



E-ISSN: 2320-7078

P-ISSN: 2349-6800

www.entomoljournal.com

JEZS 2020; 8(2): 833-837

© 2020 JEZS

Received: 01-01-2020

Accepted: 03-02-2020

Shalini BhowateTropical Forest Research
Institute, P.O. RFRC,
Mandla Road, Jabalpur,
Madhya Pradesh, India**Pawan Kumar**Tropical Forest Research
Institute, P.O. RFRC,
Mandla Road, Jabalpur,
Madhya Pradesh, India

Ethnoentomological practices by tribes and rurals of Satpura plateau of Madhya Pradesh, India

Shalini Bhowate and Pawan Kumar

Abstract

This paper focuses on the use of insects and their products in traditional healing practices and in food by the rural and tribes of Satpura plateau, India. Ethnoentomological study was carried out from June 2017 to December 2018 in tribal areas of Satpura plateau. Data was collected using questionnaires, structured interview, group discussion with vaidyas, farmers, aged tribals and village heads. Ten different species of insects are used in curing 16 ailments such as pneumonia, fever, gastritis, piles, healing of wounds, to cure weakness, liver disorder, dog bite, hydrophobia, snakebite and various diseases in children. Tribals include mashed up live ants of *Oecophylla smaragdina* as food in their diet as per availability.

Keywords: Ethnoentomology, traditional medicine, food, tribes

Introduction

Insects are used in medicine as well as in food is known from all parts of world, including Africa, the U.S. and China [1]. Humans eat over 1600 species of insects worldwide [16]. India is rich in traditional knowledge. Ethnic people of India consume insects in the form of food. A total of about 255 species of insects are consumed by different tribes of India [3]. Preference given to insect species utilized as food by ethnic people of India depends on the insect's palatability, availability and nutritional value as well as local traditions and customs. Entomophagy is suggested to serve as a significant measure not only in obtaining protein rich, inexpensive foods but also considered as delicacies [20]. Rajan [18] has reported that the winged termites are consumed as food by the tribes of North Arcot district of Tamilnadu and Karnataka. In Odisha termites are eaten alone or with rice while in Kanara region of South India, parts of Nagaland, Chhattisgarh and Orissa, mashed up workers of *Oecophylla smaragdina* are used as food. The Muria tribals of Chhattisgarh roast these ants to prepare a sauce or sun-dry and powder them for later consumption [13, 20]. Meyer-Rochow and Changkija [11] identified and provided vernacular names of 42 insect species of order Orthoptera, Coleoptera, Lepidoptera, Hemiptera, Mantodea and Odonata. Among all the edible species the consumption of Coleopteran species is the highest whereas Ephimeroptera is the least [3]. In North East India the practice of entomophagy is common among the tribes of Arunachal Pradesh, Assam, Manipur, and Nagaland while least in Kerala, Tamilnadu, Madhya Pradesh, Odisha of South and Central part of India. In Manipur Hemipterans, Arunachal Pradesh Coleopterans while Isopterans are consumed throughout India [4, 20]. However, with the modernization of human life style, except for the custom of eating insects as food and medicine by tribals its consumption is lost [13, 10]. A number of insect species are available only for a short season depending on weather and other environmental condition [10]. Over recent decades, edible insects have been used in value added products such as canned foods or even snacks on a commercial scale [19]. The use of traditional food is sustainable and has economic, nutritional and ecological benefits for rural communities in developing countries. Traditional folk knowledge of Arthropods is the sum of attitudes, opinions, belief and custom handed down from generation to generation on arthropods usage in a given society [15, 22].

Madhya Pradesh is situated in the center of the country (Fig. 1) and is the largest state of India. Madhya Pradesh being rich in biodiversity serves as an ideal place for the sustenance of traditional medicines. Edible insects play unique role in nutritional needs of the traditional people and help them to meet nutritional deficiency in certain cases. Insects such as the termites, honey bees, grasshoppers, and silkworms are common and preferred insect species because they are rich in protein, fat, minerals and vitamins [5].

