<i>Volvariella glandiformis</i> (Berk. & Broome) Pegler	Bali chatu	Kharia, Mankidi, Santal, Kolha, Munda, Bhumija, Bhuyan, Bathudi, Kudumi, Ho, Mankidia and Birhor	Lower high blood pressure	NM	Northern Odisha.	Panda and Tayung, 2015
49.	<i>Lycoperdon</i> sp.1	Anthua	Kharia, Mankidi, Santal, Kolha, Munda, Bhumija, Bhuyan, Bathudi, Kudumi, Ho, Mankidia and Birhor	Cure wound.	NM	Northern Odisha.	Panda and Tayung, 2015
50.	<i>Lycoperdon</i> sp.2	Anthua	Kharia, Mankidi, Santal, Kolha, Munda, Bhumija, Bhuyan, Bathudi, Kudumi, Ho, Mankidia and Birhor,	Cure wound.	NM	Northern Odisha.	Panda and Tayung, 2015
51.	<i>Lycoperdon</i> sp.3	Jatia rutka	Kharia, Mankidi, Santal, Kolha, Munda, Bhumija, Bhuyan, Bathudi, Kudumi, Ho, Mankidia and Birhor	Cure wound.	NM	Northern Odisha.	Panda and Tayung, 2015
52.	<i>Tuber</i> sp.	Desi rutka	Kharia, Mankidi, Santal, Kolha, Munda, Bhumija, Bhuyan, Bathudi, Kudumi, Ho, Mankidia and Birhor	Cure wound.	NM	Northern Odisha	Panda and Tayung, 2015
53.	<i>Russula</i> sp.	Pija chatu	Kharia, Mankidi, Santal, Kolha, Munda, Bhumija, Bhuyan, Bathudi, Kudumi, Ho, Mankidia and Birhor	For the treatments of malnutrition, weakness and a delicious food item used by local people.	NM	Northern Odisha	Panda and Tayung, 2015
54.	<i>Agaricus augustus</i> Fries	Haend	Local people of Jammu and Kashmir	Widely used as food and general tonic. Prescribed as a supplementary diet to patients suffering from asthma, stroke, heart ailments, and diabetes.	NM	Northern Districts of Jammu and Kashmir.	Malik <i>et al.</i> , 2017
55.		Haend	Local people of Jammu and Kashmir	Widely used as food and general tonic.	NM	Northern Districts of Jammu and Kashmir.	Malik <i>et al.</i> , 2017
56.	<i>Agaricus bisporus</i> (Lange) Imbach	Maazh hadur	Local people of Kashmir	Used for the treatment of leucoderma and considered as a tonic for patients with cardiovascular disease.	Its powder is mixed with butter and used for the treatment.	Kashmir Himalayas	Pala <i>et al.</i> , 2013
57.		Haend	Local people of Jammu and Kashmir	General tonic, Immunomodulators. Prescribed to diabetic patients	NM	Northern Districts of Jammu and Kashmir.	Malik <i>et al.</i> , 2017
58.	<i>Agaricus campestris</i> L.: Fr.	Maazh hadur	Local people of Kashmir.	Used to treat the scalds and burns by the tribals.	The fresh fruiting body is crushed and applied to the affected area.	Kashmir Himalayas, India	Pala <i>et al.</i> , 2013
59.	<i>Boletus edulis</i> Bull.	Rate	Local people of Jammu and Kashmir	Used after deliveries either alone or with dandelion as expectorant, antidepressant, treating lumbago, leg pains, numbness in limbs and tendon discomfort.	NM	Northern Districts of Jammu and Kashmir.	Malik <i>et al.</i> , 2017

