

## Phytochemical Studies and Analgesic Activity of Certain Ethno Medicinal Plants of Tripura State, India

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Methanolic extract of edible parts of certain plants (10 Nos.), growing in Tripura state, India, which are used by tribal people of Tripura, were able to exhibit analgesic activity in mice. Among them *S. torvum* showed comparable activity to the standard drug aspirin. Extracts were containing alkaloids and some other chemical constituents.

**Key Words:** Phytochemical, Analgesia, Writhing, Edible parts, Tribal of Tripura.

### INTRODUCTION

The three of nutrients that provide energy to the body are carbohydrate, fat and protein. As long as these nutrients are digested and absorbed, they can provide fuel for physical activity and for a multiple of less obvious body functions. Each of these nutrients serves functions in the body in addition of providing energy. Vegetables have a major role to provide the fuel in regulation of body function and this vegetables are marked and identified as different type of foods to the people in individual sector.

Our North-East India including Tripura is very rich in plant and herbs because of plenty of rainfall and availability of deep forest. More than 800 thousands tribals of Tripura belonging to 19 communities once in successive wages settled down on the hill tracks that were generally covered with vegetations cluster together so thick, that day light is obscured for many miles along. The commercial status of wild food resources in the state has come to the notice that a few items of forest are brought by the tribal in the village markets of tribal dominated areas and the same is mostly purchased in a lot by the vegetables vendors of the urban areas or by middlemen. It

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has been observed that non-traditional forest resources which are used by the hills people of Tripura have not yet attained the significance of economic use and botanical value despite their immense potentialities to serve as useful vegetables resources of the state with nutritive value<sup>1,2</sup>. The present investigation is designed to highlight the medicinal importance of few edible plants of tribal people of Tripura. In this regard, screening of analgesic activity of the methanolic extract of the edible parts of few plants used by tribal people of Tripura as described in Table-1, were carried out against acetic acid induced writhing<sup>3</sup> in mice and % protection are reported in Table-1 and compared with a standard drug-aspirin.

A preliminary qualitative phytochemical screening<sup>4,5</sup> of all methanolic extracts were also carried out for alkaloid, carbohydrate, glycoside, fixed oil and fat, saponins, tannin, protein/amino acid, steroid and anthraquinone. The observation was depicted in Table-1.

**Analgesic activity: Acetic acid induced writhing method:** Aspirin like non-narcotic analgesic activity of the test compounds was investigated by their ability to protect a painful writhing syndrome in mice. The syndrome is characterized by abdominal torsion, drawing up of hind limbs to the abdominal wall, marked contraction of the abdominal area and periodical arching of the back to rub the abdominal wall on the glazed surface on which the mouse was kept. Writhing was consistently produced in mouse by an intraperitoneal injection of 3 % aqueous acetic acid. Overnight fasted, healthy and adult male albino Swiss mice weighing between 18 to 25 g in groups of six were taken for present investigation. The crude extracts in DMF were administered, intraperitoneally in a dose of 100 mg/kg body weight. The control group of animal was given only DMF. One group of animals was administered with aspirin as standard, intraperitoneally in a dose of 100 mg/kg body weight. After a gap of 0.5 h of the administration of the test compounds all the groups of mice were given the writhing agent, 3 % aqueous acetic acid, in a dose of 2 mL/kg body weight, intraperitoneally. The writhings produced in these animals were counted for 0.5 h and the number of writhings produced in the treated groups was compared with those in the control group and the percentage protection was calculated as shown below:

$$\% \text{ Protection} = \frac{100 - \text{No. of wriths in tests} \times 100}{\text{No. of wriths in control}}$$

## EXPERIMENTAL

The edible parts of few plants used by tribal people of Tripura were collected from the local market of Agartala, Tripura, India and was authenticated by the expert of Tribal Research Institute, Agartala, Tripura.

