

## Antipyretic Activity of the Ethanolic Extract of Diherbal Combination of Bamboo and Bhringraj

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### ABSTRACT

Bamboo is a perennial plant determined everywhere in the Earth besides alkaline soils, desert, and marsh. In current years, consciousness on plant studies has expanded everywhere in the global and proof display titanic ability of Bamboo as a medicinal plant that's utilized in numerous conventional structures of drugs like Ayurveda. Bamboo as a natural capsules have were given excessive momentum in worldwide fitness care structures. The useful healing impact of bamboo is visible of their endured use and blessings which can be tested scientifically wherein triterpenes and steroidal glycosides are recognized as essential phytoconstituents. The ethanomedical and pharmacological research on bamboo which include anticancer, antioxidant, antimicrobial, antidiabetic, anti ulcer, antifertility homes etc., are seriously reassessed on this paper. Though the ability of Bamboo is varied, extra studies inputs are required for seriously confident results. Fever isn't always a disease, however simply a signal of might also additionally exceptional disease . Body temperature can be raised with out pathological causes , as in exercising or in hyperthermia due to immoderate publicity to heat.

**Keywords:** Bamboo; Anti cancer; Anti diabetic; Healing impact; Cardio protection, Hyperthermia, antifertility.

### I. INTRODUCTION

- Plant are one of the important source of medicine. The application of plants as medicine dates back to the prehistoric period. Several indigenous drugs used in modern medicine have figured in ancient manuscripts such as Rigved , the Bible and Quran.
- Over six thousand years ago, the ancient chinese were the first to use natural vegetation as medicine.
- Bambusa arundinacea belongs to the family Poaceae (Graminae), commonly known as Baans, is a tall and thorny tree. A bamboo stem consists of nodes and internodes. At the node

are one or more buds which produce side branches.

- B. arundinacea such as root, shoot, leaf, flower and seed showed antidiabetic, anthelmintic, anti-inflammatory, estrogenic, antiulcer, antimicrobial, antifertility, wound healing, anti-arthritis activity.
- In India the Ayurvedic system of medicine has been in use for over three thousand years.
- HIPPOCRATES , the 'Father of medicine ' was the first to give a scientific explanation of disease.

### ANTIPYRETIC

- Fever is also known as pyrexia is defined as a temperature higher than 38.3 C (100.9 F) that lasts for more than three weeks with no obvious source despite appropriate investigation.
- Fever is not a disease, but merely a sign of may different disease . Body temperature may be raised without pathological causes , as in exercise or in hyperthermia resulting from excessive exposure to heat.

### TYPES OF FEVER

There are mainly four types of fever based on the fluctuation of body temperature

1. Intermittent Fever
2. Remittent Fever
3. Relapsing Fever
4. Constant Fever

### CAUSE OF FEVER

- ❖ Exogenous pyrogens
- ❖ Endogenous pyrogens
- ❖ Acute infections disease.
- ❖ Acute and prolonged pain.
- ❖ Extreme nervousness.
- ❖ Emotional stress.
- ❖ Trauma or injury to body tissues.

### SIGNS AND SYMPTOM OF FEVER

- ❖ Rapid pulse
- ❖ Rapid shallow respiration
- ❖ Cold, then hot skin

- ❖ Headache
- ❖ Sweating and shaking chill
- ❖ Anorexia
- ❖ Nausea and vomiting
- ❖ Dehydration
- ❖ Constipation
- ❖ Sweating

#### COMPLICATIONS OF FEVER

- ❖ Sinusitis
- ❖ Bronchitis
- ❖ Pneumonia
- ❖ Sleep disruption

#### TREATMENT OF FEVER

##### Some antipyretic drugs for the Treatment of Fever

- ❖ NSAIDS
  - ibuprofen,
  - ketoprofen and
  - nimuslide
  - Aspirin and related salicylates
  - Paracetamol
  - Metamizole
  - Phenazone (antipyrine)

#### PLANT PROFILE

In distinction to its name, Bamboos are classified under the subfamily Bambusoideae. Few examples of Bamboo genera are Bambusa, Chusquea, Phyllostachys, Gigantochloa and Schizostachyum. These are about 10 genera and 1450 species.



#### Scientific classification

- Kingdom: Plantae
- (unranked): Angiosperms
- (unranked): Monocots
- (unranked): Commelinids
- Order: Poales
- Family : Poaceae
- Subfamily : Bambusoideae
- Supertribe : Bambusodae

There are approximately 60 to 70 genera and over 1,200 - 1,500 species of bamboo in the world. About half of these species grow in Asia, most of them within the Indo-Burmese region which includes 136 species under 23 genera which are available only in India. Most of the bamboos grow in a warm climate, abundant moisture, and productive soil, all though some do grow in reasonably cold weather about 20 °C. In recent years, focus on plant research has increased all over the world and evidence show immense potential of Bamboo as a medicinal plant which is used in various traditional systems like Ayurveda, Unani

etc., Bamboo as a herbal drugs have got extreme momentum in global health care systems.

