



A study on nutritional status and therapeutic uses of edible insect of Assam, India: A review

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Abstract

Assam is rich in biodiversity and cultural diversity, supporting traditional practices of insect consumption and insect-based medicine among indigenous communities. This review examines the nutritional value, medicinal applications, and regional variations in insect utilization, particularly in Assam. Studies have documented edible insect species and species used in traditional medicine across the region. Different insect life stages and products, including larvae, pupae, honey, and cocoons, are traditionally used for various health complaints. These practices reflect the close relationship between indigenous knowledge, biodiversity, nutrition, and traditional healthcare. Further research is needed to assess food safety, identify bioactive compounds, and validate reported therapeutic properties. Documenting traditional practices and conserving insect diversity may support sustainable food systems and preserve indigenous knowledge.

Keywords: Edible insects, entomophagy, ethnomedicine, insect diversity, indigenous communities, Assam

Introduction

The global population is expected to approach nearly eleven billion by the end of this century, creating immense pressure on existing food systems. Ensuring food security under such circumstances will be challenging, particularly as climate change continues to affect agricultural productivity. Producing nutritious and sustainable food with diminishing natural resources—such as land, water, and energy—requires innovative and alternative approaches. One promising solution to strengthen global food supply in an environmentally sustainable manner is the inclusion of edible insects in human diets. Water scarcity is already recognized as a global crisis, and food insecurity is likely to become an equally serious concern for both developed and developing nations. Entomophagy, the practice of consuming insects by humans and other animals, has existed since prehistoric times. Various life stages of insects—including eggs, larvae, pupae, and adults—have traditionally been consumed in many cultures across the world. Insects are rich sources of high-quality protein, essential amino acids, vitamins, minerals, and healthy fats. In regions where malnutrition remains a significant cause of illness and mortality among children, insect-based protein products have shown potential as affordable and nutrient-dense therapeutic foods. Compared to conventional livestock, insects require fewer resources, emit fewer greenhouse gases, and can be farmed sustainably, making them a viable alternative protein source. Insects belong to the phylum Arthropoda, the largest group in the animal kingdom. They exhibit remarkable adaptability to diverse habitats and possess high reproductive capacity. Insects have considerable nutritional value, and insect farming is more environmentally sustainable compared to conventional animal protein production systems. Therefore, promoting edible insects could play a significant role in ensuring food security and environmental sustainability in the coming decades.

Entomophagy, the practice of consuming insects as food, is widespread across many tropical and subtropical regions of the world. Globally, over 2,000 insect species are known to be consumed by humans (Jongema, 2017) ^[12]. The

nutritional richness and low environmental footprint of insects have attracted global attention as sustainable alternatives to conventional livestock (Van Huis *et al.*, 2013; Payne *et al.*, 2016) ^[19, 24].

The practice of consuming insects (entomophagy) and using them in traditional medicine (entomotherapy or entomotherapy) is long established across many tropical regions, including the Indian Northeast. In India, the northeastern states — characterized by high biodiversity and rich tribal cultures — are among the nation's hotspots for entomophagy. Surveys dating from the early 2000s to the present enumerate dozens of species consumed by tribal communities and document associated traditional therapeutic practices (Chakravorty *et al.*, 2011) ^[5]. Interest in insects as sustainable food and as a source of bioactive molecules has intensified in the last decade, driven by nutritional security concerns, biodiversity considerations, and rising research that links insect-derived compounds with antimicrobial, antioxidant and anti-inflammatory activities. At the same time, safe integration of insects into diets at scale requires regionally specific evidence on nutrient composition, contaminants, and validated therapeutic claims.

In India, entomophagy is particularly prevalent in the northeastern states, including Assam, where indigenous communities such as the Bodo, Karbi, Mishing, and Dimasa tribes incorporate insects into their regular diet (Chakravorty *et al.*, 2011) ^[5]. Assam, occupying a central position in the Brahmaputra valley, provides both the ecological base (wetlands, forested landscapes, agricultural mosaics) and the cultural knowledge repositories (Bodo, Karbi, Dimasa, Tiwa, Mishing and others) where insect foods and ethnotherapies persist. Beyond nutrition, insects are also used in traditional therapeutic practices, reflecting a long-standing ethnobiological knowledge system. This review synthesizes existing research on edible insect diversity, nutritional value, and therapeutic uses in Assam.

