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Research Article

**IN-VITRO ANTI INFLAMMATORY ACTIVITY OF DRIED
LEAVES OF *BORASSUS FLABELLIFER*****Ch. Krishna Mohan*, V. Soundarya, R. Vasanth Kumar, L. Kiran Kumar, K. Vamshi
Sharathnath, B. Narender**Nalla Narasimha Reddy Education Society's Group of Institutions, School of Pharmacy
Hyderabad, Telangana, India.**Abstract:**

The *Borassus flabellifer* is a tall, erect palm, easy to recognize by its large, fan-shaped leaves which are quite unlike the pinnate leaves of other palms. The different parts of the plant are used for ailments like secondary syphilis, anti periodic, heart burns, liver and spleen enlargement. The chemical constituents of *Borassus flabellifer* include gums, albuminoids, fats, steroidal glycosides and carbohydrates like sucrose. The fresh pulp is reportedly rich in vitamins A and C. The fresh sap is reportedly a good source of vitamin B-complex. The male inflorescence constitutes borassosides and dioscin, spirostane-type steroid saponins. Though the plant has pharmacognostical potentials no standardization has been done pharmacologically, hence form the basis for performing the work. These data's would help in the development of a leaf profile for the plant.

Keywords: *Borassus flabellifer*, borassosides, anti inflammatory activity, vitamin A.

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INTRODUCTION:

The *Borassus flabellifer* is a tall and erect palm, with large, fan-shaped leaves which are quite unlike the pinnate leaves of other palms. *Borassus* is from a Greek word describing the leathery covering of the fruit and *flabellifer* means "fan-bearer". Synonyms of the plant include jiggery palm, Palmyra palm, toddy ALM, toddy palm, and wine palm. The Palmyra tree is the official tree of Tamil Nadu, highly respected in Tamil culture; it is called "karpaha" or celestial tree because all its parts without exception have a use. It is a natural symbol tree of Cambodia. This species is globally distributed from Africa to Australia. Within India, it is found throughout tropical regions, especially along the peninsular coast and in West Bengal and Bihar. It is often cultivated. The uses to which various parts of the tree are put are innumerable. Hindus and Buddhists both venerate this tree because sacred writings were inscribed on its leaves in olden times. The Palmyra is one of the most valuable and important Indian trees. It is not indigenous to this country but is extensively cultivated as it readily propagates itself in regions where it is abundant; it is also found growing wild. The uses to which various parts of the tree are put are innumerable.

The hard outer wood is universally employed for posts, rafters and domestic purposes, but it is of no great strength and iron nails rust rapidly in it. The jelly like pulp of the fruit and the soft kernels of young fruit are pleasant to eat, while the germinated nuts, with their enlarged, fleshy embryos are cooked and eaten as vegetables. The mid-ribs of the leaves and the fibers from their stalks are used in brush-making and the web-like substance at the base of young leaf stalks is used for straining the toddy and for making into torches. The chief product of the Palmyra however is arrack or toddy the intoxicating drink of the country. Before fermentation it is a saccharine juice which, when freshly drawn before sunrise, makes a tasty and health giving drink and, taken in large morning doses, has a laxative effect. Hot, sunny and well drained conditions are suitable for the plant to grow. It is drought tolerant but cold sensitive. Propagation is usually done by means of seeds, especially when the seeds are its final position. The flowering and fruiting time of the plant is usually from February April. The different parts of the plant is used for the various ailments like secondary syphilis, anti periodic, heart burns, liver and spleen enlargement etc. Other than these pharmacological uses the juice of the plant is used in preparation of health drinks, jellies etc.

Classification

Kingdom	Plantae
Infra-phylum	Angiosperms
Order	Arecales
Family	Arecaceae
Subfamily	Coryphoidae
Genus	Borassus
Species	Flabellifera
Botanical name	Borassus flabellifer

Description of the plant

Borassus flabellifer is a promising species in the trumpet vine family, Arecaceae that is native to Indian sub continents and south East Asia with many synonyms and common names. Synonym include Asian palmyra. The male flowers are less than 1 cm long and form semi-circular clusters, which are hidden beneath scale-like bracts within the catkin-like inflorescences. In contrast, the female flowers are golf ball-sized and solitary, sitting upon the surface of the inflorescence axis. After pollination, these blooms develop into fleshy fruits 15–25 cm wide, each containing 1-3 seeds. The fruits are black to brown with sweet, fibrous pulp and each seed is enclosed within a woody endocarp. Young Palmyra seedlings grow slowly, producing only a few leaves each year (establishment phase), but at an as yet undetermined time, they grow rapidly, producing a substantial stem.