The hypoglycemic properties of extracts of bambusa leaves have also been established. Flavonoid-rich bamboo leaf extract has multiple biological effects, such as anti-free radical, antioxidation, anti-aging, anti-fatigue, anti-bacterial, antiviral, and prevention of cardiovascular diseases. Hence bamboo can be used as a pharmaceutical intermediate, dietary supplement, cosmetic ingredient, and food additive

#### Growth and Morphology

Bamboo is divided into two parts, one is the rhizomes and other is the culms. The underground parts of bamboo is known as rhizome.

Most of bamboo culms are cylindrical and hollow, with diameters ranging from 0.25 inch to 12 inches, and height ranging from 1 foot to 120 feet .

Bamboo has 40 to 50 stems inches one clump, which adds 10 to 20 culms yearly. Bamboo can reach its maximum height in 4 to 6 months

with a daily increment of 15 to 18 cm (5 to 7 inches) Culms take 2 to 6 years to mature, which depends on the species .

#### Common names and distribution in India

- English:- Bamboo, Bamboo manna, Giant Thorny Bamboo
- Hindi:- Bans-lochana, Vanoo, Banz
- Gujarati:- Toncor, Wans, Vas-numitha
- Bengoli:- Bans-Kapur, Baans, Baroowa Bans
- Sanskrit:- Vanshalochana,
- Marthi:- Bansa, Baambii,
- Tamil:- Munga-luppa, Mullumangila, Mungil Telugu

#### Chemical composition

The major constituents of cellulose, hemi-cellulose and lignin,(90% of the total mass)

The minor constituents are resins, tannins, waxes and inorganic salts.

It contains about-

- 2-6% starch,
- 2% deoxidized saccharide,
- 2-4% fat, and
- 0.8-6% protein

#### Medicinal uses

- It is used as Anti-diabetic
- It is used as Anti ulcer
- It is also used as Anticancer
- It is used as Antioxidants
- It is used as Anti microbial
- It is used as Antipyretics
- It is used as Anti-inflammatory.

#### Pharmacological Profile

- Anti-Cancer Activity
- Anti-Oxidant Activity
- Anti-Microbial Activity
- Anti-Diabetic Activity
- Anti-Ulcer Activity
- Anti-Inflammatory Activity
- Antifertility Activity
- Antihypertensive Activity

## II. MATERIAL AND METHODS:

**Plant material:** The matured leaves of Bambusa arundinaceae used for the present studies were collected from local market, Lucknow, India and its identification and authentication were done from National Botanical Research Institute (Council of Scientific and Industrial Research), Lucknow-226001, India (Ref. No: NBRI/CIF/rb-4/411/2013). Finally leaves were subjected to size reduction to get coarse powder and then passed through Sieve No. 40 to get uniform powder. After seaving the

powder was used for extraction process for preparing ethanolic extract: The powdered was subjected in to Soxhlet for extraction with ethanol for 6 h at 50 °C. The resulting crude extract after evaporation of the ethanol was washed with petroleum ether, chloroform and ethyl acetate successively. Percentage yield of the obtained crude extract was calculated. EEBA were subjected to various chemical tests for determination of various phytochemical constituents present in it, according to standard protocols . Animals: Male albino wistar rats weighing between 160-180 g were housed in polypropylene cages (22.5 × 37.5 cm<sup>2</sup>) and maintained under standard laboratory environmental conditions; temperature 25 ± 2 °C, 12 h light: 12 h dark cycle and 55 ± 10% relative humidity with free access to standard pellets and water, ad libitum. The experimental protocols were approved by the Institutional Animal Ethics Committee, which follow the guidelines of the Committee for the Purpose of Control and Supervision of Experiments on Animals (CPCSEA) and conform to the international norms of the Indian National Science Academy. Ethical norms were strictly followed during all experimental procedures [Hygia/M.Pharm./02/2013-14].

#### Phytochemicals Screening

- ❖ Shoot has active constituents such as oxalic acid, reducing sugars, resins, waxes, HCN, benzoic acid, diferuloyl arabinosyl anhexa saccharide, diferuloyl oligo saccharide, (5,5'-di--(diferul-9, 9'-dioyl)-[α-Larabino furanosyl-(1→3)- O-β-Dxylopyranosyl- 9 (1→4) -D-xylopyranose] (taxiphyllin).
- ❖ Seed contain arginine, cysteine, histidine, isoleucine, leucine, lysine, methionine, phenylamine, threonine, valine, tyrosine, niacin, riboflavin, thiamine.
- ❖ Leaves mainly contain proteins like gluteline, lysine, methionine, betain, cholin, proteolytic enzymes like nuclease and urease [13].
- ❖ In this plant, triterpenes and steroidal glycosides are the major phytoconstituents.
- ❖ Natural products belonging to saponins, diterpenes, triterpenes, phenols, tannins, and flavonoids were shown to be present in both the ethanolic and aqueous extracts of Philippine Bamboo, Schizostachyum lumampao, Leaves [15].
- ❖ Qualitative Phytochemical Screening of Ethanolic and Aqueous Extracts of Philippine Bamboo, Schizostachyum lumampao, Leaves illustrated the presence of saponins, Diterpenes, Phenols, phytosterols, Tannins and

Flavanoids in the ethanolic extract where as phytosterols were absent among these in the water extract [15].