Diversity of Edible Insects in Assam

Ethnographic and entomological surveys in Northeast India document a rich diversity of edible insects belonging to

multiple orders, including Coleoptera, Orthoptera, Hemiptera, Hymenoptera, Isoptera, and Lepidoptera (Chakravorty *et al.*, 2011; Meyer-Rochow, 2005) ^[5, 16]. Assamese entomophagy includes a wide taxonomic breadth: prominent orders are Hemiptera (aquatic true bugs such as *Lethocerus indicus*, *Diplonychus rusticus*), *Dytiscidae*/Coleoptera (diving beetles *Cybister* spp.), Orthoptera (grasshoppers and crickets), Hymenoptera (various ants, bees, wasps), Isoptera (termites), and Lepidoptera (moth larvae, e.g., eri/host-silkworm pupae). Both larval and adult stages are consumed depending on species biology and cultural preference. Aquatic insects — harvested from paddy fields, ponds and streams — are a notable group in the Brahmaputra floodplain communities. Sarmah *et al.* (2022) ^[23] analyzed five aquatic species commonly used in Assam and documented high protein and antioxidant values, confirming the nutritional significance of aquatic taxa in local diets. Regional surveys show entomophagy practices vary by tribe and habitat. For example, the Bodoland Territorial Region (BTR) survey (Kalita *et al.*, 2022) ^[13] recorded 25 edible insect taxa and discussed seasonality, collection methods, and household uses — highlighting forest and agro-ecosystem adjacency as drivers of species availability. Other district-level studies (e.g., Kokrajhar, Morigaon, Baksa) document similar patterns: rural households undertake seasonal harvesting for both self-consumption and small-scale sale in local markets. Entomophagy therefore serves dietary, cultural and income roles. A study conducted by Narzari and Sarmah (2015) ^[18] examined the practice of entomophagy among the Bodo community of Assam. Their findings documented the consumption of 25 different insect species, representing eight taxonomic orders and fourteen families. Among these, the highest number of species belonged to the order Orthoptera (ten species), followed by Hymenoptera (five species) and Coleoptera (three species). Two species each were recorded under Odonata and Hemiptera, while Araneae, Lepidoptera, and Isoptera were each represented by a single species in the Bodo diet. Borah *et al.* (2020) ^[3] carried out a survey across four districts of Assam—Tinsukia, Dibrugarh, Sivasagar, and Jorhat—to document the consumption of edible insects. Their investigation identified 17 insect species used as food by local communities. Among these, four species were reported to have medicinal or therapeutic value, including red ant larval brood, wasps, desert locusts, and honeybees.

Taxonomically, the recorded species were classified under six different orders, 12 families, and 17 genera. Rabha (2016) ^[20] investigated the role of edible insects in the traditional diet of the Rabha tribe of Assam. The study highlighted that entomophagy remains an important and sustainable food practice among the Rabha community, rooted in long-standing cultural traditions. This indigenous knowledge has been preserved and transmitted orally across generations. In Lower Assam, members of the Rabha community consume a variety of edible insects, including crickets, grasshoppers, giant water bugs (*Belostoma*), termites, red ants, beetle larvae, insect pupae, and water skaters (family Gerridae). These insects form a valuable component of their traditional food system and contribute to household nutrition and food security.

