

A Review on the Use of *Heteropneustes fossilis* and *Clarias magur* in Assamese Traditional Medicine

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ABSTRACT

Background: Assam is a state in the North East of India popular for its diverse culture and traditions. There are several different ethnic groups in Assam. The state has a wide variety of flora and fauna. Various types of fish can be found in the rivers Brahmaputra and Barak, as well as in their tributaries, ponds, ditches, etc. Although the medical sector in Assam has advanced considerably through technological advances, some Assamese people still rely on traditional medicines. Assamese traditional medicine has a long history and is being used today in various regions of the state to treat patients with a variety of health issues utilizing products obtained from animals. Numerous studies have shown that various Assamese ethnic groups and indigenous people use fish in their traditional medical practices. The usage of fish in religious rituals is also mentioned in certain articles. The present study will analyze how various ethnic groups and other indigenous peoples of Assam use Stinging catfish and Asian catfish in traditional medicine.

Materials and Methods: Research Gate, Google Scholar and other authentic websites have been used to search most of the literature. **Conclusion:** The present review revealed that both fish had been used in traditional medicine by different ethnic and non-ethnic people of Assam. These fish are used by the ethnic tribes to heal various illnesses. However, additional research is necessary to compile more data from this field.

Keywords: Assam, Assamese, Ethnic Group, Fish, Traditional medicine.

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INTRODUCTION

Traditional medicine (also known as indigenous medicine or folk medicine) comprises medical aspects of tradition that developed over generations within the folk beliefs of various societies, including indigenous people, before the era of modern medicine.^[1] The World Health Organization (WHO) defines traditional medicine as «the whole of the information, abilities, and practises in light of the hypotheses, convictions, and experiences of indigenous to various cultures, whether logical or not, utilized as a part of the support of health-care service and in addition in the prevention,

identification, improvement, or treatment of physical and psychological instability.»^[2] There is a long history of and continuous use of using animal products and their byproducts to treat patients with a variety of health issues.^[3] Traditional Indian medicine is the oldest of the many traditional medical systems that are practised around the world, with several associated social factors and religious beliefs.^[4] Since ancient times, India has made significant contributions to this field, which have been documented in texts like Ayurveda and the Charaka Samhita.^[5] Several different ethnic groups and tribes with a wide variety of cultures live in the northeastern part of India.^[6] Assam, a state in northeastern India, is renowned for its rich cultural heritage. Assamese culture is a combination of Indo-Burma, Aryan and Mongolian features. Assam is home to numerous ethnic groups, including the Karbi, Tiwa, Mishing, Dimasa, Ahom, Kasarai, Bodo, Rabha, Tea tribes etc. Rivers, beels, wetlands, and other types of waterbodies are

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abundant in Assam. Assam has a variety of wetlands, including lakes, ponds, oxbow lakes, marshy areas, etc.^[7] There are many different fish species residing in all of these bodies of water. Several workers have reported the presence of different fish species, including S.I.S., in these rivers and wetlands.^[8] Fish play a significant role in the Assamese traditional therapeutic methods, like other living entities. Different tribes and non-tribe indigenous people have stated that species including *Glossogobius giuris*, *Amblypharyngodon mola*, *Clarias magur*, *Heteropneustes fossilis*, *Rasbora daniconius*, *Channa* spp., *Puntius* spp., and *Monopterus albus* are important in Assam's traditional healing practises.^[9] It is interesting to mention that air-breathing fishes of several varieties have high consumer demand in various parts of India in general and in northeast India in particular among the people of all ethnic groups, for a common perception about its medicinal value.^[10] The present study is aimed to review and discuss the significance of *Heteropneustes fossilis* and *Clarias magur* in traditional Assamese medicine.

MATERIALS AND METHODS

The main objective of this review study is to evaluate the usage of *Heteropneustes fossilis* and *Clarias magur* in traditional Assamese medicine. Most of the literature has been searched from journals and different online sources such as Research Gate, Google Scholar and other authentic websites.

Heteropneustes fossilis (Bloch, 1794)

Assamese people use stinging catfish, a species of freshwater catfish, as a traditional medicine to treat a variety of diseases. In Assamese, this fish is called Xingi maas.

Taxonomic review

Systematic position

Kingdom: Animalia

Phylum: Chordata

Class: Teleostei

Order: Siluriformes

Family: Heteropneustidae

Genus: *Heteropneustes*

Species: *Heteropneustes fossilis* (Bloch, 1794)

Vernacular names

Assamese: Singee/Sheenee/Xingi

Bengali: Singhi/Singee

Hindi: Bitchu/Singhi

Karbi: Singki

Dimasa: Nagen

Characteristics

It has a compressed and elongated body. The head is depressed and covered with a bony plate at the top and sides. Barbels four pairs.^[11] Adult fish is found in ponds, drains, swamps and also in muddy rivers. It is being farmed in rice fields.^[12] Because of its medicinal value, fish has a high economic value and is in high demand.^[13] Recommended for patients after recovery from malaria for its invigorating qualities.^[14]

Traditional medicinal use

Stinging catfish is highly preferred in Assam as a food, and its medicinal value is very high among the Assamese people. Numerous ethnozoological studies conducted in Assam have documented the significance of this fish as traditional medicine among different ethnic tribes of Assam. The Karbi people of Assam consumed boiled Stinging catfish as a tonic to treat anaemia.^[15] People who live nearby the Gibbon Wildlife Sanctuary eat this fish to get relief from wound healing and pain. They cooked the fish with spices like black pepper.^[16] Fresh fishes are cooked with local vegetables and used for the treatment of physical weakness by Bodo tribes in Kokrajhar, Assam.^[17] The brain of this fish is consumed raw by the karbi people when the fish sting them. Boiled fish is taken to regain strength after delivery by the Dimasa women.^[18] The therapeutic importance of *Heteropneustes fossilis* among different Assamese ethnic groups is summarized in Table 1.