TABLE-1  
PHYTOCHEMICAL OBSERVATION AND ANALGESIC ACTIVITY OF THE METHANOLIC  
EXTRACTS OF EDIBLE PARTS OF PLANTS

Name of the plant (family)/tested compound	Edible parts	Presence chemical entities	Average writhings within 0.5 h	% Protection to writhings ± SEM
Control	-	-	59.6	0.0
Aspirin	-	-	13.4	77.52 ± 1.99
<i>Dioscorea hamiltonii</i> Hook (Dioscoreaceae)	Tuber	Alkaloid, Carbohydrate, Glycoside, Fixed oil & fat, Saponins, Tannin	33.2	44.3 ± 2.44
<i>Ipomoea aquatica</i> L. (Convolvulaceae)	Twigs and Leaves	Alkaloid, Carbohydrate, Glycoside, Fixed oil & fat, Saponins, Steroid, Anthraquinone	35.2	40.94 ± 3.75
<i>Musa paradisiaca</i> L. (Musaceae)	Immature buds	Alkaloid, Carbohydrate, Saponins, Tannin	27.8	53.36 ± 3.48
<i>Solanum indicum</i> L. (Solanaceae)	Fruits	Alkaloid, Glycoside, Fixed oil & Fat, Tannin, Steroid	33.0	44.63 ± 1.52
<i>Solanum torvum</i> Swartz (Solanaceae)	Tender fruits	Alkaloid, Glycoside, Fixed oil & Fat, Tannin, Steroid	18.4	69.13 ± 2.94
<i>Monochoria hastata</i> L. (Pontederiaceae)	Stems and Leaves	Alkaloid, Carbohydrate, Fixed oil & Fat, Saponins, Tannin, Protein/Amino acid, Anthraquinone	32.6	45.30 ± 0.54
<i>Diaplazium polypodioides</i> Bl. (Athenaceae)	Tender coiled Leaves (Leaf buds)	Alkaloid, Carbohydrate, Fixed oil & Fat, Saponins	34.4	42.28 ± 1.65
<i>Alocasia odora</i> Roxb. (Araceae)	Stems	Alkaloid, Carbohydrate, Tannin, Protein/Amino acid	29.6	50.34 ± 1.28
<i>Canavalia gladiata</i> Jacq. (Papilionaceae)	Fruits	Alkaloid, Carbohydrate, Protein/amino acid	27.8	53.36 ± 3.07
<i>Lasta spinosa</i> L. (Araceae)	Stems and Leaves	Alkaloid, Glycoside, Fixed oil & fat, Tannin, Protein/amino acid	24.8	58.39 ± 1.39

Edible parts were cleared from extraneous matters and were shade dried with occasional shifting of material to avoid any growth of fungi. Completely dried edible parts were powdered and passed through sieve 40. Extraction was done by using Soxhlet apparatus in methanol. Liquid extract was collected, filtered, air dried followed by keeping at desiccator, for further works. The chemicals used for all purposes were of analytical grade.

## RESULTS AND DISCUSSION

All the methanolic extracts of edible parts of tested plants were containing alkaloids, as observed in qualitative phytochemical screening. Extracts were also containing some other chemical entities as indicated in Table-1. Extract of the edible parts of *Canavalia gladiata* was showing only to contain carbohydrate and protein/amino acid along with alkaloid.

Significant analgesic activity of methanolic extracts of edible parts of tested plants were observed and almost at par activity was also found in one case in compare to standard drug aspirin. The dose was fixed as ¼th of extracts, considering a man can consume 400 mg extracts obtained from edible parts/kg body weight, per day. It was found that tender fruits of *Solanum torvum* was able to show % protection against acetic acid induced writhing highest among all other tested extracts as 69.13, which was almost nearer to the effect of aspirin as 77.52. Significant activities were found in the extract of *A. odora*, *M. paradisiaca*, *C. gladiata* and *L. spinosa*. Interestingly all the plant extracts were able to show analgesic activity in mice.

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