Dutta *et al.* (2016) ^[10] conducted a study on terrestrial edible insects and their medicinal significance in Moridhal Panchayat of Dhemaji district, Assam, in Northeast India. The survey revealed that local communities consume 16 species of insects as food. These species were classified under six different orders within the class Insecta. The findings also emphasized the dual role of these insects, serving not only as a dietary resource but also as part of traditional therapeutic practices in the region. Rahman *et al.* (2018) ^[21] explored the practice of entomophagy among the Tiwa community in Morigaon district of Assam. Their study documented 15 edible insect species categorized under six orders of the class Insecta, namely Hemiptera, Coleoptera, Orthoptera, Hymenoptera, Odonata, and Isoptera. These insects are incorporated into the Tiwa diet both as part of their routine meals and during cultural or festive occasions. Similarly, Das (2021) ^[7] examined entomophagy as a sustainable food strategy among tribal communities in Baksa district, Assam, India. The investigation recorded 31 edible insect species distributed across nine different orders, collected from diverse habitat types within the study area. Hazarika *et al.* (2020) ^[11] investigated the diversity of edible insects and the perceptions of entomophagy among ethnic communities residing in Manas National Park, a UNESCO Natural World Heritage Site in Assam, India. The survey recorded 22 edible insect species representing 15 families and eight orders from different habitat types within the park. Among these, the order Orthoptera was most dominant with eight species, followed by Hymenoptera (four species) and Hemiptera (three species).

Table 1: Taxonomy, seasonal availability, edible part and mode of consumption of edible insects in Assam

Sl. No.	Scientific Name	English Name	Order	Family	Seasonal Availability	Edible Part	Mode of Consumption
1	<i>Periplaneta americana</i>	Cockroach	Blattodea	Blattellidae	Whole year	Adult	Fried
2	<i>Hydrophilus olivaceus</i>	Water scavenger beetle	Coleoptera	Hydrophilidae	Whole year	Larva and adult	Fried, curry
3	<i>Oryctes rhinoceros</i>	Rhinoceros beetle	Coleoptera	Scarabaeidae	Sept–Feb	Larva	Fried
4	<i>Plectoderma scalator</i>	Wood borer	Coleoptera	Cerambycidae	May–Aug	Larva	Fried
5	<i>Phyllophaga</i> spp.	June beetle	Coleoptera	Scarabaeidae	Apr–Jun	Adult	Fried
6	<i>Lethocerus indicus</i>	Giant water bug	Hemiptera	Belostomatidae	Whole year	Adult	Fried, smoked
7	<i>Laccotrephes ruber</i>	Water scorpion	Hemiptera	Nepidae	Jun–Oct	Adult	Fried, smoked
8	<i>Diplonychus rusticus</i>	Water beetle	Hemiptera	Belostomatidae	May–Sept	Adult	Fried, curry
9	<i>Vespa affinis</i>	Potter wasp	Hymenoptera	Vespidae	Apr–Oct	Egg and larvae	Raw, roasted, fried
10	<i>Polistes olivaceus</i>	Paper wasp	Hymenoptera	Vespidae	Apr–Oct	Egg and larvae	Raw, roasted, smoked
11	<i>Apis indica</i>	Indian honey bee	Hymenoptera	Apidae	May–Sept	Egg and larvae	Raw, fried

12	<i>Apis dorsata</i>	Rock bee	Hymenoptera	Apidae	May–Sept	Egg and larvae	Raw, fried
13	<i>Oecophylla smaragdina</i>	Weaver ant	Hymenoptera	Formicidae	Mar–Aug	Eggs	Raw, fried
14	<i>Microtermes obesi</i>	Termite	Isoptera	Termitidae	Mar–Jul	Larva, adult	Fried
15	<i>Philosamia ricini</i>	Eri silkworm	Lepidoptera	Saturniidae	Mar–Oct	Larva, pupa	Fried
16	<i>Antheraea assamensis</i>	Muga silkworm	Lepidoptera	Saturniidae	Mar–Oct	Larva, pupa	Fried
17	<i>Mantis religiosa</i>	Praying mantis	Mantodea	Mantidae	Jun–Nov	Adult	Fried, smoked
18	<i>Ictinogomphus rapax</i>	Dragonfly	Odonata	Gomphidae	Mar–Aug	Nymph	Fried
19	<i>Oxya multidentata</i>	Short-horned grasshopper	Orthoptera	Acrididae	Mar–Sept	Adult	Fried, smoked
20	<i>Atractomorpha crenulata</i>	Short-horned grasshopper	Orthoptera	Acrididae	Mar–Sept	Adult	Fried, smoked
21	<i>Hieroglyphus banian</i>	Short-horned grasshopper	Orthoptera	Acrididae	Mar–Sept	Adult	Fried, smoked
22	<i>Mecopoda elongata</i>	Long-horned grasshopper	Orthoptera	Tettigoniidae	Mar–Sept	Adult	Fried, smoked
23	<i>Gryllus bimaculatus</i>	Field cricket	Orthoptera	Gryllidae	May–Sept	Adult	Fried, smoked
24	<i>Acheta domestica</i>	House cricket	Orthoptera	Gryllidae	May–Sept	Adult	Fried, smoked
25	<i>Gryllotalpa africana</i>	Mole cricket	Orthoptera	Gryllotalpidae	Whole year	Adult	Fried, smoked