Corresponding Author:**Pawan Kumar**Tropical Forest Research
Institute, P.O. RFRC,
Mandla Road, Jabalpur,
Madhya Pradesh, India

The Satpura plateau of Madhya Pradesh is a remarkable place not only because of the many tribal populations but also for a lot of rare and useful natural resources, which are used for curing different kinds of diseases. Gond, Korku, Bhariya and Pardhan tribes are inhabiting in Chhindwara and Betul district of Madhya Pradesh. The tribal people are totally dependent on the forest and its resources for their livelihood [14]. They developed their own skills to harvest the natural resources through traditional knowledge on ethnoentomology in which use of insects as food supplement is one example. The edible insects are immensely important for villagers to serve as source of additional nutrients particularly fats and proteins. The tribals also use insects to cure different types of ailments. The work on ethnoentomology is very scanty in the Satpura plateau. Hence the study has been undertaken in this region.

Study area

The study area comprises remote villages of Chhindwara district i.e. Tamia, Bijori, Parasiya, Bhurabhat, Khursidhana, Srijote, Delakhari (N 22°25'47.9" E 78°36'52.3") in west Chhindwara; Harrai, Dhanora, Uzaldhana, Saladhana, Batkakhapa (N 22°31'49.9" E 79°2'52.5") in East Chhindwara; Ramakona, Ambada, Amla, Sillewani, Umaranala, Khutama (N 21°45'31.6" E 78°49'56.3") in South Chhindwara and in Betul district i.e. Khedi, Mahupani (N 21°53'14" E 77°42'37") in east Betul; Alampur, Chicholi, Chunarjuri (N 22°5'59.3" E 77°37'17.4") in south Betul and Tigriya, Shahapur, Chopna, Bhoura (N 22°16'53.6" E 77°52'12.6") in north Betul.



Fig 1: Map of Madhya Pradesh with Chhindwara and Betul

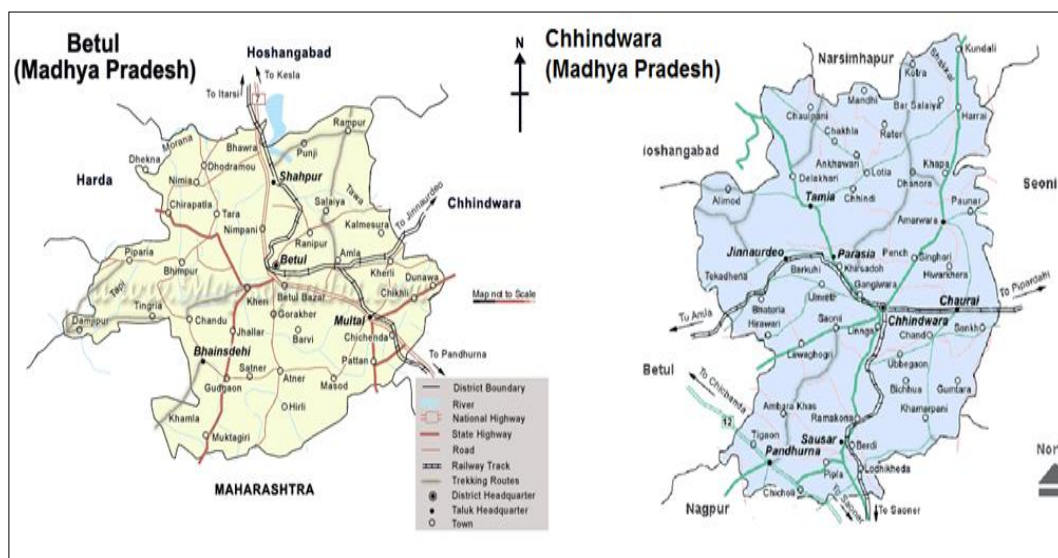


Fig 2: Map of betul and Chhindwara district

Chhindwara district located on the South-West region of Satpura mountain. It is spread from 21.28 to 22.49 Deg. North (latitude) and 78.40 to 79.24 Deg. East (longitude) over an area of 11815 sq.km. Betul district has an area of 10043 sq.km and is located 21.92 Deg. North and 77.90 Deg. East.

