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Preliminary phytochemical screening of *Vatankura* (*Ficus bengalensis*) with milk and in water extract

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ABSTRACT

Every human being has inherent, intense desire to continue his (one's) own race; to become a mother is one of the most cherished desires of every woman. Infertility is defined as "a disease of the reproductive system defined by the failure to achieve a pregnancy after 12 or more of regular unprotected sexual intercourse". In Ayurveda, this condition is considered as *Vandhvatva*. It is a Universal phenomenon occurring both in developing and under developing countries. A great demand from Ayurveda in the field of infertility has been established due to its unique concept about effective and cheaper therapy without any side effects. *Vata* (*Ficus bengalensis*) is such a drug which is widely available and is having many mentioning in the classics for its effectiveness in *Stree Vandhyatwa*. Its vegetative buds are used in the treatment of *Vandyatwa.*

Key words: *Vatankura, Ficus bengalensis, Vandyatwa, Infertility.*

INTRODUCTION

Ayurveda is gaining popularity day by day. Herbal medicine is still the mainstay of about 75 - 80% of the world population, mainly in the developing countries, for primary health care. This is primarily because of the general belief that herbal drugs are without any side effects besides being cheap and locally available. The "Birds eye view" of our great saints lead to the invention of different medicinal plants one among them is *Vata. Vata* is considered as one among the *Pancha Valkala* which constitute the famous *Ksheeri Vrukshas.*[1] *Ficus benghalensis* (Moraceae, Mulberry family) is commonly known as Banyan tree or *Vata* or *Vada* tree in Ayurveda. There are more than 800 species and 2000 varieties of Ficus species, most of which are native to the old world tropics. It is widely used in Ayurveda for the treatment of diarrhea, dysentery, Infertility condition, skin disorders like sores, piles and boost immune system as a hypoglycemic.[2]

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MATERIALS AND METHODS

Collection

The vegitative bud of *Ficus benghalensis* were collected from Udyavar and near by places of Udupi District in the month of April. The drug was authenticated by Dr. Ajayan. S, (H.O.D, Dept. of Dravya Guna Vijnana, Vishnu Ayurveda College, Shoranur, Kerala).

Preperation of study drug

The vegitative bud of *Ficus benghalensis* was cleaned and dried in shade and powdered and stored in an air tight container. It was then made into 2 study groups A & B. The group A was prepared by making juice of the same and mixing with Milk and Group B was prepared by water extraction of the drug in Soxhlet Apparatus. Group A & B was subjected to Preliminary

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qualitative phytochemical test according to the procedures described below.

Procedure for Preliminary Phytochemical tests[3]

1. **Steroids**

a. **Salkowski's test -** A wine red colour was developed when chloroform and $H2SO_4$ were added to the test solution; it indicates the presence of steroidal nuclei.

2. **Flavanoids**

a. **Shinoda test -** This test is applied in the same way as Zn/Hcl, but magnesium powder was used instead of zinc. The development of a deep red or magenta colour of the solution is an indication for the presence of flavane dihydroflavanol. Dihydrochalcones and other flavanoids do not react with the reagent.

b. **Aqueous NaOH solution -** 1ml of aqueous NaOH solution was added to 1ml of test solution. Formation of yellow colour indicates the presence of flavanoids.

c. **Conc. $H2SO_4$ test -** 1ml of conc. $H2SO_4$ was added to test solution, formation of red colour indicates the presence of flavanoids.

3. **Saponin**

a. **Foam test -** Extract is shaken vigorously with distilled water in a test tube. Honeycomb like foam produced, persists for few minutes. It confirms the presence of saponin.

4. **Glycosides**

a. **Molisch's test -** 1ml of Molisch's reagent and 1ml of conc. $H2SO_4$ was added to the test solution, formation of reddish violet colour ring at the junction of two liquids indicates the presence of glycosides.

b. **Conc. $H2SO_4$ test -** 1ml of conc. $H2SO_4$ was added to the 1 ml of solution and was allowed to stand for 2 minutes. Formation of reddish colour indicates the presence of glycosides.

5. **Phenols**

a. **Phenol test -** When 0.5ml of FeCl3 solution was added to 2ml of test solution formation of an intense colour indicates the presence of phenols.