Nutritional Composition

Edible insects are widely recognized as nutrient-dense food sources. They provide substantial amounts of protein, essential amino acids, lipids, carbohydrates, vitamins, and important trace minerals (Xiaoming *et al.* 2010) ^[26]. On a dry weight basis, the protein content of commonly consumed insects generally ranges from approximately 35% to 60%, while on a fresh weight basis it typically varies between 10% and 25% (Melo *et al.* 2011) ^[15]. In several cases, the protein concentration in insects is higher than that found in many plant-based proteins sources such as lentils and cereal grains (Bukkens 1997) ^[4]. Assam aquatic species measured by Sarmah *et al.* (2022) ^[23] contained crude protein ~50–58% dry weight — among the higher ranges reported for edible insects worldwide. Other Assam analyses of terrestrial species (silkworm pupae, grasshoppers) report protein values generally between 30–60% dry weight depending on species and life stage. In addition to protein, insects are also rich in fats (lipids). The quantity of fat present varies depending on species, sex, developmental stage, season, and diet. Studies have reported average fat contents across different insect orders as follows: Orthoptera (13.14%), Coleoptera (33.40%), Lepidoptera (27.66%), Isoptera (32.74%), Hemiptera (30.26%), and Blattodea (29.90%). This variation highlights the nutritional diversity among different insect groups (Rumpold and Schluter 2013) ^[22]. Carbohydrates are another component of edible insects, with reported average values ranging from about 6.71% to 15.98% (Micek *et al.* 2014). Beyond macronutrients, insects also supply a variety of

micronutrients. Reports from the Food and Agriculture Organization (FAO, 2004) indicate that larvae (maggots) of several edible species are good sources of B-complex vitamins, potassium, calcium, magnesium, zinc, and iron. Additional research suggests that insect consumption may contribute carotene, thiamine (vitamin B1), riboflavin (vitamin B2), pyridoxine (vitamin B6), ascorbic acid (vitamin C), cholecalciferol (vitamin D3), as well as vitamins E and K (Micek *et al.* 2014). Furthermore, significant concentrations of essential minerals such as iron, copper, calcium, zinc, phosphorus, and manganese have been reported in species like grasshoppers, mealworms, crickets, and termites (Micek *et al.* 2014 and de Castro *et al.* 2018) ^[9].

Das (2018) ^[8] studied on the quantitative analysis of macronutrient contents in insects commonly consumed in Baksa district Assam. On chemical analysis it is observed that edible insects are nutritious in terms of protein (2.5–24.6 gm/100g fresh weight), lipid (1.6–18.6 gm. /100g fresh wt.), and carbohydrate (0.2– 5.8 gm/100 g fresh wt.). The *Phylophaga* sp., a terrestrial insect, contains the highest amount of protein (24.4 g/100g fresh wt.) in comparison to other terrestrial edible insects studied. The *Hydrophilus olivaceus*, an aquatic edible insect, has maximum amount of protein in comparison to other studied insects. Das (2021) ^[7] Studied Entomophagy, as a way of food sustainability amongst the tribal people in Baksa District Assam, India. The study indicates that edible insects are nutritious in terms of protein (2.5–24.6 g/100g fresh wet weight), also rich in mineral contents such as Ca, Mg, Fe etc.