Both the districts are rich in tribal population. Chhindwara district is bounded by the plains of Nagpur district on the South, Hoshangabad and Narsingpur districts on the North, Betul district on the West and Seoni district on the East. Betul district is sharing border with Chhindwara district to the East,

Hoshangabad district to the North, Amravati district of Maharashtra to the South (Fig 2). As per census 2011, the total population of the Chhindwara district is 20,92,922 out of which 15,85,739 belonging to rural areas and the total population of Betul district is 15,75,362 out of which 12,66,211 living in rural areas.

Materials and Methods

The ethnoentomological survey was carried out in remote villages of Satpura plateau (Chhindwara and Betul district) of Madhya Pradesh (Fig. 1) and collected data. Field work was conducted using structured interview scheduled and group discussion to gather information from the indigenous people of Chhindwara and Betul district. Data was collected from the period of June 2017 to December 2018. Visits were made to interview the tribal physician (vaidyas), farmers, aged tribals, village heads etc. asking them what they know about insects, whether they used them in their food/ folk medicine, the remedies made from insects and the types ailments they are used to cure/treat, how the medicines were prepared and administered. Twenty-one vaidyas were interviewed during the period, eight of whom were found practicing with insectan medicines. The insects were collected from 'vaidyas', village heads and identified with the help of literature and confirmed by comparing with the specimens from Zoological Survey of India and Tropical Forest Research Institute, Jabalpur.

Results

Following are the detail of insects used for medicine and food by Rural and Tribes of Satpura plateau

1. *Trombidium grandisimum*, Koch (Red velvet mite)

Trombidiformes: Trombididae

Local name: Bir bahuti, Rani kida

Stage: Nymph

Habitat: Found on ground during the first shower of monsoon
Locality: Used by Vaidyas of Tamia, Delakhari of Chhindwara District and Chunahajuri, Bhoura of Betul district.

Disease: Pneumonia, fever

Method of use: Dry insect divided into two parts, one part mix with one teaspoonful of milk and given to children for pneumonia. Total three doses are recommended. For fever one dry insect is administered orally.

2. *Oecophylla smaragdina*, Fab.

Hymenoptera: Formicidae

Local name: Lal chiti

Stage: larvae, pupae and adult

Habitat: Nests found on trees or shrubs

Locality: Used by Vaidyas, tribals of Chopna village, Shahapur tahsil of Betul district.

Disease: To prevent gastritis and for nutritive value

Method of use: Live ants are mashed with salt, red chillies, mustard oil and eaten with rice to prevent gastritis and for nutritive value.

3. *Polistes carolina*, Linn. (Red wasp)

Hymenoptera: Vespidae

Local name: Tataiya

Locality: Used by Vaidyas of Delakhari, Bhurabhagt Chhindwara district

Disease: Piles and general wound

Method of use: Fume of wax hive applied on piles and general wound.

4. *Apis dorsata*, Fab. & *Apis indica*, Fab. (Honey bee)

Hymenoptera: Apidae

Local name: Madhu makkhi

Locality: Used by vaidyas, rurals and tribals of Multai, Shahapur of Betul district and Tamia, Delakhari range of Chhindwara district.

Method of use: *Apis dorsata* & *Apis indica* bee hive boiled with mustard oil and the extract used to treat cracks and scars. Honey applied on burn area for rapid healing. Honey is taken orally to cure weakness.

5. *Mylabris pustulata* Thumb.

Coleoptera: Meloidae

Local name: Kuddu kida

Stage: Adult

Habitat: On flowers of cucurbits

Locality: Used by Vaidyas of Tigariya village of Betul district

Disease: Dog bite, Hydrophobia

Method of use: The insect is dried and preserved. One dried insect powdered and divided into three parts. One part mixed with 10 gms of jaggery and taken empty stomach. Only one dose is prescribed.

6. *Microtermes obesi* Holmgren (White ant)

Isoptera- Microtermitidae

Local name: Dimak

Locality: Used by Vaidyas of Shahapur, Betul district and Shrizote village Delakhari range, of Chhindwara district.