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Sl.No.	Mushroom names	Vernacular names	Name of tribe or local people	Used as	Preparations for use	Reported from India	References
60.		Badul	Local people of Jammu and Kashmir	Used for respiratory tract infections after boiling in milk and concentrated to powder form is used against frost bites.	Cooked in milk with some preliminary treatment.	Northern Districts of Jammu and Kashmir.	Malik <i>et al.</i> , 2017
61.	<i>Bovista plumbea</i> Pers	Mwikhun daudwi	Bodo tribe.	Used for the treatment of sores, ulcers and skin infection.	From powdered fruiting bodies.	Chirang District of Assam, North-East India.	Devi <i>et al.</i> , 2016
62.		Sesdeung.	Local people of Kashmir	Used for the treatment of frost bite and to heal wounds.	NM	Kashmir Himalayas	Pala <i>et al.</i> , 2013
63.	<i>Cantharellus cibarius</i> Fr	Pueh Heand	Local people of Jammu and Kashmir	Used to cure wounds when used in powdered form, natural tonic, bone ailments and general weakness.	Powder from the dried fruitbody is used to heal wounds.	Northern Districts of Jammu and Kashmir.	Malik <i>et al.</i> , 2017
64.		Harda guech	Local people of Jammu and Kashmir	Young mushrooms or the stipe only is used against respiratory ailments and against diabetes.	A decoction is prepared from the young mushrooms.	Northern Districts of Jammu and Kashmir.	Malik <i>et al.</i> , 2017
65.	<i>Coprinus comatus</i> (O.F.Mull.: Fr.) Pers.	Ajjo	Ghanashia and Rabaris	It is mostly used for skin related diseases like lesions, bruised and infected skin, or for wound healing.	The part of the fruiting body used in these cases is the cap and not the stipe, the cap is opened and the spore bearing gills are applied to the affected area directly, which is then bandaged.	Gujarat	Lahiri <i>et al.</i> , 2010
66.		Setherwat	Local people of Kashmir	Its preparations are also recommended for the treatment of respiratory disorders.	NM	Kashmir Himalayas	Pala <i>et al.</i> , 2013
67.	<i>Disciotis venosa</i> (Pers.) Arnould	Kana Guech	Local people of Jammu and Kashmir	Used against common cold.	As culinary preparations with chilli and eggs.	Northern Districts of Jammu and Kashmir.	Malik <i>et al.</i> , 2017
68.	<i>Flammulina velutipes</i> (Curt.) Singer	Heand	Local people of Jammu and Kashmir	Used as a tonic and immunomodulator.	NM	Northern Districts of Jammu and Kashmir.	Malik <i>et al.</i> , 2017
69.		Hendh or Drubdi	Local people of Kashmir	It is used for diabetes patients by local herbalists	NM	Kashmir Himalayas	Pala <i>et al.</i> , 2013
70.	<i>Fomes fomentarius</i> (L.) Fr.	Heand	Local people of Jammu and Kashmir	Used against skin ailments and also for hypertensive patients.	In case of skin disease its ash is mixed with oil. Small slices are prescribed in vegetables to hypertensive patients.	Northern Districts of Jammu and Kashmir.	Malik <i>et al.</i> , 2017
71.		Frassi lashe	Local people of Kashmir	Used as a disinfectant for wounds and an anti-inflammatory agent and also against arthritis.	NM	Kashmir Himalayas	Pala <i>et al.</i> , 2013
72.		Heand	Local people of Jammu and Kashmir	Used for the patients with weak immune systems, against cough and common cold.	Local herbalists use it along with honey and Kaloongi.	Northern Districts of Jammu and Kashmir.	Malik <i>et al.</i> , 2017
73.	<i>Ganoderma applanatum</i> (Pers.) Pat.	Soorkul lashe	Local people of Kashmir	Used the belief that it reduces the chances of disease.	The powder obtained from the dry fruiting body is added to vegetables in very small quantities during cooking.	Kashmir Himalayas	Pala <i>et al.</i> , 2013
74.	<i>Geopora sumneriana</i> (Cooke) M. Torre	Shage Kan	Local people of Jammu and Kashmir.	Used as stimulant and tonic, anticold and also as immunomodulator.	Its powder is taken along with milk and sugar before sleep.	Northern Districts of Jammu and Kashmir.	Malik <i>et al.</i> , 2017
75.	<i>Helvella acetabulum</i> (L.) Quel	Heand	Local people of Jammu and Kashmir.	Used as chronic cough.	NM	Northern Districts of Jammu and Kashmir.	Malik <i>et al.</i> , 2017
76.	<i>Helvella crispa</i> Bull	Batta Heand	Local people of Jammu and Kashmir.	For treatment of asthma, cough, releases intestinal inflammation and mouth ulceration.	Powdered form is taken with milk to get relief from intestinal inflammation.	Northern Districts of Jammu and Kashmir.	Malik <i>et al.</i> , 2017