Table 2: Nutritional status of various edible insects of Assam

Serial No.	Common Name of Insect	Scientific Name	Order	Carbohydrate (%)	Protein (%)	Fat (%)
1	Eri silkworm	<i>Samia cynthia ricini</i>	Lepidoptera	35.00	3.5	7.3
2	Winged termite	<i>Odontotermes</i> sp.	Blattodea	2	14.56	18.60
3	Mole cricket	<i>Brachytrupes orientalis</i>	Orthoptera	4.5	16.9	6.5
4	House cricket	<i>Acheta domesticus</i>	Orthoptera	5.8	19.8	6.9
5	Giant water bug	<i>Lethocerus indicus</i>	Hemiptera	N/A	21.6	13.3
6	Rice grasshopper	<i>Oxya hyla hyla</i>	Orthoptera	2.817	6.467	2.18
7	Short-horned grasshopper	<i>Oedaleus abruptus</i>	Orthoptera	3	6	1.5
8	Stink bug	<i>Aspongopus nepalensis</i>	Hemiptera	N/A	1.06	3.8
9	Scarlet skimmer	<i>Crocothermis servilia</i>	Odonata	1.18	7.048	0.493
10	Red ants	<i>Oecophylla smaragdina</i>	Hymenoptera	2.90	13.90	3.5
11	Giant water beetle	<i>Hydrophilus triangularis</i>	Hemiptera	2.10	19.80	8.30
12	Small grasshopper	<i>Tetrix</i> sp.	Orthoptera	3.90	20.6	6.10

13	Large grasshopper (Katydid)	Katydid sp.	Orthoptera	2.2	14.30	3.30
14	Caterpillars	—	Lepidoptera	N/A	6.70	N/A
15	June beetle	Phyllophaga sp.	Coleoptera	2.90	13.40	1.40
16	Wax moth	Galleria mellonella	Lepidoptera	N/A	15.5	22.1
17	Dung beetle	Scarabaeus sp.	Coleoptera	2.0	17.2	4.3
18	Mealworms	Tenebrio sp.	Coleoptera	N/A	20.2	12.7

Regional Variation in Insect-Based Traditional Medicine in Assam

Traditional medicinal practices involving insects differ among indigenous communities in Assam, reflecting their cultural heritage, local biodiversity, and knowledge inherited from earlier generations. Among the districts of Assam Dima Hasao district recorded 66 insect species belonging to 32 families. The Zeme, Sema, Dimasa, and Biate communities were reported to possess traditional knowledge of insect-based remedies. In Morigaon district, the Karbi and Nath communities were reported to use two species belonging to two families. The Mising community of Dhemaji district utilized 16 insect species from eight families. In Jorhat district, the Ahom, Chutiya, Koch-Rajbongshi, and Kalita communities used 13 species representing 11 families. Meanwhile, Karbi Anglong district recorded 10 insect species from eight families that were used in traditional medicine. The differences observed among these regions suggest that the use of insects in traditional medicine is closely associated with community-specific knowledge and the availability of local insect resources. These findings highlight the importance of documenting and preserving indigenous medicinal knowledge, which forms a valuable part of Assam's cultural heritage. Further scientific research is also needed to investigate the safety and effectiveness of the reported remedies.

Therapeutic Applications of Insects and Their Different Life Stages

Insects and their products have long been incorporated into traditional healthcare practices by various indigenous communities. Different developmental stages, including eggs, larvae, pupae, cocoons, and adults, are used as sources of nutrition and traditional remedies. Ethnomedicinal applications of insects include the management of pain, inflammation, digestive disorders, respiratory illnesses, and certain infectious conditions. Traditional practices also associate some insect species with the treatment of fever,

diarrhoea, dysentery, jaundice, diabetes, asthma, and joint-related problems. Depending on the species and customary practice, insects may be consumed after roasting, frying, smoking, or cooking, while some are processed for external application to wounds and skin injuries. Honey and other insect-derived products are also used in traditional preparations.