Method of use: Ash of the insect is used orally to cure liver disorder.

7. *Hieroglyphus banian* Fab.

Othoptera: Acrididae

Local name: Chidda

Locality: used by Vaidyas of Batkakhapa, Chhindwara

Method of use: Powder of dry insect mixed with Jaggery and taken once in the treatment of dog bite.

8. *Pachliopta aristolochiae* Fab. (Common rose)

Lepidoptera: Papilionidae

Local name: Ishwarmulki Illi

Locality: Used by Vaidyas of Shri-jote village Delakhari, Chhindwara

Method of use: Larvae were dried and preserved. One dried larva powdered, mixed with one teaspoonful honey and taken in the treatment of snake bite. Only one dose is prescribed.

9. *Bombyx mori* Linn.

Lepidoptera- Bombycidae

Local name: Kosa kida

Locality: Used by Vaidyas of Uzaldhana village Batkakhapa, Chhindwara

Method of use: Ash of larva mixed with honey is applied on chest for pneumonia.

10. *Sceliphron* spp. (Mud Wasp)

Hymenoptera: Vespidae

Local name: Ghameri

Locality: Used by Vaidyas of Delakhari, Chhindwara

Method of use: Mud of hive dissolved in water and given to children to treat vomiting.

Also, Mud hive mixed with water, thick paste is applied on fore head to relieve migraine.



Trombidium grandissimum



Caterpillars of *Pachliopta aristolochiae*



Oecophylla smaragdina



Apis dorsata with Bee hive



Polistes carolina



Larva of *Bombyx mori*



Mylabris pustulata

Discussion

The above investigation documented a list of ten insect species belonging to different families which find acceptance as food and medicine by the tribal and rural of Satpura Plateau of Madhya Pradesh, India. As documented earlier, insects can be a source of drugs used in modern medicine since compounds of insect origin can have immunological, analgesic, antibacterial, diuretic, anesthetic and anti-rheumatic properties [5]. The acrid oil exuded from openings in the apices of femora in *Mylabris pustulata* [7], is commercially very useful. Bandana Kumari and Sudhanshu [1] have reported that insect *Mylabris pustulata* is used by Vaidyas of Panch Pargana area of Jharkhand in the treatment of dog bite and Hydrophobia. In Chhattisgarh, Red Velvet Mite (*Trombidium grandissimum*) is used in combination with different herbs for the treatment of about 10 diseases like Malaria, Paralysis,

Polio, Joint pains etc. ^[12, 1]. In the present study, these mites (*Trombidium grandissimum*) are found to be used for the treatment of pneumonia and fever. The red ant has been used in traditional medicine to cure various diseases like tetanic fever, ear pain, high fever, malarial fever, aphrodisiac, antibacterial, rheumatism etc. ^[16]. The red ants (*Oecophylla smaragdina*) are used for bronchitis in Jharkhand ^[1] while in the current study are found to be used to prevent gastritis and for nutritive value. The information which has been gathered on the uses of insects and their products among the tribal and rural people of the area is the key to the indigenous insects use. Further detailed investigations on their rearing prospect in traditional way will be beneficial for natural conservation of insect fauna. Some of the useful insects like *Apis dorsata*, *Apis indica* are getting depleted in their natural habitat due to indiscriminate exploitation and habitat destruction, especially by deforestation, road construction, use of chemicals for pest control etc. ^[6]. The knowledge on ethnoentomology in the state is very less and detailed scientific investigation, proper traditional management strategy is sought to keep its species intact before the population of species dwindle.

Conclusion

Insects as a major animal group contribute enormous biodiversity and form a valuable biomass in nature. They offer many ecological, economic and social benefits. Documentation of traditional therapeutic knowledge could not only lead to the discovery of new drugs but also contribute to the conservation, sustainable management and use of animal resources; hence, it is very crucial that ethno entomological surveys be carried out for the preservation of this indigenous knowledge. Therefore, we need to protect the biodiversity of the region and conserve the valuable insect resources found in this region for posterity.