Ethno botany

- The plant has been used traditionally as a stimulant, Anti leprotic, diuretic, Anti phlogistic.
- The fruits are stomachic, sedative, laxative, aphrodisiac, hyperdipsia, dyspepsia, flatulence, skin disease, hemorrhages, fever, and general debility.
- The ash obtained by burning the inflorescence is a good antacid, anti periodic, useful in heart burn, splenomegaly and bilious fever.

Phytochemistry

B. flabellifer contains gums, albuminoids, fats and the fresh pulp is reportedly rich in vitamin A. The fresh sap is a good source of vitamin B-complex. Studies have indicated that diets rich in fruits and

vegetables and those of selected natural antioxidants such as plant poly-phenols, vitamin C and flavonoids are correlated with reduced incidence of cardiovascular and chronic diseases and certain cancer.

MATERIALS AND METHODS:

Collection of leaves

Palmyra palm leaves were collected from Ranga reddy district. It was peeled and washed with water, then dried under the shade. It was coarsely powdered using a mixer. The powdered materials were packed in aluminum pouch and stored in atmospheric condition.

Preparation of crude extracts:

90 grams of shade dried leaves powder of *B. flabellifer* is weighed and packed with a muslin cloth. Packed dried powder is kept for soxhlation for 6 hours using chloroform, and then powder is removed and kept for drying. The crude extract is left for air drying for about 1 week until all the volatile substance in it dries. The similar process is continued for air dried powder with methanol and water, crude extract is left for drying.

RESULTS AND DISCUSSION:

Determination of anti inflammatory activity

Requirements

- Male BALB/C mice (20-25 g).
- Cages and feed.
- Formalin.

Procedure

Single dose of 0.02 ml of freshly prepared 2% formalin was used to induce chronic inflammation in mice. The animals were divided into 4 groups of 6 animals each.

Group 1 remained as control.

Group 2 and 3 received 200 and 400 mg/kg body weight extract orally.

Group 4 received 10 mg/kg body weight diclofenac (IP).

Drug treatment was started 1 hr prior to formalin injection and continued for 6 days. The thickness of the paw was measured using vernier calipers every day for 6 days.

The results of anti inflammatory activity of leaves extract of *B. flabellifer* in given in Table 1 showed positive result.

Table 1: Anti inflammatory activity of leaves extract of *B. flabellifer*

	Day 1		Day 2		Day 3		Day 4		Day 5		Day 6	
	Right Paw (cm)	Left Paw (cm)	Right Paw (cm)	Left Paw (cm)	Right paw (cm)	Left paw (cm)	Right paw (cm)	Left paw (cm)	Right paw (cm)	Left Paw (cm)	Right Paw (cm)	Left Paw (cm)
Control	0.51±0.0 20	0.21±0 .020	0.62±0. 020	0.20±0. 032	0.62±0. 023	0.20±0 .022	0.61±0. 012	0.20±0 .022	0.60±0. 038	0.20±0 .092	0.60±0 .012	0/20±0. 012
Standard	0.52±0.0 35	0.21±0 .022	0.62±0. 012	0.20±0. 022	0.56±0. 012	0.20±0 .092	0.40±0. 012	0.22±0 .012	0.31±0. 018	0.20±0 .012	0.22±0 .012	0.20±0. 012
Test 1	0.52±0.0 465	0.21±0 .012	0.62±0. 028	0.20±0. 034	0.60±0. 029	0.20±0 .022	0.59±0. 030	0.20±0 .022	0.54±0. 028	0.20±0 .018	0.51±0 .012	0.20±0. 012
Test 2	0.52±0.0 48	0.20±0 .016	0.62±0. 034	0.20±0. 018	0.59±0. 012	0.20±0 .020	0.44±0. 024	0.20±0 .016	0.32±0. 036	0.20±0 .018	0.26±0 .048	0.20±0. 012

CONCLUSION:

By conducting the above experiment it's was concluded that the leaves extract of *B. flabellifer* is most effective towards anti inflammatory activity. And can be used in herbal medicines as it has fewer side effects as compared to those synthetic drugs. *Borassus flabellifer* is a medicinal plant with innumerable medicinal qualities for all parts used since ancient times. Besides the plant having traditional uses it is also used for people who make their living from this tree using its wood, fruits, sap, stems, petioles and leaves to process a variety of food products, beverages, furniture, building materials, and handicrafts. In this review, an attempt was made to provide traditional uses and pharmacological aspects of *Borassus flabellifer*, a medicinal plant native to Southeast Asia. Furthermore, a detailed and systematic approach can be done in exploiting and identifying the phytopharmacology to explore in knowing the maximum potentiality of the plant which will be useful to mankind.

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