These practices reflect the importance of entomotherapy in indigenous knowledge systems; however, their reported therapeutic benefits should be distinguished from scientifically established clinical efficacy. Insects have been an important part of traditional healing practices among many indigenous communities of Assam. Their use varies from one community to another and depends on local customs, the availability of insect species, and the traditional knowledge passed down through generations. As presented in Table 3, some communities use the entire insect, including adults, larvae, and nymphs, whereas others prefer particular body parts, such as the head, wings, legs, or digestive tract, for medicinal purposes. The methods used to prepare and administer insect-based remedies also differ according to the insect species and the health problems they are traditionally believed to address. Some remedies are taken orally, while others are applied directly to the affected area. Insects may be consumed raw or after cooking, crushed into a paste or powder, or prepared as infusions and topical formulations, such as ointments and salves. In certain communities, insect-derived smoke or fumes are also used in traditional healing practices. Besides their medicinal applications, insects may have a role in protective rituals and other culturally significant ceremonies. These practices reflect the close connection between indigenous communities, their natural environment, and their traditional healthcare systems. The knowledge associated with insect-based remedies represents an important part of their cultural heritage. Documenting this knowledge can help preserve traditional practices and provide opportunities for further scientific investigation into the potential medicinal properties of insects.

Table 3. Traditional Use of Insects and Their Parts for the Treatment of Various Ailments among Indigenous Communities across Different Districts of Assam

District/ Area	Tribes/ Community	Scientific name	Family	Body parts used	Ailments	Prescription	Reference
Dhemaji District	Mishing Tribe	Samia Cynthia ricini	Saturniidae	Pupae, Cocoon, cocoon ash	Liver protection	-	(Doley & Kalita 2012)
		Apis indica	Apidae	Honey	Cough, cold, fever	-	
		Vespa orientalis	Vespidae	Whole insect	Cough, cold, stomach problem	-	
		Dorylus orientalis	Formicidae	Eggs, adults	Small pox, chicken pox, dysentery, stomachache.	-	
		Schistocera gregaria	Acrididae	Whole body, body oil	Lip protection	-	
		Eumenes petiolatus	Vespidae	Eggs, larvae	Headache	-	
		Bombyx mori	Bombycidae	Larvae, pupae & adult	Constant itching & soreness of throat	Consumed after frying and boiling	(Dutta <i>et al.</i> , 2016) [10]
		Antheraea	Saturniidae	Larvae, pupae &	Constant itching &	Consumed after frying and	

		assamensis		adult	Soreness of throat	boiling	
		Samia cynthia ricini	Saturniidae	Larvae, pupae & adult	Infection of tongue & mouth	Consumed after frying and boiling	
		Oecophylla smoragdina	Formicidae	Adult	Nose infection, sinus & throat infection	Insect dried, grinded and mixed with mustard seeds & inhaled.	
		Odontotermes sp.	Termitidae	Adult stage	Food value	Wings & intestine removed then fried in oil	
		Vespa orientalis	Vespidae	Eggs & larvae	Stomach problems	Larvae and eggs are crushed & boiled and consumed	
		Vespa magnifica	Vespidae	Eggs & larvae	Stomach problems	Larvae and eggs are crushed & boiled and consumed	
Dima Hasao	Zeme, semsa, Dimasa	Crocothemis servilia servilia	Libellulidae	Nymph (whole body)	Headache, vision	Boiled and eaten	Kemprai, et al., 2022) ^[14]
		Diplocodes trivialis	Libellulidae	Whole body	Joint pain	Externally applied raw body.	
		Neurothemis fulvia	Libellulidae	Whole body	Body ache	Soup nourishes the body	
		Orthetrum pruinsum neglectrum	Libellulidae	Head	Vision	Inhaling vapors from boiling manually every day for a week	
		Pantala flavescens	Libellulidae	Whole body	Conjunctivitis	Fumes of boiled are permitted to enter the eyes three times every day for seven days.	
		Potamarcha congener	Libellulidae	-	Arthritis	Externally applied after boiling.	
		Melanoplus sp.	Acrididae	Whole body	Hiccups	Consumed roasted body.	
		Tarbinskiellus portentosus	Gryllidae	Adult (Whole body)	Indigestion	Roasted & whole body is consumed	
		Gryllus spp.	Gryllidae	Adult (Whole body)	Headache, Loose motion and malaria	Boil or roasted are consumed for early recovery	
		Acheta domesticus Linn	Gryllidae	Adult (Whole body)	Reflux of food, indigestion	Whole roasted insects are consumed on an empty stomach	
		Teleogryllus spp.	Gryllidae	Adult (Whole body)	Headache, vomiting	Roasted and grinded parts are consumed in an empty stomach along with water.	
		Pseudophyllus titan	Tettigoniidae	Adult (Whole body)	Fever, Dysentery	Orally administered roasted body to young children.	
		Mecopoda nipponensis	Tettigoniidae	Adult (Whole body)	Weight loss and constipation	Boiled and eaten	
		Tettigonia sp.	Tettigoniidae	Adult (Whole body)	Body ache, joint pain	Roasted whole body are eaten and externally applied after grinded.	
		Tenodera sinensis	Mantidae	Adult (Whole body)	Warts, Fracture	Whole body is used on warts	
		Hierodula coarctata	Mantidae	Adult (Whole body)	Enuresis, kidney stone	Roasted whole body is orally administered to young children and it has been prescribed to drink the grinded whole body for kidney stone.	
		Epilampra sp.	Blaberidae	Adult (Whole body)	Appetizer	Consumed in raw state.	
					Bloating	Roasted body is rubbed on abdomen.	
		Carausius sp.	Diapheromeridae	Adult (Whole body)	Calluses	Paste is made and externally applied	
					Prickling spines	Adult stick insects are rubbed on the skin for removal.	
		Lethocerus indicus	Belostomatidae	Adult (Whole body)	Dry cough	Soup is orally administered twice daily.	
					Rheumatoid arthritis	Fumes of boiled insects are taken for quick recovery	
		Notobitus meleagris	Coreidae	Adult (Whole	Stomach ache	Roasted insects are taken.	

