
Original Paper

Food and Medicinal Values of Freshwater Crab (*Barytelphusa cunicularis*) & Snail (*Filopaludina bengalensis*): A way to reduce forest dependency and improve sustainability

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Adequate food and medicine are global problems. In forested areas, the communities get all their needs from the forest, including food and medicines. Due to deforestation, the pressure on forests is increasing, and unlimited extraction is happening. They also get some faunal species from the forests, like snails, crabs, insects, larvae, and some birds. Among them, snails and crabs are common, having food and medicinal values. Keeping in mind the importance of nutraceuticals, getting sustainable life stuff, and the need to reduce forest dependency, an attempt has been made to document some faunal nutraceuticals from selected areas of Jharkhand and Odisha states in India. A survey was made in 2022 and 2023, and two nutraceuticals were enumerated as commonly available in and around forest areas. We gathered information on the food and medicinal values of freshwater snails (*Filopaludina bengalensis*) and crabs (*Barytelphusa cunicularis*). It was observed that the population of the selected species is declining and has the potential to be evaluated for value addition. The present communication also suggests sustainable harvesting and value addition to improve the livelihood of forest dwellers and reduce the negative impacts of forest dependency

Keywords: Tribal medicinal food, faunal, value addition

Introduction

The use of biological resources for various therapies has been documented in many different parts of the world (Uniyal et al., 2006; Alves and Rosa, 2006; Agra et al., 2007; Alves et al., 2007a, 2007b; Alves and Rosa, 2007a; Kunwar and Bussmann, 2008; Pradhan and Badola, 2008; Napoli, 2008; Yineger et al., 2008; Mahawar and Jaroli, 2008; Alves, 2009; Costa and Alves, 2010). Plants and animals have been used as medicinal sources since ancient times (Lev and Amar, 2002; Chivian, 2002; Lev, 2003; Alves and Rosa, 2005; Yesilada, 2005; Lev, 2006; Alves and Rosa, 2007b; Voultziadou, 2010), and even today, animal and plant-based pharmacopoeias continue to play an essential role in world health care (Alves and Rosa, 2005; Alves and Rosa, 2007b; Costa and Alves, 2010). Although plants and plant-derived materials make up most of the ingredients used in most traditional medical systems globally, whole animals, animal parts, and animal-derived products also constitute important elements of the *Materia Medica* (Scarpa, 1981; Unnikrishnan, 2004; Alves and Rosa, 2005; Alakbarli, 2006). The use of organs or parts of animals as medicine is the basis of many traditional therapeutic practices (Scarpa, 1981). Zootherapy is the treatment of human ailments with remedies made from animals and their products (Alves and Rosa, 2005). As Marques states, "all human cultures that present a structured medical system will utilize animals as medicines" (Marques, 1994). The phenomenon of zootherapy is marked both by a broad geographical distribution and by very deep historical origins. In modern societies, zootherapy constitutes an important alternative among many other known therapies practiced worldwide (Sodeinde and Soewu, 1999; Almeida and Albuquerque, 2002; Pieroni et al., 2002; Apaza et al., 2003; Kang and Phipps, 2003; Silva et al., 2004; Alves and Rosa, 2005; Vázquez et al., 2006; Alves and Pereira, 2007; Alves and Rosa, 2007c; Ashwell and Walston, 2008; Van and Tap, 2008; Quave et al., 2010; Ibrahim et al., 2010). Despite its prevalence in traditional medical practices worldwide, research on this phenomenon has often been neglected in comparison to medicinal plant research. Many cultures still employ traditional medicine, which includes animal-derived remedies. Probably the most famous of these are the Chinese, who use animals for a variety of ailments. Less known and studied, though just as varied and rich, is Latin America's long tradition of animal remedies for all kinds of ailments. Latin America's rich biological and cultural diversity makes it an exceptional location to examine and increase our knowledge of faunistic resources used in traditional folk medicine, draw attention to their importance in public health, and protect traditional knowledge and biodiversity (Alves and Alves, 2011). Some of the faunal species used in remedies in India are red weaver ants, freshwater snails, freshwater crabs, and some insects like wasps, blister beetles (present study), grasshoppers, etc. The larvae and pupae of Muga silkworms are consumed to cure constant itching and soreness of the throat. Eggs, larvae, and adults of honey bees, and their products (honey) were consumed to cure whooping cough (Loganathan and Haldhar, 2020). Adults, eggs, and larvae of red weaver ants are consumed in Rasam (Soup) and Thuvaiyal to cure cough, sneezing, and colds (Sharma and Banu, 2019).