Clarias magur

It is a type of air-breathing catfish that lives on the Indian subcontinent. *Clarias magur* is highly popular because of its therapeutic value among the Assamese people, much like *Heteropneustes fossilis*. In Assamese, it is called Magur Maas. In addition to its therapeutic value, it is also used in several Assamese rituals.

Table 1: Use of *Heteropneustes fossilis* in Assamese traditional medicine.

Tribe	Disease	Mode of Preparation	Mode of Administration
Karbi	Anaemia	Boiled fish is prepared as tonic.	Oral
Tea tribe	Wound healing	The fish is cooked with black pepper.	Oral
Bodo	Physical weakness	Fresh fishes are cooked with local vegetables.	Oral
Karbi	Sting by the fish	Brain of the fish is removed.	Oral

Table 2: Use of *Clarias magur* in Assamese traditional medicine.

Tribe	Disease	Mode of Preparation	Mode of Administration
Karbi	Small pox	Fish is cooked.	Oral
Dimasa	Weakness after delivery	Fish is boiled.	Oral
Indigenous people	Weakness	Fish is Prepared as soup with <i>Piper nigrum</i> and <i>Spinacia oleracea</i> .	Oral
Indigenous people	Chicken pox, Measles	Fried fishes with processed bamboo shoot (Kharisha).	Oral
Bodo	Malaria	Fresh fishes are cooked with local vegetable leaf, called jwглаori.	Oral
Tea tribe	Body ache	Cooked with spices like black pepper.	Oral
Indigenous people	Chicken pox	Magur is cooked with fermented bamboo shoot following specific recipe (known as hukoni).	Oral

Taxonomic review

Systematic position

Kingdom: Animalia

Phylum: Chordata

Class: Actinopterygii

Order: Siluriformes

Family: Clariidae

Genus: *Clarias*

Species: *Clarias magur* (Hamilton, 1882)

Vernacular names

English name: Asian catfish

Assamese: Magur

Hindi: Mangur

Karbi: Nagur

Dimasa: Nagen

Bodo: Magur

Characteristics

The body of the walking catfish is elongated. The body is mostly coloured grey or greyish brown, and it is frequently covered laterally in tiny white patches. The dorsal and anal fins of this catfish have long bases, and the anterior end of its body is covered with many pairs of sensory barbels. Although the skin is scaleless, it is

mucous-covered, protecting the fish while it comes out of the water. Behind the fins, it possesses a defensive structure that resembles a sting or thorn.^[19] *C. magur* was differentiated from *Clarius batrachus* based on the deeply serrated pectoral spine and the difference in head shape.^[20]

Traditional medicinal use

Cooked fish is eaten to cure smallpox by karbi people. Boiled fish is taken regularly by the dimasa women to relieve weakness after delivery.^[18] To relieve weakness, the fish is cooked as a dish using Black pepper and Spinach. The same study also documented that Fried fish with the processed bamboo shoot (Kharisha) is eaten to relieve infection of measles and chickenpox.^[21] Fresh fish is cooked with local vegetable leaves, called jwглаori and used for the treatment of malaria and sick by Bodo people.^[17] Indigenous people living nearby Gibbon wildlife Sanctuary, Jorhat, cook this fish with spices like black pepper and eat it to relieve body pain.^[16] It is well known that providing Magur supplements on a regular basis to persons with anaemia has a very significant effect, especially on undernourished children, new mothers, and young and teenage girls.^[22]

Clarias magur in Assamese rituals

Assamese people believe that people suffering from chickenpox get relief from the symptoms faster when they consume Magur. Hukoni is a specific recipe prepared by cooking Magur fish with bamboo shoots which is offered to the patient on a specified day (5th or 7th day) during the course of infection. Patients eat this recipe praying to God (known as Aai in Assam, which means Mother).^[22] The usage of *Clarias magur* in traditional Assamese medicine and customs is summarised in Table 2.

CONCLUSION

These medicines have been used by different ethnic and non-ethnic indigenous peoples of Assam since ancient times. They are used as medicines to treat a variety of illnesses. In this review, it has been found how the Karbi, Bodo, Dimasa and other Assamese people employ stinging fish to treat conditions like anaemia and maternal weakness in women. These tribes also consume Asian catfish to treat anaemia, physical weakness etc. There is no information available on the use of these fishes in traditional Assamese medicine among the Mishing, Tiwa or other ethnic groups of Assam. Some in-depth field studies in this regard will provide a lot of information about the therapeutic and other religious uses of these catfishes. The use of these catfish to get

relief from weakness and other symptoms during the menstrual period by Assamese women is quite popular in rural areas. Gathering sufficient information on the therapeutic use of these fishes and further studies of their molecular characteristics might reveal information on their medicinal value.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

Authors' Contributions

A literature survey and article screening was done by both authors. Writing the draft manuscript and revisions were done by both authors.

ABBREVIATIONS

SIS: Small Indigenous Fish; ***C. magur.*** *Clarias magur.*

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