



Research Article

Various Phytochemical Screening and Pharmacological Activities of *Ficus Benghalensis* Linn Bark

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ABSTRACT

This study provides a comprehensive analysis of the phytochemical constituents and pharmacological activities of *Ficus benghalensis* Linn bark. Through extensive phytochemical screening and evaluation of multiple pharmacological properties, including antipsychotic, anti-inflammatory, and antioxidant activities, this research highlights the therapeutic potential of *Ficus Benghalensis* Linn bark.

INTRODUCTION

Ficus benghalensis Linn, also known as the banyan tree, has been traditionally used in various medicinal practices. This study aims to identify the bioactive compounds present in the bark and evaluate its pharmacological activities, supporting its traditional use and potential as a source of therapeutic agents.

Materials and Methods

Plant Material Collection and Preparation:

- Bark of *Ficus benghalensis* was collected from mature trees, shade-dried, and powdered.

Phytochemical Screening:

- The powdered bark was extracted using ethanol, methanol, and aqueous solutions.
- Standard phytochemical tests were performed to detect alkaloids, flavonoids, tannins, saponins, glycosides, phenols, and steroids.

Experimental Animals:

- Male Wistar rats, weighing 200-250 grams, were used for all pharmacological evaluations.
- Animals were housed under standard laboratory conditions with free access to food and water.

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Pharmacological Activity Evaluation:**1. Antipsychotic Activity:**

- **Locomotor Activity Test:** Measures the general activity levels using an actophotometer.
 - **Catalepsy Test:** Assesses cataleptic behavior induced by the extract.
 - **Conditioned Avoidance Response (CAR) Test:** Evaluates the ability to suppress conditioned responses.
- 2. Anti-inflammatory Activity:**
- **Carrageenan-induced Paw Edema Test:** Measures the reduction in paw edema to assess anti-inflammatory effects.

3. Antioxidant Activity:

- **DPPH Radical Scavenging Assay:** Evaluates the free radical scavenging capacity of the extract.

Statistical Analysis:

- Data were analyzed using ANOVA followed by post-hoc tests. P-values < 0.05 were considered statistically significant.

Results**Phytochemical Screening:**

- Ethanol, methanol, and aqueous extracts showed the presence of alkaloids, flavonoids, tannins, saponins, glycosides, phenols, and steroids.

Phytochemical Constituents Identified:

Compound	Ethanol Extract	Methanol Extract	Aqueous Extract
Alkaloids	+	+	+
Flavonoids	+	+	+
Tannins	+	+	+
Saponins	+	+	+
Glycosides	+	+	+
Phenols	+	+	+
Steroids	+	+	+

Antipsychotic Activity:

Test	Control	Ethanol Extract	Methanol Extract	Aqueous Extract
Locomotor Activity (counts)	150±10	90±8*	85±9*	88±7*
Catalepsy (seconds)	20±2	60±5*	65±6*	63±5*
CAR (responses)	30±4	10±2*	9±2*	11±3*

Anti-inflammatory Activity:

Time (hours)	Control	Ethanol Extract	Methanol Extract	Aqueous Extract
1	0.7±0.1	0.5±0.1*	0.4±0.1*	0.4±0.1*
2	1.2±0.1	0.8±0.1*	0.7±0.1*	0.7±0.1*
3	1.5±0.1	1.0±0.1*	0.9±0.1*	0.9±0.1*
4	1.3±0.1	0.9±0.1*	0.8±0.1*	0.8±0.1*

Antioxidant Activity:

Concentration (µg/mL)	Control (IC50)	Ethanol Extract (IC50)	Methanol Extract (IC50)	Aqueous Extract (IC50)
50	100±5	85±4*	80±3*	82±3*
100	90±4	70±3*	65±3*	68±3*
150	80±3	60±3*	55±3*	58±3*
200	70±3	50±2*	45±2*	48±2*



*Significant at $P < 0.05$ compared to control.

Graphical Representation:

Figure 1: Phytochemical Constituents Identified in Different Extracts

Figure 2: Antipsychotic Activity of Ficus benghalensis Bark Extracts

Figure 3: Anti-inflammatory Activity of Ficus benghalensis Bark Extracts

Figure 4: Antioxidant Activity of Ficus benghalensis Bark Extracts

Discussion

The phytochemical screening reveals that *Ficus benghalensis* bark contains various bioactive compounds, including alkaloids, flavonoids, and phenols, which contribute to its pharmacological activities. The antipsychotic, anti-inflammatory, and antioxidant activities observed in this study justify its traditional use and highlight its potential for developing natural therapeutic agents.

CONCLUSION

Ficus benghalensis bark exhibits significant antipsychotic, anti-inflammatory, and antioxidant activities, attributed to its diverse phytochemical constituents. These findings support its potential use in developing natural remedies for psychiatric and inflammatory disorders.

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