Acknowledgement

The authors are thankful to Dr. G. Rajeshwar Rao, Director, Tropical Forest Research Institute, Jabalpur for providing the facilities for carrying out this research work. Thanks are also due to Dr. S. Sambath, Scientist D, Zoological Survey of India, Jabalpur for authentic identification of these insects.

References

- Bandana Kumari, Sudhanshu K. An insight into the ethno zoology of Panch Pargana area of Jharkhand, India: Journal of Threatened Taxa. 2009; 1(8):441-443.
- Beeson CFC. The Ecology and the control of Forest Insects of India and the Neighbouring Countries. Vasant Press, Dehradun, 1941, 1006.
- Chakravorty J. Diversity of Edible insects and Practices of Entomophagy in India: An Overview: Journal of Biodiversity, Bio prospecting and Development. 2014; 1(3):1000124.
- Costa-Neto EM. Animal based medicines: biological prospection and the sustainable use of zoo therapeutic resources: Annals Acad Bras Cienc. 2005; 77(1):33-43.
- Gahukar RT. Entomophagy for nutritional security in India: potential and promotion: Current Science. 2018; 115(6):1078-1084.
- Kato D, Gopi GV. Ethnozoology of Galo tribe with special reference to edible insects in Arunachal Pradesh: Indian Journal of Traditional knowledge. 2009; 8(1):81-83.
- Leproy HM, Howlett FM. Indian Insect Life. W. Thacker & Co., London, 1909.
- Mahapatro GK. Ethno-entomology: Termites as food and medicine Current Biotica. 2015; 9(1):5-8, ISSN 0973-4031.
- Mahawar MM, Jaroli DP. Traditional zootherapeutic studies in India: A review. Journal of Ethnobiology and Ethnomedicine, 2008, 4, 17.
- Manuranjan Borgohain, Aparajita Borkotoki, Rita Mahanta. Protein Content in *Oecophylla smaragdina*, Fabricius Consumed in upper Assam of North East India. The Science Probe. 2014; 2:1-7.
- Mayer-Rochow VB, Changkija S. Uses of insects as human food in Papua New Guinea, Australia, and north - east India: Cross - cultural considerations and cautious conclusions. Ecol. Food Nutr. 1997; 36:159-185.
- Oudhia P. Traditional medicinal knowledge about Red velvet mite, *Trombidium* sp. (Acari: Trombidiidae) in Chhattisgarh. Insect Environment. 1999; 5(3):113.
- Oudhia P. Traditional medicinal knowledge about Pod borer - *Helicoverpa armigera* in Chhattisgarh, India. International Chickpea and pigeon pea Newsletter. 2001; 1:14-15.
- Pandey AK, Patra AK, Shukla PK. Medicinal plants of Satpura plateau of Madhya Pradesh: Current status and Future prospects. Indian Forester. 2005; 131(7):857-883.
- Pdmnabhan P. Ethnozoological Studies on the Tribals of Palakkad and Malappuram districts of Kerala, South India, Division of Forest Ecology and Biodiversity Conservation, KFRI Research Report, 2004, 292.
- Ragunath G, Iyyapan R, Senthilkumar SK, Senthilkumar V. Traditional zoo-therapeutical importance of the medicinal weaver ant *Oecophylla smaragdina*: International Journal of Biological & Pharmaceutical Research. 2017; 8(1):34-40.
- Ranjit Singh AJA, Padmalatha C. Ethno-entomological practices in Tirunelveli district, Tamil Nadu, Indian Journal of Traditional Knowledge. 2004; 3(4):442-446.
- Rajan BKC. The wild fauna and human food. My forest. 1987; 23:177-180.
- Siriamornpun S, Thammapat P. Insect as a Delicacy and a Nutritious Food in Thailand, Food Science and Technology to improve Nutrition and Promote National Development. International Union of Food Science & Technology, 2008.
- Srivastava SK, Babu N, Pandey H. Traditional insect bioprospecting-as human food and medicine. Indian Journal of Traditional Knowledge. 2009; 8:485-494.