**Anti-pyretic activity:**

- Brewer’s yeast pyrexia model:
- The antipyretic activity was evaluated with fever induced by Brewer’s yeast following the established method 34, 35 in rats with some modifications. At zero hour, the basal rectal temperature of each rat was recorded using clinical digital thermometer. Pyrexia was induced by subcutaneous injection of 15% w/v suspension of Brewer’s yeast in distilled water at a dose of 10 ml/kg body weight. After 18 h of Brewer’s yeast injection the rise in rectal temperature was recorded and only animals showing an increase in temperature of at least 0.6 °C (or 1°F) were selected for the study. The animals were randomly divided into four groups, each group contains six rats. Group I received normal saline orally. Group II was given standard drug paracetamol at the dose of 150 mg/kg perorally. Groups III and IV received EEBA at oral dose of 100 mg/kg and 200 mg/kg respectively. After the treatment, the temperature of all the rats in each group was recorded periodically at 0 h, 1 h, 2 h, 3 h, 4 h and 5 h of drugs administration. Statistical analysis: All values were expressed as mean ± S.E.M. and data were analyzed by Graph Pad Prism using One-way analysis of variance followed by dunnett’s test. P < 0.05 was

considered significant. **RESULTS:** Preliminary phytochemical screening: Preliminary phytochemical investigations showed the presence of flavonoids, alkaloids, steroids, carbohydrates, proteins and amino acids, tannins and phenolic compounds as major secondary metabolites. Estimation of acute toxicity: EEBA found safe at all tested doses (up to 2000 mg/kg) and did not show any noxious symptom in rats like sedation, convulsions, diarrhoea and irritation. During the 48 h assessment, no mortality was found.

**III. RESULTS**

**Preliminary phytochemical screening:**

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**Anti-pyretic activity: Brewer’s yeast pyrexia model:** EEBA 100mg/kg and 200 mg/kg significantly (P <0.0001) attenuated hyperthermia in rats. The inhibition was dose dependent. EEBA at 200 mg/kg showed maximum antipyretic effect and returned body temperature to normal levels (P < 0.0001) (**Table 3**)

**TABLE 3: EFFECTS OF EEBA ON BREWER'S YEAST-INDUCED PYREXIA IN RATS**

Group	Dose	Route	Rectal tmp. (c) after yast induction					
			Initial	5 hours	10hours	15hours	20hours	25hours
Control	10 ml/kg	i.p.	37.15±0.08	37.17±0.03	37.35±0.06	38.13±0.05	39.2±0.07	38.25±0.08
Paracetamol	150mg/kg	p.o.	36.21±0.06	36.64±0.07	37.13±0.04	38.17±0.09	37.32±0.05	37.15±0.07
EEBA	100mg/kg	p.o.	37.25±0.07	37.17±0.10	37.75±0.03	37.90±0.04	38.05±0.08	38.06
	200mg/kgp.	p.o.	37.25±0.06	37.30±0.06	38.15±0.05	37.25±37.	37.37±0.08	37.07±0.00

- Data are expressed as mean ± S.E.M.; n = 6. \*Significant difference (\*\*P < 0.001 and \*\*P < 0.0001) in comparison to control

**IV. DISCUSSION AND CONCLUSION**

The present study revealed that ethanolic extract of Bambusa arundinacea leaves (EEBA) possessed significant dose dependent analgesic and antipyretic activities in experimental animals. The analgesic activity of ethanolic extract of Bambusa arundinacea leaves was evaluated using tail immersion test and hot plate test models of analgesia. The antipyretic activity of ethanolic

extract of Bambusa arundinacea leaves was evaluated using brewer’s yeast pyrexia model.

In the antipyretic testing model, EEBA 100 mg/kg and 200 mg/kg markedly decreased elevated body temperature but not in control animals. Brewer’s yeast-induced fever is called pathogenic fever. Its etiology includes production of prostaglandins, particularly PGE2 appears to be a final pathway responsible for fever production induced by several pyrogens 34. Most of the

NSAIDS show the antipyretic activity by inhibiting the prostaglandin synthesis. It is therefore suggested that the antipyretic effect of EEBA occurs in a similar fashion as paracetamol.

In conclusion Bamboo is a less explored plant with high therapeutic potential. There is a need for extensive studies in bamboo apart from its use in food and craft making. The ethnopharmacological uses of bamboo need to be substantiated with strong scientific studies for its extensive usage in various therapies.

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