

Various Ethno Medicinal Plants used in the Preparation of *Apong*, a Traditional Beverage use by Mising Tribe of upper Assam

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ABSTRACT

The main objective of this article is to document and represent the medicinal herb used for the preparation of *Apong* by the Mising tribal community. North-East India is inhabited by many indigenous tribes and as a part of their socio-cultural life, most of these tribes prepare their own household liquors, mostly using rice grains as the substrate. Each of the tribes also prepares their own unique starter cultures to carry out fermentation, and each type is a mixture of different parts of various plant species. There are 39 plants documented here which possess distinct medicinal values. The paper reflects the rich ethno medicinal values of the herbs. The informations are collected by the active field survey in three villages of Sibsagar district in Assam, and through the available local literature. This review will help to researchers and scholars to investigate the proper bio-molecules and its' accessible pharmacological responses. The further scrutiny and evaluation of the safety parameters of each component of the herb used in *Apong* may be investigate to develop a pharmacologically potent lead molecule.

INTRODUCTION

The North-East region of India (22⁰-29⁰ N; 89⁰-97⁰ E) comprises the Sikkim and the seven sister states namely Assam, Arunachal Pradesh, Nagaland, Meghalaya, Mizoram, Manipur and Tripura. Nearly 40% of the total geographical area of this region is covered by evergreen forest. Each state of the North-east is inhabited by number of ethnic tribes characterized by their native languages, rituals, costumes and housing patterns. The consumption of rice beer prepared from rice is a common practice among many tribal Communities residing in the North-Eastern states of India and many of them have been preparing it since time immemorial (Ghosh and Das, 2004; Jeyaram *et al.*, 2008).

It also plays an important role in the socio cultural life of the tribal people as it is found to be associated with many occasions like merry making, ritual ceremonies, festivals, marriages and even death ceremonies (Saikia *et al.*, 2007). The preparation and consumption of this type of liquor emerged mainly due to the climatic conditions and discovering the use of surrounding natural resources (Roy *et al.*, 2004).

It is being use for medical purpose also. *Mising*, (Mi-sing) is a tribal community belonged to Mongoloid group – a multitude of people that followed Austro-Asiatic races to India (Singh *et al.*, 1996). They are one of the plain tribe of Assam and are found in far flung areas of Brahmaputra valley especially in Dhemaji, Lakhimpur, Sonitpur, Sibsagar district of Assam and are involving in collection of fire woods, in cultivation of agricultural land and also earnings their live hoods by government services etc. The peoples of this community are highly passionate for cooking traditionally unique food items, not only this they have the keen knowledge for differentiate the various folklore medicines. *Misings* have distinct entities from the rest of the tribes of Assam with their special culture and tradition (Baruah and Kalita, 2007). The rice beer prepared by the *Misings* is known as *Apong* and the starter cake is called as *aopo pitha*. *Apong* forms an integral part of the culture, traditions and rituals of this tribe. During Ali-Aye Ligang (traditional festival of *mising* tribe) *Apong*, along with chickens and pigs is offered to the spirits to placate them. The recipes of these brews are rolled down through generation-wise with or without modification. As a whole, the steps for processing of brews are complicated, and are generally the women who are engaged in preparing rice beer.

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Method of preparation of *Apong*

The leaves of the different plant needed for preparing *apop pitha* is collected and cleaned. Then they are dried by placing on a bamboo mat. They can be used either fresh or dried in the sun before addition. Soaked rice and the leaves are grinded separately in a wooden grinder and they are mixed together in a vessel with a little of water. From the dough, oval shaped balls of about (6 cm x 3cm) are made and dried in the sun. The earthen pot is use as a fermentor and before starting the fermentation process, it is fumigated by placing it on a bamboo frame constructed over the fire place until the pot turns blackish .There after the boiled rice are spread over a large banana leaf and allowed to cool. To this powdered *apop pitha* (Fig 2) is added (1 *apop pitha* for 1 kg of rice) and the whole mixture is kept inside the fermentor and the mouth of the pot is covered with banana leaves or leaves of *bhilongoni* (*Cyclosorus exlensa*) (Fig 3).The fermentor is left for a period of at least 5 days. A little water is added to the fermented product and is filtered to get the *apong* (Das *et al.*, 2012).



Fig. 1: Piper longum.



Fig. 2: Apop pitha.



Fig. 3: Cyclosorus exlensa.



Fig. 4: A *Mising* woman showing the *Apop pitha*.

MATERIAL AND METHODS

A field survey was carried out in the three villages of Sibsagar district viz. afolgaon, disangmugh, borhulapar for four months (September to December, 2012). The women of the *Mising* community were visited mostly and they were inquired about their practices for preparation, such as making of starter cakes along with plants and their parts added, fermentation procedure, duration and uses of the beverage. Some of the nearby fields and forests were visited along with local help and the available plant samples were collected. The information gathered was cross verified with available local literature, literatures published in the form of journals and literature available on the library of Dibrugarh University. The collected plant species were identified with the help of local floras. Later on, these samples were dried and made into herbarium and deposited to the herbarium of Department of Pharmaceutical Sciences, Dibrugarh University. The species are alphabetically arranged followed by common names, family, plant part used in *Apong* preparation and their medicinal values.