Continued

Sl.No.	Mushroom names	Vernacular names	Name of tribe or local people	Used as	Preparations for use	Reported from India	References
77.	<i>Hericium coralloides</i> (Scop.) Pers.	Kukur Panj	Local people of Jammu and Kashmir.	Used for anticold, brain tonic, suggested food for diabetic patients also.	NM	Northern Districts of Jammu and Kashmir.	Malik <i>et al.</i> , 2017
78.		Yaad gab	Local people of Kashmir	It is widely consumed with the belief that it lowers the risk of cancer, heart disease and also recommends macro fungus for patients with hypertension.	NM	Kashmir Himalayas	Pala <i>et al.</i> , 2013
79.	<i>Lactarius deliciosus</i> (L.: Fr.) Gray	Heand	Local people of Jammu and Kashmir	Used as sex stimulants and also useful for gastric irritation and heart burns.	Used along with herbal medicines (Sharbat bazoori motadil or Saikanjabeen lee moon).	Northern Districts of Jammu and Kashmir.	Malik <i>et al.</i> , 2017
80.		Kater	Local people of Kashmir	It is believed to enhance the defensive mechanisms of the body, also used for the treatment of frostbite.	Dried fruiting body is crushed to form powder.	Kashmir Himalayas	Pala <i>et al.</i> , 2013
81.	<i>Lentinus tigrinus</i> (Bull.) Fr.	Veer Heand	Local people of Jammu and Kashmir	Widely used as food, brain tonic and against anger, dry cough, asthma and enhances digestion.	Powder of the dried mushroom is taken in hot water in case of dry cough and asthma. It is taken raw to cure wet cough. Raw slices along with lemon juice are advised in case of indigestion.	Northern Districts of Jammu and Kashmir.	Malik <i>et al.</i> , 2017
82.		Vire haddur	Local people of Kashmir	Used for diabetic patient.	NM	Kashmir Himalayas	Pala <i>et al.</i> , 2013
83.	<i>Morchella conica</i> (Pers.) Fr.	Zande guech	Local people of Jammu and Kashmir	Used for heart ailments, brain tonic, arthritis general weakness and sex stimulant.	If taken along with dimagheen (herbal medicine), pomegranate and honey then its efficacy enhances the mentioned ailments.	Northern Districts of Jammu and Kashmir.	Malik <i>et al.</i> , 2017
84.		Batta Guchi	Local people of Jammu and Kashmir	Used for heart ailments, general weakness, brain tonic, arthritis.	NM	Northern Districts of Jammu and Kashmir.	Malik <i>et al.</i> , 2017
85.	<i>Morchella esculenta</i> Fr.	Kann guch, Guuch	Local people of Kashmir	Used as sexual weakness (aphrodisiac) of men.	Paste of the dried fruiting body is blended with a glass of lukewarm milk.	Kashmir Himalayas	Pala <i>et al.</i> , 2013
86.		Saaz guech	Local people of Jammu and Kashmir	Used for heart ailments, general weakness, brain tonic, arthritis.	NM	Northern Districts of Jammu and Kashmir.	Malik <i>et al.</i> , 2017
87.	<i>Morchella vulgaris</i> (Pers.) Boud.	Kreuhn guech/ Dumguch	Local people of Jammu and Kashmir	Used for heart ailments, general weakness, brain tonic, arthritis.	NM	Northern Districts of Jammu and Kashmir.	Malik <i>et al.</i> , 2017
88.		Kann guch, Guuch	Local people of Kashmir	Used it for treatment of respiratory problems and as an aphrodisiac.	NM	Kashmir Himalayas	Pala <i>et al.</i> , 2013
89.	<i>Phallus impudicus</i> L.	Paane laet	Local people of Jammu and Kashmir	Used for healing of wounds.	NM	Northern Districts of Jammu and Kashmir.	Malik <i>et al.</i> , 2017
90.		Sawan guch	Gujar	The gelatinous material inside the egg covering of mushroom is used for healing wounds and also for burns.	NM	Kashmir Himalayas	Pala <i>et al.</i> , 2013