6. **Anthocyanins**

a. **Aqueous NaOH test -** 1ml aqueous NaOH solution was added to 1ml test solution, formation of blue to violet colour indicates the presence of anthocyanins.

b. **Conc. $H2SO_4$ test -** 1ml of conc. $H2SO_4$ was added to the 1 ml of test solution, formation of yellow to orange colour indicates the presence of anthocyanins.

7. **Proteins**

a. **Biuret tests -** 2ml of 10% copper sulphate solution, was added to 2ml of test solution, mixed well and 2 drops of 1% copper sulphate solution was added. Violet or pink colour indicates the presence of two or more peptide bond of proteins.

b. **Ninhydrin test -** 1ml of 0.1% freshly prepared ninhydrin solution was added to 4ml of the test solution, which should be neutral pH. The contents were mixed and boiled for a minute and was allowed to cool. Violet or purple coloured solution indicates the presence of amino acids and proteins.

c. **Xanthoproteic test -** 1ml of Conc. HNO_3 was added to 5ml of the solution. The contents were boiled and cooled. Appearance of yellow colour indicates the presence of nitro derivatives of aromatic amino acids. To this solution 40% of NaOH was added. A deep orange colour solution indicates the presence of sodium salts of nitro derivatives of aromatic amino acids.

d. **Hopkins cole test -** 2ml of glacial acetic acid was added to 2ml of the test solution and mixed well. To this 2ml conc. $H2SO_4$ was added carefully along the sides of the test tube. The formation of violet ring in the junction of two liquids indicates the presence of indole group of tryptophan.

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e. **Sulphur test -** 2ml of 40% NaOH solution and 10 drops of 2% lead acetate solution were added to the 2ml of solution and contents were boiled for a minute and cooled back. Precipitate indicates the presence of sulphur containing amino acids of proteins.

8. **Carbohydrates test for starch**

a. **Molisch's test -** 2 drops of Molisch's reagent was added along the sides of the test tube. At the junction of two liquids a red cum violet coloured ring indicates the presence of carbohydrates.

b. **Fehling's test -** 1ml of Fehling's solution "A" and 1ml of Fehling's solution "B" were added to 1ml of test solution. The contents were mixed well and boiled for a minute. Yellow or brownish-red precipitate indicates the presence of the reducing sugars.

c. **Benedict's test -** 2ml of Benedict's reagent was added to five drops of the solution. Boiled for a minute in a water bath and cooled the solution. Yellow, red or green colour precipitate indicates the presence of reducing sugars.

9. **Non - reduction sugar such as sucrose**

Benedict's test - Benedict's test showing no characteristic colour forming, indicates the presence of non - reducing sugars in the test solution.

Picture 1: Showing *Vatankura*

Picture 2: *Vata Vruksha* (Banyan Tree)

RESULTS

SN	Test	Aqueous extract	With milk
1.	**Test for steroid**		
	a) Salkowski test	-	-
2.	**Test for flavanoids**		
	a) Shinoda test	-	-
	b) Aqueous NaoH solution	-	-
	c) Conc. H_2SO_4test	+	+
3.	**Test for saponins**		
	a) Foam test	-	-
4.	**Test for Glycosides**		
	a) Molischis test	+	-
	b) Conc. H_2SO_4 test	+	+
5.	**Test for Phenols**		
	a) Phenol test	+	+
6.	**Test for Anthocyanins**		
	a) Aqueous NaoH test	-	-
	b) Conc. H_2SO_4 test	-	-

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7.	**Test for proteins**		
	a) Biuret test	-	-
	b) Ninhydrin test	-	+
	c) Xanthoproteic test	+	++
	d) Hopkins Cole test	++	+
	e) Sulphur test	-	-
8.	**Test for starch**		
	a) Molischis test	-	-
	b) Fehlings test	-	++
	c) Benedicts test	-	+++
9.	**Non reducing sugar**		
	a) Benedict's test	-	-

Discussion and Conclusion

Preliminary phyto chemical study of *Vatankura* in milk and aqueous extract has shown that tests for flavanoids, glycosides, phenols and proteins were found to be positive in both the solution. Test for starch was found to be positive in solution of *Vatankura* with milk. The results of the study can be taken as an authentic monograph for qualitative phytochemical analysis of *Vatankura*. Such phytochemical screening may lead to the identification of the probable active principles of the drug thereby justifying its action and use as Ayurvedic medicine. Further investigations may be carried out to elucidate the individual chemical component responsible for the respective drug action.

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