Table. 1: List of some indigenous plant species commonly use in *Apong* preparation.

Sl. No	Scientific Names	Vernacular name	Family	Plant part used in preparation of apong	Ethno medicinal value and mode of use
1	<i>Achyranthes aspera</i> L.	Bioni-hakuta	Amaranthaceae	Leaf	Leaf decoction is used in the treatment of cough(Buragohain <i>et al.</i> ,2011)
2	<i>Cinnamomum bejolghata</i>	Patihonda	Lauraceae	Leaves	Leaf is used as anti diabetic.
3	<i>Adhatoda Vasica(Nees)</i>	Titabahak	Acanthaceae	Leaves and Shoot	The juice of leaves is used as an expectorant and relieve cough (Kutum <i>et al.</i> ,2011)
4	<i>Ageratum conyzoides</i> L.	Gendelabon	Asteraceae	Flowers	Bruised leaves are applied to cuts and wounds as antiseptic. (Buragohain <i>et al.</i> ,2011)
5	<i>Ananas comosus</i> (L.) Merr.	Anaras	Bromeliaceae	Tender leaf base	Leaf base is crushed and the extract is given for amoebic dysentery and intestinal worms. (Sharma and Pegu , 2011)
6	<i>Artocarpus heterophyllus</i>	Kathalpat	Moraceae	Matured leaf	Leaves are antihelmenthic (Deka <i>et al.</i> .,2010)
7	<i>Asparagus racemosus</i> Willd.	Satmul	Liliaceae	Tuberous root	Root decoction is used as diuretic, ophthalmic, galactagogue (Sharma and Pegu , 2011)
8	<i>Cinnamomum tamala</i> Nees.	Tezpat	Lauraceae	Leaves	The leaves are useful in gonorrhoea, rheumatism, diarrhoea, enlargement of spleen and diabetes.(Sharma and Pegu , 2011)
9	<i>Capicum annum</i> L.	Jalokia	Solanaceae	Leaves	The roots are used in urinary troubles and Dysentery.
10	<i>Centella asiatica</i> L.	Bormanimuni	Apiaceae	Whole plant	The leaves are used in amoebic dysentery or any kind of liver problem(Sharma and Pegu , 2011)
11	<i>Clerodendrum Viscosum</i> L.	Dhapat tita	Verbenaceae	Leaves	Infusion of leaves is said to cure malaria(Buragohain <i>et al.</i> ,2011)
12	<i>Costus speciosus</i> (Koen.ex.Retz.) J.E. Smith	Jomlakhuti	Liliaceae	Leaves, Barks	Rhizome paste is given in jaundice (Buragohain <i>et al.</i> ,2011)
13	<i>Drymeria cordata</i> L.	Lai jabori	Caryophyllaceae	Young Leaves	Paste of whole plant is applied on tongue in fungal infection, juice is given in sinusitis. (Buragohain <i>et al.</i> ,2011)
14	<i>Gomphostemma parviflora</i> Wall.	Bhedaitita	Lamiaceae	Tender leaves	Leaves are used in Malaria.(Sharma and Pegu , 2011)
16	<i>Ipomoea aquatica</i> Forsk	Bam kolmou	Convolvulaceae	Leaves	Taken as a vegetable is said to be useful in diabetes and as galactagogue to nursing mother
17	<i>Ipomea mauritiana</i> Jacq.	Bhui komora	Convolvulaceae	Tubers	Tubers are used to reduce fever.
18	<i>Kaempferia rotunda</i> L.	Bhumichampa	Zingiberaceae	Tubers	The tubers are used for wounds, ulcers, tumors, swellings and gastroenteritis(Sharma and Pegu , 2011)
19	<i>Leucas plukenetii</i> (Roth) Spreng.	Durun	Lamiaceae	Leaf	Leaf juice is used in sinusitis (Sharma and Pegu , 2011)
20	<i>Lygodium flexuosum</i>	Kopou dhekia	Lycopodiaceae	Leaves	Antifungal property.(Kutum <i>et al.</i> ,2011)
21	<i>Melothrea heterophylla(Lour)</i> Cogn	Belipoka		Leaves	Roots have anticancer activity (Kardong <i>et al.</i> , 2012)
22	<i>Microsorium punctatum</i> (L.) Copel	Kapau dhekia	Polypodiaceae	Leaf	Leaf juice used as purgative, diuretic and healing wounds (Sharma and Pegu , 2011)
23	<i>Musa balbisiana</i> Colla	Musaceae	Bhimkol	Leaves	Young pseudo stems are eaten as vegetables. This is used as medicine against tuberculosis. (Kutum <i>et al.</i> ,2011)
24	<i>Naravelia feylavica(D.C)</i>	Goropsoi	Ranunculaceae	Leaves	The leaves are anthelmintic; they are useful for wounds and ulcers(Sharma and Pegu , 2011)
25	<i>Oldenlandia corymbosa</i> Linn	Banjuluk	Rubiaceae	Leaves	The plant is diuretic, stomachic, carminativeand used as liver tonic. It is also used in jaundice. (Sharma and Pegu , 2011)
26	<i>Oryza sativa</i> L.	Dhan	Poaceae	Rice grain	Rice-wash water is used in diarrhea and dysentery(Sharma and Pegu , 2011)
27	<i>Piper longum</i> L.(Fig. 1)	Pipoli	Piperaceae	Leaves	The fruits and the roots are eaten in the respiratory disorders, muscular pains, epilepsy and drowsiness.
28	<i>Piper nigrum</i> L.	Jaluk	Piperaceae	Seeds	The fruits are consumed in in-digestion, Body-ache and in the post labour ailment as well as in the bone fractures.
30	<i>Phlogacanthus thyrsoformis</i> (Hardw.)Mabb.	Titaphool	Acanthaceae	Flower	Eaten as vegetable is useful in rheumatism,anemia and cough.(Buragohain <i>et al.</i> ,2011)
31	<i>Psidium guajava</i> L.	Madhuriam	Myrtaceae	Leaves	Tender leaves are used in Amoebic dysentery(Sharma and Pegu , 2011)
32	<i>Pueraria tuberosa</i> (Roxb.ex Willd.)DC	Bhuin Komora	Papilionaceae	Tuberous roots	Tubers are used for fever(Sharma and Pegu , 2011)
33	<i>PtRIDium aquilinum</i> Kuhn	Bihlongoni	Polypodiaceae	Leaves	Leaves are antibacterial and germicidal(Kardong <i>et al.</i> , 2012).
34	<i>Saccharum officinarum</i> Linn.	Kuhiar	Poaceae	Leaves	The aerial part is used in jaundice, fever, and tooth-ache and stomach troubles
35	<i>Scoparia dulcis</i> L.	Bon chini	Scrophulariaceae	Leaves and Flourescence	Leaves and seeds are taken with water in diabetic treatment
36	<i>Selaginella species(Lour)</i> Cogn	Selaginella	Leaves	Whole plant	Roots have anticancer property
37	<i>Swernia chirata(Buch-Hem)</i>	Chirota tita	Gentianaceae	Leaves and barks	Decoction of bark is used as bitter tonic (Kardong <i>et al.</i> , 2012)