Continued



Sl.No.	Mushroom names	Vernacular names	Name of tribe or local people	Used as	Preparations for use	Reported from India	References
91.		Kuel Heand	Local people of Jammu and Kashmir	Used as tonic against weakness as a result of prolonged illness.	NM	Northern Districts of Jammu and Kashmir	Malik <i>et al.</i> , 2017
92.	<i>Pleurotus ostreatus</i> (Jacq.:Fr.) P.Kumm.	NM	Santal, Kolha, Munda, Khadia, Bhumija, Bhuyan, Bathudi, Kudumi, Ho, Mankdias	Used for the treatments of asthma and lowering high blood pressure.	NM	Similipal biosphere reserve, Odisha	Sachan <i>et al.</i> , 2013
93.		Lutur Onth	Santal, Lodha, and Dhangar	Yellow-colored spores are used as medicine for the treatment of wounds.	NM	Eastern Lateritic Part of India	Manna <i>et al.</i> , 2014
94.		Khodmand hadur	Local people of Kashmir	Used for the treatment of hypertension, diabetes, jaundice, and asthma. It is also believed to reduce the chances of tumour.	NM	Kashmir Himalayas	Pala <i>et al.</i> , 2013
95.	<i>Ramaria stricta</i> (Pers.) Quel.	Rai Saad	Local people of Jammu and Kashmir	Used for the treatments of asthma, other respiratory ailments, blood purifier and enhances skin colour and eye ailments.	Its powder along with herbal medicines Stumble tayeb and Shahtara purifies blood. In winters its powder along with pepper and clove is useful against lung inflammation.	Northern Districts of Jammu and Kashmir	Malik <i>et al.</i> , 2017
96.	<i>Rhizopogon villosulus</i> Zeller	Deodar Mungrae	Local people of Jammu and Kashmir	Used against kidney stones, urinary tract infections, and also used to cure fatty liver and asthma.	In case of kidney stones its powder along with herbal extract of Aaloo Baloo and Sang i sarmahi is used. In combine with Zoofa an ayurvedic medicine cures fatty liver and asthma.	Northern Districts of Jammu and Kashmir	Malik <i>et al.</i> , 2017
97.	<i>Rhizopogon roseolus</i> Corda	Madaan Mungrae	Local people of Jammu and Kashmir	Used for the treatment of urinary tract infections.	NM	Northern Districts of Jammu and Kashmir	Malik <i>et al.</i> , 2017
98.	<i>Sparassis crispa</i> Wulfen	Kawa khour	Local people of Jammu and Kashmir	Used as general tonic, blood purifier, anticold, against memory loss, depression, anger and chest pains.	Local hakims use its powder along with Aaloo Baloo (herbal medicine) in the ratio of 1:5.	Northern Districts of Jammu and Kashmir	Malik <i>et al.</i> , 2017
99.	<i>Sparassis spathulata</i> (Schwein.) Fr	Raisaad/ Kawkhour	Local people of Jammu and Kashmir	Mainly used as General tonic and anticold, blood purifier.	Cooked along with milk.	Northern Districts of Jammu and Kashmir	Malik <i>et al.</i> , 2017
100.	<i>Trametes versicolor</i> (L.) Lloyd. H	Heand	Local people of Jammu and Kashmir	Effective against skin diseases such as rashes, itching, dryness, and healing of wounds.	Used with butter or oil.	Northern Districts of Jammu and Kashmir	Malik <i>et al.</i> , 2017
101.		Mukhmal gunde	Local people of Kashmir	Used against dermatitis.	NM	Kashmir Himalayas	Pala <i>et al.</i> , 2013
102.	<i>Termitomyces mammiformis</i>	NM	Mokokchung	Used for the treatment of abdominal discomfort, cough and whooping cough.	NM	Nagaland, North East India	Kumar <i>et al.</i> , 2014
103.	<i>Auricularia auricular</i> (Hooker)	NM	Mokokchung	Used as medicine.	NM	Nagaland, North East India	Kumar <i>et al.</i> , 2014
104.	<i>Lentinula edodes</i> (Berk.) Pegler	NM	Local people of Assam.	Used to increase general strength and immunity.	NM	Kamrup District, Assam.	Devi, 2017
105.	<i>Russula delicata</i> Fr.	NM	Santal, Kolha, Munda, Khadia, Bhumija, Bhuyan, Bathudi, Kudumi, Ho, Mankdias	Used in malnutrition, weakness and nutritional disorder.	NM	Similipal biosphere reserve, Odisha	Sachan <i>et al.</i> , 2013
106.	<i>Termitomyces eurhizus</i> (Berk.) R. Heim	NM	Santal, Kolha, Munda, Khadia, Bhumija, Bhuyan, Bathudi, Kudumi, Ho, Mankdias	Used for the treatments of rheumatism, diarrhoea, lowering high blood pressure.	NM	Similipal biosphere reserve, Odisha	Sachan <i>et al.</i> , 2013

