

**ANTINOCICEPTIVE ACTIVITY OF CRUDE ETHANOLIC EXTRACT OF
*PAEDERIA FOETIDA, BUTEA MONOSPERMA, BOMBEX CEIBA***

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Summary:

Paederia foetida (Local name- Gondhal), *Butea monosperma* (Local name- Palash) and *Bombex ceiba* (Local name- Shimul Tula) are traditionally employed to cure various disorders. The extracts of these three traditionally used medicinal plants available in Bangladesh were tested for their potential antinociceptive of acetic acid induces writhing method. Ethanolic extract of the aerial part of *Paederia foetida*, gums of *Butea monosperma* and barks of *Bombex ceiba* showed significant antinociceptive activity.

Key Words: *Paederia foetida*, *Butea monosperma*, *Bombex ceiba*, Antinociceptive.

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Introduction

Leaf stalks of *Paederia foetida* are commonly up to 6 cm long. Leaves and stems have a disagreeable odor, especially when crushed. The flowers are small, grayish pink or lilac in color and occur in broad or long, ‘leafy’ curving clusters. Petals are jointed to form a corolla with 5 spreading lobes. Fruits persist through winter and are shiny brown, and nearly round, and are typically 0.7 cm wide. Inside are two seeds that are black, round and often dotted with white, needle-shaped crystals¹.

Butea monosperma is a small to moderate sized tree or shrub growing to 3 to 5 m tall. The leaves are bipinnate, 20-40cm long, bearing 3-10 pairs of pinnate, each with 6-10 pairs of leaflets 15-25 mm long and 10-15mm broad. The flowers are borne in racemes up to 20 cm long, each flower with five yellow, orange or red petals. The fruit is a pod 6-10cm long².

Bombex ceiba a member of the Malvaceae family it also including Indian kapok, the red cottontree and the simal tree. It is native to tropical Asia, temperate Asia and parts of austrilia. The trunk and stems of young trees are covered in sharp outgrowths to deter herbivores. Flowering occurs between March and April for three weeks and fruit is producing quit rapidly in a period of one month. The bisexual flowers require out crossing for successful fertilization.³

Leaf juice is astringent and given to children in diarrhea. Poultice of leaves is used to relive distention due to flatulence in herpes and retention of urine. Decoction of leaves dissolves vesicle calculi and acts as diuretic. Leaves and roots are also regarded as tonic and stomachic and given to stick and convalescing patients, used as remedies for diarrhea, dysentery and rheumatic affections. Roots and barks are used as emetic and in the treatment of piles, inflammation of spleen and pain in chest and liver. Fruit is specific against toothache⁴.

Infusion of flowers is pectoral & febrifuge and is used in the treatment of coughs, bronchitis, asthma, chronic catarrh, malarial fever and intestinal worms. Leaves are used as purgative, abortifacient, febrifuge and tonic. Extraction of leaves is anticancer and fungi toxic. Juice from the leaves is said to cure fever. Root are acrid and astringent and are given in infantile convulsions. Decoction of wood and bark is an emmenagogue and used in diarrhea, dysentery and certain skin diseases².

Various parts are used in fever, small pox, bleeding gums, toothache, caries, sores in mouth, enlarged spleen, haematouria, pneumonia, rheumatism, leprosy. Bark is demulcent and tonic and is in leucorrhoea, diarrhea, dysentery, boils, acne, pimples and cough. Roots have stimulant, tonic properties².

Materials And Methods

Plant Materials:

For the present investigation the plant *Paederia foetida* Linn. (Family- Rubiaceae) was collect from Khulna, Bangladesh, in december, 2007 and was identified by Forestry Discipline, Life science school, Khulna University, Bangladesh. The plant *Butea monosperma* (Family- Fabaceae) was collect from Khulna University campus, Khulna, Bangladesh in October 2007 and was identified by Bangladesh National Herbarium, Mirpur, and Dhaka. (Accession number- 32091) and a voucher specimen was also deposited there. The plant *Bombex ceiba* Linn (Family- Bombacaceae) was collect from Khulna, Bangladesh in December 2007 and was identified by Bangladesh National Herbarium, Mirpur, Dhaka. (Accession number- 32093) and a voucher specimen was also deposited there.

