

Analgesic effect of two edible ingredients of Tribal people

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Abstract

The analgesic activity of the methanolic extract of young bamboo stem i.e *melocanna baccifera* and extract of *chakhwi* has been studied in acetic acid induced model. The result indicated that these possess significant analgesic activity at the dose of 150mg/kg bw. Both the activities were compared with standard drug aspirin.

Key words: *Melocanna baccifera*, *Chakhwi*, Analgesic activity, Acetic acid, aspirin.

Tripura is a small but beautiful hilly state with lovely green hills, and valleys, luxuriant forests, streams and small rivers. Nutritional biodiversity among the tribal people of Tripura is well known. Generally they use less amount of spices and least amount of oil. Maximum of them take dry fish in each recipe. *Chakhwi* is a popular food ingredients of Tribal people of Tripura. It is liquid in nature & alkaline in reaction. In Bengali, it is also known as *Kharpani*. To prepare *chakhwi*, Tribals burn dry leaves of bamboo, banana, sesame, plants, dry stem and shoots of bamboo etc. The burn ash is taken in a specially prepared basket called *cheyakhok* in *Kokborok* (The popular Tribal Language/dialect). The basket is hanged from a suitable support & a container is kept below it to collect the extract

of ashes. The water is poured slowly on ash to bath the whole ash. This extract is collected in the container is known as *chakhwi*. They prepare many more dishes mixing with *chakhwi*, along with other vegetables like *Muia* (Bamboo shoot) & *Laifung* (young banana stem) etc. Tribals consider this type of food as an easily digested food, which does not produce any disturbances in stomach. They also believe that this *chakhwi* with *muia* (known as *Muia-chakhwi*) acts as an antihelmintic and as a washing agent of bowel¹.

Few phytochemical analysis of plant ingredients used by Tribal people of Tripura is reported. Few food items/ingredients are *muia* (*Bambusa arundinacea*), *Khamka sikam* (*Solanum torvum*), *Khamka bilati* (*Solanum*

indicum), *Hukni Phantok* (*Solanum melongena*), *khokleng* (*Cajanus cajan*) etc.¹

In this part of research, we wanted to concentrate on one prepared food ingredient *chakhwi* and one plant originated raw food ingredient *muia*.

Tribal people of Tripura like to mix *chakhwi* with almost all curry/preparation. *Muia* is also used daily & vigorously by the tribal people by allowing it as one of the major ingredient of almost all curry.

Based on a preliminary survey conducted among the house wives of tribal family residing in North Tripura district, it has been observed that one adult consumes approximately 100-200 ml. of *chakhwi* per day in average and almost 250 gm of *muia* per day.

Let a review of literature is presented as below for *muia* & *chakhwi* and for leaves & shoots of bamboo, leaves of banana and leaves of sesame plant.

Nutraceutical” a term combining the words ‘Nutrition’ a ‘Pharmaceutical’, is a food or food products that provides health & medical benefits, including prevention & treatment of diseases. It has become a popular science during recent years. Studies on ancient and Tribal food materials will provide newer imports in the field of nutrition. A nutraceutical is demonstrated to have a physiological benefits and provide protection against chronic diseases². This term was coined in the late 1980s by

Dr. Stephen L. De. Felice, M.D. founder and chairman of the Foundation for Innovation in Medicine (FIM)^{2, 3}.

It is reported that tribal people of Tripura are also believing that *Muia* has certain medicinal importances and they are utilizing *Muia* for following medicinal purposes¹-

1. A thick transparent watery liquid is obtained from the hollow internodes of the female bamboo called *Tabashir* in Hindi, *Bansa Rochana* in Sanskrit and *Wakhwi* in *Kokborok*. This *Tabashir* is composed of silicic acid with traces of iron, calcium, alum, alkalies and organic matters. The *Tabashir* obtained from *bambusa arundinacea* is largely used as cooling tonic and as an aphrodisise. It is also useful in Asthma, Cough, Poisoning cases and paralytic complaints.
2. In Ayurveda, the stems and leaves are used in *Kapha*, diseases of blood, leucoderma, wounds and piles and inflammatory conditions.
3. According to the indigenous system of medicines, the burnt roots are applied to ring worm, bleeding gum and to painful joints.
4. The leaves are good as eye wash and in fever. The leaves are given to animals during parturition, from a supposition that they cause a more rapid expulsion of the placenta.

Nutrition has great deal for survival of society & for its people and exploration of the nutritional status is still unfolded in case of Tribal people of Tripura. That is why concentration is given on searching and followed by screening of different ingredients of their dishes.

The aim of this work is to study the analgesic activity of the two food ingredients *i.e chakhwi and muia*.