Continued

Sl.No.	Mushroom names	Vernacular names	Name of tribe or local people	Used as	Preparations for use	Reported from India	References
107.	<i>Termitomyces</i> sp.	NM	Santal, Kolha, Munda, Khadia, Bhumija, Bhuyan, Bathudi, Kudumi, Ho, Mankdias	Used for the treatments of rheumatism, diarrhoea, lowering high blood pressure.	NM	Similipal biosphere reserve, Odisha	Sachan <i>et al.</i> , 2013
108.	<i>Agaricus silvaticus</i> Schaeff.	NM	Santal, Kolha, Munda, Khadia, Bhumija, Bhuyan, Bathudi, Kudumi, Ho, Mankdias	Used in high fever.	NM	Similipal biosphere reserve, Odisha	Sachan <i>et al.</i> , 2013
109.	<i>Volvorella volvacea</i> (Bul.) Singer	NM	Santal, Kolha, Munda, Khadia, Bhumija, Bhuyan, Bathudi, Kudumi, Ho, Mankdias	Used for lowering high blood pressure.	NM	Similipal biosphere reserve, Odisha	Sachan <i>et al.</i> , 2013
110.	<i>Lentinus sajor-caju</i> (Fr.) Fr.	NM	Santal, Kolha, Munda, Khadia, Bhumija, Bhuyan, Bathudi, Kudumi, Ho, Mankdias	Used in cold and cough	NM	Similipal biosphere reserve, Odisha	Sachan <i>et al.</i> , 2013
111.	<i>Lycoperdon</i> sp.	NM	Santal, Kolha, Munda, Khadia, Bhumija, Bhuyan, Bathudi, Kudumi, Ho, Mankdias	Used to cure wound.	NM	Similipal biosphere reserve, Odisha	Sachan <i>et al.</i> , 2013
112.	<i>Pleurotus</i> sp.	NM	Santal, Kolha, Munda, Khadia, Bhumija, Bhuyan, Bathudi, Kudumi, Ho, Mankdias	Used for the treatments of asthma and lowering high blood pressure	NM	Similipal biosphere reserve, Odisha	Sachan <i>et al.</i> , 2013
113.	<i>Xylaria</i> sp.	More-pankh (peacock feather)	Ghanashia and Rabaris	Used for the treatments of pneumonia, constipation, eczema, and pneumonia like symptoms.	Around 5 to 6 entire fruiting bodies are triturated fresh with water for several times to form a uniform paste. The paste is consumed orally for pneumonia or constipation. Generally for pneumonia 1 tablespoon is administered for 3-5 times on different days.  For severe constipation same dose is given after dinner for 2 to 3 days. The paste is applied topically for eczema  In case of eczema the affected area is covered with the paste and bandaged.	Gujarat	Lahiri <i>et al.</i> , 2010
114.	<i>Phallus</i> sp.	Datto (button)	Ghanashia and Rabaris	Used in wound, skin infections, boils, or lesions.	The cap is crushed in mortar with water and applied on affected area but is not bandaged.  The application is repeated twice everyday for 3 days or longer if needed.	Gujarat	Lahiri <i>et al.</i> , 2010
115.	<i>Lepiota cristata</i> (Bolton) P.Kumm.	Chatri (umbrella)	Ghanashia and Rabaris	Used for the boils to speed its maturation and the regression.	The entire mushroom is crushed in mortar and applied. One or two applications are sufficient to treat.	Gujarat	Lahiri <i>et al.</i> , 2010
116.	<i>Scleroderma</i> sp.	Dado (ball)	Ghanashia and Rabaris	Used for physical afflicted wounds.	The gleba is triturated in water and applied over wounds and bandaged. The same is repeated for 2 to 3 times or till total recovery is confirmed.	Gujarat	Lahiri <i>et al.</i> , 2010