				body)			
		Aspongopus nepalensis	Dinidoridae	Adult (Whole body)	Jaundice	Boiled insects are consumed thrice a day for a week.	
		Coridius singalanus	Dinidoridae	Adult (Whole body)	Malaria, viral fever	Cooked stink bugs are eaten daily for a duration of two weeks.	
		Laccotrephes ruber	Nepidae	Adult (Whole body)	Blood purifier	Boiled nymph is orally administered daily for a week	
					Indigestion	Boiled Soup of the bug is orally taken for rapid recovery.	
		Udonga montana	Pentatomidae	Adult (Whole body)	Analgesic, coughs	Boiled bugs are eaten for rapid healing.	
		Myrmeleon spp.	Myrmeleontidae	Larva	Diabetes	Boiled insects are consumed to maintain blood sugar level.	
		Batocera parryi	Cerambycidae	larva	Aphrodisiac, malaria, typhoid	Soup of boiled are orally administered	
		Orthosoma brunneum	Cerambycidae	larva	Asthma, coughs	Roasted insects are eaten	
		Apis cerana indica	Apidae	Honey	Blood pressure, cholera, cold coughs.	One tea spoonful of honey is mixed in warm water and consumed for quick recovery.	
		Apis laboriosa	Apidae	Honey	Appetizer, Common illness, cholera, cold coughs, vertigo, diarrhoea	One teaspoonful of honey is mixed in a cup of warm water and garlic powder and orally administered once daily.	
				Bee comb	Appetizer, Common illness diarrhoea coughs, vertigo	A small piece of bee comb is dissolved in a cup of warm water and orally administered.	
		Lepidotrigona arcifera L	Apidae	Honey/bee comb	Analgesic, blood pressure, cancer, chest pain, gastritis, heart disease	A small piece of bee comb is dissolved in a cup of warm water and orally administered	
		Lophotrigona canifrons	Apidae	Nest entrance	Diarrhoea, dog bite, snake bite, mouth ulcers	A small piece of nest entrance is dissolved in a cup of warm water and orally administered.	
		Oecophylla smaragdina	Formicidae	Whole body	Analgesic, fever, headache	Cocked ants with tulsi leaf and administered orally for quick recovery	
		Provespa barthelemyi	Vespidae	Adult (Whole body)	Analgesic, insomnia, oedema	Soup of boiled wasps is orally administered	
Jorhat	Ahom, Chutiya, Koch-Rajbongshi, Kalita	Scapteriscus borellii	Gryllotalpidae	Alimentary canal	Intestinal worm (thread worm)	Alimentary canal part of the insect is consumed in raw state.	(Borah and Prasad, 2017) ^[2]
		Lampyridae spp.	Lampyridae	Whole Body	Cancer	Raw insects are prescribed to eat daily	
		Periplaneta americana	Blattidae	Whole body	Asthma	Boiled the insect without their wings and prescribed to eat.	
		Apis cerana indica	Apidae	Whole body	Cancer	The insect is ground in water and prescribed to consume	
		Vespa affinis	Vespidae	Whole body	Cancer	It is grinded and mixed with water and prescribed to drink	
		Myrmecaria brunnea	Formicidae	Whole body	Body pain	Prescribed to eat in raw state	
		Tetraponera rufonigra	Formicidae	Whole body	Body ache	Prescribed to eat in raw state	
		Oecophylla smaragdina	Formicidae	Whole body	Sinus Cancer Epistapix (Bleeding from nose)	Fried and prescribed to eat some are prescribed to eat in the raw state	
		Leptocoris	Alydidae	Whole body	Fever	Boiled and prescribed to eat	

