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COMPARATIVE PHYTOCHEMICAL SCREENING OF FLOWERS AND BARK OF SPATHODEA CAMPANULATA

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ABSTRACT : Since ancient times, plants have been an exemplary source of medicines. Researches conducted in last few decades on the plants mentioned in ancient literature or used as folk medicines have shown potential of phytoconstituents in treatement of various diseases. *Spathodea campanulata* is a plant that has been frequently used as a medicine which belongs to the genus *Spathodea* and family Bignoniaceae. *Spathodea campanulata* (Bignoniaceae) flowers and bark are used traditionally in the treatment of Mental disorders, Malaria, Hemorrhoids, Bacterial infections, HIV, Poor blood circulation, Gastro-intestinal diseases, Respiratory ailments, Genital-urinary system disorders etc. The Comparative Preliminary Phytochemical Screening Study of flowers and bark of *Spathodea campanulata* has been summarized in the present article.

Keywords: Bignoniaceae, *Spathodea campanulata*, Phytoconstituents, Flowers, Bark.

INTRODUCTION

Spathodea is a monotypic genus in the flowering plant family Bignoniaceae (George Watt, et. al., 2004). The single species is *Spathodea campanulata*, known as the Fountain Tree, African Tulip Tree, Flame-of-the-Forest or Nandi Flame. It is a tree that grows between 7–25 meters (23–82 ft) tall, native to tropical Africa and Southern Asia. This tree is planted extensively as an ornamental tree throughout the tropics and is much appreciated for its very showy reddish-orange or crimson (rarely yellow), campanulate flowers. However, it has the potential to become an invasive species.The flower bud is ampule-shaped and contains water. These buds are often used by children who play with its ability to squirt the water. The sap sometimes stains yellow on fingers and clothes. The open flowers are cup-shaped and hold rain and dew, making them attractive to many species of birds. In neotropical gardens and parks, their nectar is popular with many hummingbirds, such as the Black-throated Mango (Anthracothorax nigricollis), the Black Jacobin (Florisuga fusca), or the Gilded Hummingbird (Hylocharis chrysura).

The wood of the tree is soft and is used for nesting by many hole-building birds such as Barbets. The generic name comes from the Ancient Greek word *Spathe*, in reference to the spadix-like calyx. *Spathodea campanulata* (Bignoniaceae) flowers and bark are used traditionally in the treatment of Mental disorders, Malaria, Hemorrhoids, Bacterial infections, HIV, Poor blood circulation, Gastro-intestinal diseases, Respiratory ailments, Genital-urinary system disorders etc (Vinayak V. Patil et. al., 2009, E. J. Mbosso et. al., 2008, Trigo J. R. et. al., 2000, G. Niyonzima et. al., 1999, J. M. Makinde et. al., 1988, A. Kovoor et. al. 1953).

The application of leaves and stem barks in most herbal preparations can be attributed to the fact that, human body organs are known to accumulate in high concentrations, active components of most of the herbal preparations. These components which have been shown to relieve diseased conditions in patients include alkaloids, tannins and inulin.

Leaves have also been reported to be the most commonly used plant part in other parts of Africa.

MATERIALS AND MEHTODS

Plant Materials and Chemicals

The fresh plant materials of *Spathodea campanulata* (flowers and bark) were collected from Cannaught Place Area, Town Center, CIDCO, Aurangabad (MS), India during the month of January 2010. The botanical identity of the plant was confirmed at the Botany department of Dr. Babasaheb Ambedkar Marathwada University, Aurangabad. A voucher specimen has been deposited at the Museum of Department of Botany, Dr. BAMU, Aurangabad. All the reagents and chemicals used in the study were procured from Dipa Laboratory, Aurangabad and were of analytical grade.

Extraction and isolation

The air dried and coarsely powdered flowers and bark (each 450g) of plant *Spathodea campnulata* were continuously soxhlet extracted with Petroleum Ether (60 – 80°c), Chloroform and then with Methanol (35 hrs, 70°c) and three extracts were processed separately. Petroleum ether extract**:** Solvent was evaporated to give a yellow gummy material (14g) and waxy in nature. Chloroform extract: Solvent was evaporated to give a brownish black material (5g). Methanol extract: Solvent was evaporated to give a reddish semisolid material (6g).

RESULT AND DISCUSSION

The preliminary phytochemical screening was performed on various extracts of flowers and bark of *Spathodea campanulata*. Tests showed the presence of carbohydrates, alkaloids, tannins, glycosides in extracts of flowers and presence of steroids, carbohydrates proteins, tannins ghycosides and alkaloids in bark of the plant.

Preliminary phytochemical screening

Preliminary Phytochemical screening was carried out by using standard procedures (Harborne J. B. et. al., 1998, Kokate C. K. et. al., 1986). .

Table 1: Preliminary Phytochemical Tests for Extracts of *Spathodea campanulata* Flowers

Extract	Steroid	Carbohydrates	Gum	Protein	Tannins	Glycoside	Alkaloid	Flavonoid
Chloroform	-	+	-	-	-	+	+	-
Petroleum Ether	-	+	-	+	-	+	-	-
Methanol	-	-	-	-	+	+	-	-

Table 2: Preliminary Phytochemical Tests for Extracts of *Spathodea campanulata* Bark

Extract	Steroid	Carbohydrates	Gum	Protein	Tannins	Glycoside	Alkaloid	Flavonoid
Chloroform	-	+	-	-	+	+	+	-
Petroleum Ether	+	+	-	+	-	-	+	-
Methanol	-	+	-	-	+	+	-	-

CONCLUSION

The preliminary phytochemical screening revealed the carbohydrates, alkaloids, tannins, glycosides in extracts of flowers and presence of steroids, carbohydrates proteins, tannins ghycosides and alkaloids in bark of the plant. Due to the presence of active phytochemicals, in both flowers and bark of the plant, it can be used medicinally in future.

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