Continued

Sl.No.	Mushroom names	Vernacular names	Name of tribe or local people	Used as	Preparations for use	Reported from India	References
117.	<i>Termitomyces tyleranus</i> Otieno	Adim	Dangi people	It is used to treat on general protection against diseases or with special reference to chicken pox.	It is dried and used for prophylaxis throughout the year for general protection against diseases or with special reference to chicken pox. Also burned and inhaled to speed up the occurrence, maturation and scaling of chicken pox. Cooked or raw mushrooms are consumed orally.	Gujarat	Lahiri <i>et al.</i> , 2010
118.	<i>Phellinus durissimus</i> (Lloyd) A. Roy	Galpacodio (addressing mumps)	Dangi people	It is used to cure mumps affected edema and simple edema.	Generally it is triturated in water and applied on mumps affected edema, fruiting body heated and padded on simple edema or inflammation.	Gujarat	Lahiri <i>et al.</i> , 2010
119.	<i>Bovista</i> sp.	Bhupid	Dangi people	The spore mass used as topical application on bruised skin infections directly till recovery	NM	Gujarat	Lahiri <i>et al.</i> , 2010
120.	<i>Pleurotus</i> sp.	NM	Dangi people	It is used to impart strengthening effect.	Consumed orally after cooking.	Gujarat	Lahiri <i>et al.</i> , 2010
121.	<i>Lentinus</i> sp.	Vansarta (growing on bamboo)	Dangi people	Used for better health, specifically during convalescence.	It is stored through the year as powder and added in soups for better health.	Gujarat	Lahiri <i>et al.</i> , 2010
122.	<i>Amanita muscaria var. formosa</i> (Pers. : Fr.) Chamber	Zahare heddu	Local people of Kashmir	Used for rheumatoid arthritis.	Preparations from dry powder of mushroom are used.	Kashmir Himalayas	Pala <i>et al.</i> , 2013
123.	<i>Coprinus atramentarius</i> (Bull. : Fr.) Fr	Sakerbub	Local people of Kashmir	Its acid formulations are used in the treatment of kidney problems, pus cells in urine, and removal of gall stones.	NM	Kashmir Himalayas	Pala <i>et al.</i> , 2013
124.	<i>Coprinus micaceus</i> (Bull.: Fr.)Fr.	Hoon haddur	Local people of Kashmir	Used to treat skin infections.	NM	Kashmir Himalayas	Pala <i>et al.</i> , 2013
125.	<i>Fomitopsis pinicola</i> (Sw. :Fr.) P. Krast	Yaade lashe	Local people of Kashmir	Used to stop bleeding of minor physical injuries and rheumatoid arthritis.	Dried fruitbody of the mushroom is crushed and turned into powdered form and used in case of injuries. From that extract is prepared and used in case of arthritis.	Kashmir Himalayas	Pala <i>et al.</i> , 2013