Preparation of Extract:

About *Paederia foetida* 380 gm, *Butea monosperma* 428gm and *Bombex ceiba* 277gm of powered material was taken in a clean, flat bottomed glass container and soaked in 1200 ml of 80% ethanol. The container with its contents was sealed and kept for a period of 15 days accompanying occasional shaking and stirring. The whole mixture then underwent a coarse filtration by a piece of clean, white cotton material.

The filtrate (ethanol extract) obtained was evaporated under ceiling fan until dried. It rendered a gummy concentrate of reddish black color. The gummy concentrate was designated as crude extract of ethanol which is about 20, 12, 16 gm that mean % of yield = 5.26%, 2.80%, 5.78%

The extract thus obtained was used for pharmacological screening

Test For Different Chemical Groups:

Testing of different chemical groups present in extract represent the preliminary phytochemical studies. In each test 10 % (w/v) solution of extract in ethanol was taken unless otherwise mentioned in individual test (Evans, 1989). The reagents were used for the different chemical group test^{4,5,6}.

Table: 1 Result of different chemical group test

Ethanol Extract	Alkaloid	Glycosides	Steroid	Gums	Reducing sugars	Tannins	Amino acid	Saponins	Flavonoids
Aerial part of <i>Paederia foetida</i> Linn	+	+	+	+	+	-	-	-	-
Gums of <i>Butea monosperma</i>	+	+	+	+	+	+	-	-	+
Barks of <i>Bombex ceiba</i>	+	+	-	-	+	+	-	-	-

+: Positive result; -: Negative result

Antinociceptive Activity:

The acetic acid induced writhing method is an analgesic behavioral observation assessment method that demonstrates a noxious stimulation in mice. The test consists of injecting the 0.7 % acetic acid solution intra-peritoneal and then observing the animal for specific contraction of body referred as 'writhing'. A comparison of writhing is made between control, positive control (Diclofenac sodium), and test sample. Control and positive control (Diclofenac sodium) & test sample are given orally 30 minutes prior to acetic acid injection. If the sample possesses analgesic activity, the animal that received the sample will give lower number of writhing than the control, i.e. the sample having analgesic activity to inhibit writhing⁷.

Animals

Swiss-albino mice of either sex, aged 4-5 weeks, average weight 25-30 gm were used for the experiment. The mice were obtained from the Animal Research Division, International Centre for Diarrhoeal Disease and Research, Bangladesh (ICDDR, B) were

used for the experiments including analgesic and anti-diarrhoeal screening. They were kept in Standard environmental condition, had free access to standard food ICDDR, B formulated rodent food and water *ad libitum* and fasted 18hr prior to their use.

Table: 2 Effect of ethanol extract on acetic acid induced writhing in mice

Animal group	No. of mice	Total writhing	Mean writhing	% writhing	Inhibition of writhing	SD	SE	t-test (p-values)
Control	5	225	45	100	-	3.03	1.52	-
Diclofenac-Na(25mg/kg)	5	44	7.8	17.3	82.7	3.61	1.8	7.1 (p<0.001)
Aerial part of <i>Paederia foetida</i> Linn (500mg/kg)	5	100	20	44	56	3.27	1.64	11.16(p<0.001)
<i>Butea monosperma</i> (500mg/kg)	5	122	24.4	54.22	45.78	8.49	8.89	4.57(p<0.001)
<i>Bombex ceiba</i> (500mg/kg)	5	166	33.2	73.77	26.23	11.2	5.52	2.06(p<0.05)

: Results and Conclusions

From the result of different group test it was found that all the extract gave positive test for alkaloid, glycoside and reducing sugar. The ethanol extract of *Paederia foetida* Linn, *Butea monosperma*, *Bombex ceiba* produced statistically significant ($p > 0.001$, 0.001, 0.05) writhing inhibition in acetic acid induced in mice. The crude extract produced 56%, 45.78% & 26.23% inhibition of writhing at the oral doses of 500mg/kg body weight respectively. While the standard drug Diclofenac- Na inhibition was found to be 82.70% at a dose of 25 mg/kg body weight ($p > 0.001$). So the ethanol extract of *Paederia foetida* Linn, *Butea monosperma*, *Bombex ceiba* significantly suppressed the frequency of acetic acid-induced writhing in mice. Further studies are required to confirm this preliminary finding, which may provide rationale for ethnopharmacological uses of this plant.

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