Materials and methods

Many states in India have good populations of tribal communities. They have unique skills to get food and medicines from the forests. Jharkhand and Odisha have many tribal and primitive tribal

communities. Therefore, for the present work, selected areas of Jharkhand and Odisha. It enjoys the vegetation of a dry deciduous forest and a well-known wetland near Ladhna village. Selected areas of Odisha and Jharkhand states have several communities like Santhal, Ho, Juang, Bhuian, Sabar, etc. They have traditional food practices based on animal wealth. The communities of both states go to the forest and collect the crabs and snails from nearby water bodies.

Results and discussions

The results revealed that both selected species (*Filopaludina bengalensis* and *Barytelphusa cunicularis*) are consumed in the study areas. It was noticed that their population is declining in both selected areas of Jharkhand and Odisha states. It indicates that there is a negative impact on forests due to over-extraction and other factors. While performing a survey on the catching and cooking methods of freshwater crabs in selected areas of Odisha state, the authors came across a Bhuian tribe, who was explaining the medicinal values of freshwater crabs. When he was cleaning the crabs by separating the carapace from the body, he kept all the fat in a different shell. He explained that in their tribe, they use these fats to cure lip cracks. He also disclosed the technique for preparing it and how to use it. The fats were collected in a single shell and kept on fire for some time. The fats started boiling under fire and were reduced to a jelly-like consistency. The shell containing fat was removed from the fire and kept aside to cool for a few minutes. After cooling, he took some jelly on his finger and applied it directly to his lips (Figure 1). He said that during the winter, the tribal people use this jelly on their lips to prevent lip cracks as it has healing properties. This piece of valuable information can be used to prepare a lip balm from the freshwater crabs, which may lead to the culture and conservation of these freshwater crabs. During a visit to Jharkhand, the authors observed some tribal people collecting snails from the water bodies of Jamtara Forest Division, Jamtara. The authors observed their method of catching, which is illustrated in Figure 2. The authors also interacted with locals and found that snails have not only food but also medicinal and economic values.



Figure 1: Preparation of jelly from fats of freshwater crabs to prevent lip cracks by Bhuian in Odisha, India. Photograph by Subhalakshmi Rout & Sanjeet Kumar

They consume enumerated snails 2-3 times up to 3–4 weeks for their beneficial effect on the body. Through interviews, it was noted that freshwater snails are good for the eyes and can cure night blindness, conjunctivitis, and other eye-related problems. They are also helpful in reducing joint pain, diarrhea, and other stomach ailments. Tribal people first boil the snails in hot water and then remove

the meat from the shell. The meat is fried with onion, ginger, garlic, green chilies, salt, and some spices. Water was added and allowed to cook properly on fire. These snails are often consumed cooked as meat with rice or soup by the tribal communities.



Figure 2: Collection of freshwater snails from the pond by the Santhal communities

Conclusions

The results showed that the population is declining. Hence, there is a need for more exploration work on the edible and medicinal faunal wealth of the study areas to know the status. The enumerated species have food and medicinal values. Therefore, they can be a source of livelihood through proper value addition. Need to be aware of sustainable harvesting and develop techniques for culturing them in captive mode. A proper conservation plan is also needed, as they are part of the food chain inside the forest, to reduce the negative impacts of forest dependency and ecological balance.

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