126.	<i>Gomphus floccosus</i> (Schwn.) Singer	Makhmle kanz	Local people of Kashmir	Used externally for eczema and athlete's foot disease.	Paste is obtained from the sporocarp and used to treat eczema. Extract is used in case of athlete's disease.	Kashmir Himalayas	Pala <i>et al.</i> , 2013
127.	<i>Gyromitra sphaerospora</i> (Peck) Sacc.	Buji kan kuch	Local people of Kashmir	Used for the treatment of goiter.	NM	Kashmir Himalayas	Pala <i>et al.</i> , 2013
128.	<i>Hevella lacunose</i> Afzl.: Fr.	Shajikunl	Local people of Kashmir	Used to cure piles.	NM	Kashmir Himalayas	Pala <i>et al.</i> , 2013
129.	<i>Hevella macropus</i> (Pers.) P. Karst.	Kanpatri	Local people of Kashmir	Used for the treatment of asthma by the tribal people.	NM	Kashmir Himalayas	Pala <i>et al.</i> , 2013
130.	<i>Humaria hemisphaerica</i> (Wigg.) Fuckel	Panz kan	Local people of Kashmir	Used by the tribal for the treatment of blisters on skin.	Preparation is made in combination with mustard oil and fruiting body.	Kashmir Himalayas	Pala <i>et al.</i> , 2013
131.	<i>Inonotus hispidus</i> (Bull.) P.Karst.	Chunth Lashe	Local people of Kashmir	Used externally as a disinfectant and for the treatment of boils.	Extract obtained from the fruiting body is used.	Kashmir Himalayas	Pala <i>et al.</i> , 2013
132.	<i>Langarmania gigantia</i> (Batsch ex Pers.) Rostk	Jangli Aaloo	Local people of Kashmir	Used to cure stomach ulcers.	NM	Kashmir Himalayas	Pala <i>et al.</i> , 2013
133.	<i>Panaeolus sphinctrinus</i> (Fr.) Qué.	Guhi haddur	Local people of Kashmir	Used as an aesthetic agent.	The paste of the sporocarp is blended with a tea in small concentrations.	Kashmir Himalayas	Pala <i>et al.</i> , 2013
134.	<i>Peziza repanda</i> Pers.	Bati kuch	Gujar	It is used against diabetes, constipation, and eczema.	NM	Kashmir Himalayas	Pala <i>et al.</i> , 2013
135.	<i>Ramaria formosa</i> (Pers.) Qué.	Panz anguj or Hapat paanji	Local people of Kashmir	It is also recommended for cardiac and diabetic patients by local tribes.	NM	Kashmir Himalayas	Pala <i>et al.</i> , 2013
136.	<i>Verpa bohemica</i> (Krombh.) Schrot.	Paankat	Local people of Kashmir	It is used for the treatment of urinary disorders.	NM	Kashmir Himalayas	Pala <i>et al.</i> , 2013

NM = Not mentioned.