Preparation of extract of Muia :

Very young stem of bamboo (*Melocanna baccifera*) *i.e. muia* was collected. Removing the outer shell and internodes, 1 kg of *muia* was pieced (1.5mm in length), since certain compounds get denatured in sunlight it was dried under shade to avoid decomposition and followed by grinding into fine powder by electric grinder. After shed dry, it was 56.7 gm and soaked into 200 ml methanol. The extract was filtered through cotton followed by vacuum suction and allowed to dry to get powder like sample.

Preparation of sample-2 :

The prepared ingredient naming *Chakhwi* is also allowed to evaporate under very low flame. When the water portion was evaporated entirely, the whitish substance like powder is obtained and allowed to dry which is treated as sample 2.

Screening of Analgesic activity: Acetic acid induced method⁴:

The abdominal torsion test described by Witkin *et al.* was used to measure the analgesic activity of two unknown samples. Overnight fasted healthy adult albino swiss mice weighing between 18-25gm were divided into four groups of six animals. The animals were housed under standard environmental condition ($25\pm 2^{\circ}\text{C}$) and relative humidity

($50\pm 5\%$) and fed with standard diet and water ad libitum. The animals were acclimatized to laboratory environment for a period of 14 days before performing the experiments.

The first group of four comprised the control, and the remaining 3 groups were administered with Standard and test drugs. The test doses were prepared in distilled water to get the desired concentration of The extract.

The animals were orally pretreated with vehicle (0.5% CMC), aspirin (100mg/Kgbw) or samples (150mg/kgbw). 30 min later all mice were treated with intraperitoneal injection of 3% aqueous acetic acid solution (2ml/kg) to cause a typical stretching response. The mice were then kept in individual cages and writhing or stretching of each mouse was counted for a period of 10 min by myself and blinded individual. The analgesic effect was measured by calculating the mean number of writhing produces into treated groups compared with those of control group.

Result of the application of two samples are shown in the Table-1.

Mean number of writhing produces in control after injection of acetic acid is 76.33 ± 5.194 . But when we applied the sample the number of writhing reduces. In case of sample 1, the mean number is about 40.66 ± 1.647 and that of sample 2 is 38.33 ± 2.591 . The no. of writhing produces after injection of drug aspirin is 19.33 ± 2.171 . It has been observed that the affect of samples is not similar to those of standard drug aspirin, but both these samples have the analgesic activity.

Table-1. Results of Analgesic Activity (Acetic Acid –Induced writhing)

Sl. No.	Treatment	Dose	Number of writhing (in 10 min duration)	Total	Mean± SEM	Responders n/n
1	Control CMC/Water + Acetic acid	10ml/kg + 2ml/kg	TT 25, Ex L 30, AC-23	78	76.33 ±5.194	6/6
2			TT 32, Ex L 37, AC-26	95		
3			TT 28, Ex L 33, AC-21	82		
4			TT 30, Ex L 15, AC-31	78		
5			TT 22, Ex L 17, AC-19	58		
6			TT 26, Ex L 25, AC-16	67		
1	Aspirin(std) 100mg/kg + Acetic acid	100mg/kg + 2ml/kg	TT 12, Ex L 09, AC-05	26	19.33 ±2.171	6/6
2			TT-10, ExL-07, AC-07	24		
3			TT-09, ExL-06, AC-04	19		
4			TT-08, ExL-05, AC-06	19		
5			TT-11, ExL-03, AC-03	17		
6			TT-06, ExL-04, AC-01	11		
1	<i>Muia</i> + Acetic acid	50mg/kg + 1+2ml/kg	TT-09, ExL-25, AC-14	48	40.66 ±1.647	6/6
2			TT-15, ExL-18, AC-08	41		
3			TT-13, ExL-16, AC-10	39		
4			TT-10, ExL-20, AC-06	36		
5			TT-11, ExL-15, AC-15	41		
6			TT-18, ExL-14, AC-07	39		

1	<i>Chawkhwi</i>	150mg/kg	TT-18, ExL-09, AC-15	42	38.33 ±2.591	6/6
2	+		TT-18, ExL-07, AC-16	41		
3	Acetic acid	2ml/kg	TT-16, ExL-10, AC-08	34		
4			TT-19, ExL-06, AC-07	32		
5			TT-16, ExL-15, AC-17	48		
6			TT-11, ExL-08, AC-14	33		

TT-tongue twisting, Ex L-Extension of limb, AT- Abdominal torsion.

Highest mean writhing response of 40.66 ± 1.647 was shown by the animals after the injection of sample 1 (*muia*) at a dose of 150mg/kg bw and also the writhing response of 38.33 ± 2.591 was shown by the animals after the injection of sample 2 (*chakhwi*) given at a dose of 150mg/kg bw. On calculating the percentage of protection of sample 1 is shown 48.105% while of sample 2 is 49.805%. Hence it has been observed that more active is chakhwi in analgesic property. The values were considered significant when $p < 0.001$ as compared with control acetic acid treated groups vs test groups.

The Tribal's most common traditional two food ingredients are sample1 and sample

2. Both of these two food ingredients have analgesic property.

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