38	<i>Vitex negundo L.</i>	Posotia	Verbenaceae	Leaves Root, twigs, leaves	Leaves & roots are used as febrifuse and tonic(Kutum <i>et al</i> 2011)
39	<i>Zanthoxylum nitidum (Roxb.)</i>	Tezmori	Rutaceae	Root,stem, fruit	The stem and root extract is used in tooth-ache, stomach-ache and externally on boils (Buragohain <i>et al.</i> ,2011)

RESULT AND DISCUSSION

There are 39 species are recorded during investigation (Table- 1). Among them 7 species effect on gastrointestinal problem, 6 species effect on skin disease & respiratory ailments where as 4 species effect as anti-diabetic purposes, not only this other 2 species also effects individually on rheumatism, jaundice and as anti-malarial purposes. Remaining species are used as anti-helmenthic, galactogogue etc.

The infusion and decoction are the most commonly employed method adopted by the local people for the preparation of herbal medicines. Presently due to the deforestation and the up-gradation of the socio-economical life style of the tribal community the scarcness of the medicinal herb is now becoming a serious concern for the *Mising* community as their cultural identity is intertwined with these plants. Each of the beverages prepared is rooted with the socio-cultural practices of the individual tribes and also on various environmental factors.

Apart from imparting colour, flavour and sweetness to the beer, the various plants used in the starter culture are also said to have many medicinal properties. The quality of the starter culture is said to be dependent on the variety of plant parts used and on the maintenance of proper sanitary conditions. The nutrients present in the finished product give energy besides its soothing effect and other medical properties to the consumer. It works effective against Insomnia, headache, body ache, and inflammation, diarrhea, urinary problems, and expelling worms and as a treatment of cholera. (Samati and Begum, 2007; Deka and Sarma, 2010).

CONCLUSION

Rice beer is a traditional alcoholic beverage consumed on a daily basis by various ethnic tribes of North East India. This alcoholic beverage is believed to possess many medicinal and therapeutic properties possibly contributed by various indigenous herbs used in starter culture cake preparation.

The bioactive principles which contribute to its remarkable versatility in treating a wide range of illnesses may be targets for interdisciplinary research involving nutritionists, medical doctors, biotechnologists and agronomists which can give effective solutions for more productive and acceptable drugs molecules from the plant. These researches would further help not only in drug developments but will also open up prospects for their prosperous and profitable cultivation. This led to the development of the economical gradation of the tribal communities. This review will help to researchers and scholars to investigate the proper bio-molecules and its' accessible pharmacological responses.

The further scrutiny and evaluation of the safety parameters of each component of the herb used in *Apong* may be investigate to develop a pharmacologically potent lead molecule.

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