		varicornis					
		Antheraea assamensis	Saturniidae	Whole body	-	Consumed raw for nutrition	
		Acheta domesticus	Gryllidae	Whole body	Pain For better eye sight improve pancreas	Fried and prescribed to eat	
		Pheropsophus spp.	Carabidae	Whole body	Alcoholic habit	Beetle is consumed in raw state	
		Samia cynthia ricini	Saturniidae	Larvae, pupae & adult	Infection of tongue & mouth	Consumed after frying and boiling	
Karbi Anglong		Apis mellifera	Apidae	Honey	Asthma, flu, coughs	Consumed honey in raw state	(Verma <i>et al.</i> , 2014) ^[15]
		Periplaneta americana	Blattidae	Whole body	Asthma	Insect is fried and consumed	
		Achaeta sp.	Gryllidae	Hind legs	Diuretic	Insect is burned and eaten	
		Psudacanthoter ms sp.	Pentatomidae	Whole body	Asthma	Insect is fried and eaten	
		Musca domestica	Muscidae	Whole body	Baldness	Insect is roasted and consumed	
		Poecillocerus pictus	Pyrgomorphidae	Whole insect	Lung infection	Insect is fried and eaten	
		Trigona spinipes	Apidae	Honey	Throat inflammation	Honey consumed	
		Lytta vesicatoria	Meloidae	Whole body	Anticancer	Crushed and dissolved in water and orally consumed	
		Mylabris cichorii	Meloidae	Whole body	Anticancer, rabies, warts	Crushed and dissolved in water and orally consumed	
Morigaon	Nath community, Karbi	Pediculus sp.	Pediculidae	Whole body	Clears urinary tract	Consumed alive	Borah and Prasad, 2016)
		Sceliphron sp.	Sphecidae	Whole insect	Pneumonia	Insect along with cinnamon, clove, honey, and black pepper boiled together and prescribed to eat.	
		Apis indica	Apidae	Honey	Cough	The combination of honey and Ocimum sanctum (Tulsi) leaf sap is prescribed	

Conclusion

Insects represent an important natural resource with considerable potential in both human nutrition and traditional healthcare. Their nutritional composition and relatively low resource requirements make them promising candidates for promoting sustainable food systems and addressing future food security challenges. At the same time, the traditional use of insects for medicinal purposes reflects the extensive knowledge developed by indigenous communities through generations of interaction with their natural environment. In Assam and other parts of North east India, insect-based ethnomedicine forms a valuable component of indigenous cultural heritage. However, much of this knowledge remains insufficiently documented and scientifically investigated. Systematic research is therefore necessary to record traditional practices, identify the insect species involved, and evaluate the safety and potential therapeutic properties of their use. Conservation of insect biodiversity and preservation of indigenous knowledge should go hand in hand with these efforts. Collaboration among local communities, researchers, and healthcare professionals could help bridge traditional knowledge and modern scientific research. Overall, responsible documentation and scientific validation of insect-based resources may open new avenues for sustainable food production and biomedical research while ensuring respect for indigenous traditions and the protection of biodiversity.

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