review work, we have found that there are almost 18 reports about the traditional use of wild mushrooms as medicine from 14 states, namely, Uttarakhand, Gujarat, Madhya Pradesh, Assam, Nagaland, Sikkim, Jammu, Kashmir, Odisha, Tamilnadu, West Bengal, Bihar, Chhattisgarh and Jharkhand of India. This documentation suggested that, at present, there are 100 species of macrofungi belonged to 56 genera are used by the diverse tribes or people from various parts of India for the cure of various diseases (Table 1). Some of them are *Pleurotus*, *Astraeus*, *Agaricus*, *Bovista*, *Coprinus*, *Pisolithus*, *Ganoderma*, *Lycoperdon*, *Trametes*, *Termitomyces*, *Phallus*, *Morchella*, *Lentinus*, *Lactarius*, *Hericium*, *Fomes*, *Flammulina* and *Auricularia* which were highly used as a local medicine by the various tribes of India.

### TRADITIONAL USES OF WILD MUSHROOMS AS MEDICINE IN INDIA

Wild mushrooms are used as herbal medicine, namely, wound healing, burning, itching, staunch bleeding eye disorders (pain, redness, conjunctivitis), fever and vomiting, typhoid, frost bites, ear puss, skin infections, curing stomach upset, brain tonic, against anger, constipation, weakness, eczema and mouth freshener (Devi, 2017; Dutta and Achariya, 2014; Kumar *et al.*, 2014; 2017; Lahiri *et al.*, 2010; Malik *et al.*, 2017; Manna *et al.*, 2014; Panda and Tayung, 2015; Rai *et al.*, 1993; Thangaraj *et al.*, 2017). Some mushrooms are used for a common illness, such as an antidepressant, treating lumbago, leg pains, numbness in limbs and tendon discomfort, nervous system colds, sore throats, sore eyes and stop bleeding (Malik *et al.*, 2017; Pala *et al.*, 2013; Panda and Tayung, 2015). Some major traditional uses of mushrooms against various scared diseases, *viz*, pneumonia, respiratory problems, asthma, jaundice, pox, goiters, diabetes, cancer, aphrodisiac, invigorative, revitaliser, anti-aging, kidney stones and partial paralysis (Kumar *et al.*, 2014; 2017; Manna *et al.*, 2014; Pala *et al.*, 2013; Panda and Swain, 2011; Panda and Tayung, 2015; Rai *et al.*, 1993). Wild mushrooms are also used by the tribal people for private diseases, such as aphrodisiac, menstrual cramps, to enhancing the lactation and prescribed to women after deliveries, treat male infertility and male visceral organ infections (Kumar *et al.*, 2017; Thangaraj *et al.*, 2017). Different ethnomedicinally important mushrooms with their traditional names of macrofungi, names of the tribes with their locality, purposes of use, various preparation techniques along with their references of publication are mentioned in Table 1.

### CONCLUSION

Present finding concluded that wild mushrooms may contain various active compounds due to which they showed different medicinal behavior and used by the tribal peoples of the world. The traditional drug preparation knowledge of mushrooms could preferably attract scientist which will incorporate to indulge their interest for the exploration of underlying scientific, economic and biological prospects. Accurate identification is also necessary because without any proper identification, we cannot explore traditional knowledge of wild mushrooms. Therefore, there is an urgent need to document indigenous knowledge about wild medicinal mushrooms which were used by the tribal peoples belonging to all the states of India as well as all over the world. This study will also be helpful for future researchers to identify the active compound of traditionally used wild macrofungi which were

responsible for different medicinal activities. It is also needed to develop species specific cultivation of traditionally used mushrooms for commercialization and also for conservation. Many mushrooms species still remain unexplored and their medicinal, nutritional properties, as well as health benefits are unknown to us.

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### CONFLICT OF INTEREST

The authors have declared that they have no conflict of interest.

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### ETHICS APPROVAL

Not applicable.

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