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Phytochemical analysis and applications of *Cynodon* (L.) and *Ficus bengalensis* (L.) as an herbal medicine

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ABSTRACT

The present work was carried out to investigate the quantitative determination of their crude phytochemicals, protein contents and folic acid contain in *Cynodon dactylon* and *Ficus bengalensis* there use of as a herbal medicine. The quantitative determination of crude phytochemicals. Which including alkaloids, total phenols, flavonoids and saponins were determined quantitatively using literature methods? In present study, Leaf extract of *cynodon* and *Ficus bengalensis* Bud extract is found to be very rich source of folic acid, along with rich in phytochemicals they are being as a source of folic acid it is found to be good tonic for anaemic and pregnant ladies. Consumption of this extract or herbal medicines prepared from *Cynodon* leaves and *Ficus* buds at the time of pregnancy will reduces anaemia and increases the foetus growth. As it is an easily available everywhere and being as a herbal medicine it does not have any side effects. So in present study it is found that *cynodon* leaf extract and *Ficus bengalensis* Buds are boon for anaemic patient's, pregnant ladies and is also used as an tonic.

KEYWORDS: *Cynodon*, *Ficus bengalensis*, phytochemicals, folic acid,Protein, herbal medicine

INTRODUCTION

Cynodon dactylon (L.) Pers. belongs to family Poaceae, subfamily Chloridoideae. It is a weedy grass, also known as Durva or Bermuda grass. It is one of the ten auspicious herbs that constitute the group of "DASAPUSHPAM" in Ayurveda. *Ficus bengalensis* (L.) belongs to family moraceae. Both these plants has many therapeutic and decorative value. *Cynodon dactylon* and *Ficus bengalensis* has an anti inflammatory and antioxidant properties. In present study after preliminary phytochemical screening of the extract showed the presence of alkaloids, sugars and Carbohydrates, steroids, tannins and flavanoids. Along with that *Cynodon* leaves and Ficus Buds are found to be one of the rich sources of folic acid. The state government has recorded 60.495 cases of miscarriages between years 2017-18. Reason for the miscarriages is abnormality, anaemia, poor development in foetus, unbalanced hormones. In present study, Leaf extract of *cynodon* and Bud extract *Ficus bengalensis* is found to be very much beneficial to cure anaemia. Consumption of this extract for early 3 months of will reduces anaemia and Extract consumption will reduces miscarriages due to lack of folic acid and increases the foetus growth. As it is a easily available everywhere and being as a herbal medicine it does not have any side effects. So in present study it is found that *cynodon* leaf extract and *Ficus bengalensis* Buds are rich source of secondary metabolites, proteins as well as folic acid.

MATERIAL AND METHODS

Collection of plant material:

Cynodon dactylon and *Ficus bengalensis* was collected from the Smruti Van Vihar. In Solapur city (MH). Identification of plant species is done by using flora of Maharashtra by Singh *et. al*. Plant species shed dried and powdered by using mortal and piston. Sample is carried out for FTIR for detection of active compounds. Sequential extraction is carried out with D/W, ethanol, methanol, chloroform and petroleum ether. As D/W and Methanol gives best result these two extracts was selected for screening of secondary metabolites. For folic acid detection two major tests are carried out by TLC.

Phytochemical Analysis:

1. Screening for alkaloids: Five mL of the extract was boiled with 2N HCL (5mL) and mixture was filtered and to the filtrate a few drops of Mayer's reagent was added. A cream colour precipitate produced immediately indicates the presence of alkaloids.

2. Screening for saponins: About 5mL of the extract was boiled in 10mL of distilled water in a test tube and the test tube was shaken vigorously for about 30sec and allowed to stand for half an hour. Formation of froth indicates the presence of saponins.

3. Screening for tannins: To five mL of the extract, a few drops of 1% lead acetate were added. A yellow precipitate was formed, which indicates the Phytochemical Analysis & Antimicrobial Activity of Medicinal Plants 93 presence of tannins.

4. Screening for phenols: About 2 mL of the extract was added to 2 mL of ferric chloride solution and appearance of deep bluish green colour solution indicates the presence of phenols.

5. Screening of steroids: One mL of the extract was dissolved in 10ml of chloroform and equal volume of conc. Sulphuric acid was added by the sides of the test tube. The upper layer turns red and sulphuric acid layer showed yellow with green fluorescence, which indicates the presence of steroids.

6. Screening for cardiac glycosides: To the solution of the extract in glacial acetic acid, few drops of ferric chloride and concentrated sulphuric acid were added and observed for the reddish brown coloration at the junction of two layers and the bluish green colour in the upper layer shows the presence of cardiac glycosides.

7. Screening for anthraquinones: About 5mL of the extract was boiled with 10mL of sulphuric acid and filtered while hot. The filterate was shaken with 5mL of chloroform. The chloroform layer was pipette into another test tube and 1mL of dilute ammonia was added. The resulting solution was observed for colour changes.

8. Screening for flavonoids: To one mL of the extract, a few drops of dilute sodium hydroxide were added. An intense yellow colour was produced in the plant extract, which became colourless on addition of a few drops of dilute acid. This indicates the presence of flavonoids.

9. Screening for terpenoids : The extract was dissolved in 1mL of chloroform,1mL of acetic anhydride was added following the addition of 2ml of conc.H2SO4. Formation of reddish violet colour indicates the presence of terpenoids.

10. Screening for amino acids: One mL of the extract was treated with few drops of Ninhydrinreagent. Appearance of purple colour shows the presence of amino acids.

11. Screening for reducing sugars: To 1mL of the extract, 5-8 drops of Fehling's solution was added and boiled and observed for the brick red precipitate.

12. Screening for monosaccharides: To 1mL of the extract, 1 mL of Barfoed's reagent was added and heated on a water bath. Formation of brown precipitate indicates the presence of Sample is carried out for FTIR for detection of active compounds. For folic acid detection two major tests are carried out by TLC. Protein analysis for both the plants was carried out by Biuret method.

Sample Preparation for folic acid determination:

TLC plates were prepared by using silica gel. Solvent system used is 96% of ammonia: propanol: ethanol 20:20:60 (v/v/v). Standard and samples was prepared by dissolving 50mg of CRS folic acid in a mixture of 2:9 volume of ammonia : methanol and diluted to 100 ml. Line the walls of the chromatographic tank with filter paper, and pour a sufficient quantity of mobile phase into the tank. Saturate the tank replace the lid and allow to stand at 20-25˚C for 1 hr. Apply the prescribed volume of the solutions in sufficiently small portions to obtain bands at an appropriate distance from the lower edge. When the solvent has evaporated from the applied spots place the plate in as vertical as possible close the tank and allow the plate to run for 15 cm. Remove the plate and dry in air. Observe under UV light at 365 nm.

OBSERVATION

Table 1: Phytochemical screening of *Cynodon dactylon* and *Ficus bengalensis*

Phytochemicals	*Cynodon dactylon* (D/W)	*Ficus bengalensis* (D/W)	*Cynodon dactylon* (methanol)	*Ficus bengalensis* (methanol)
Alkaloids	+++	++	+++	+++
Saponins	++	+	++	++
Tannins	+	++	++	++
Phenol	+	++	+	++
Steroids	++	+	+	+
Cardiac glycosides	++	-	++	+
Antraquinones	++	+++	++	+++
Flavanoids	+	++	++	+++
Terpenoids	-	+	++	++
Amino acids	+	+	+++	+++
Reducing sugars	+	++	+++	+++
Monosaccharides	++	-	++	++

(strongly present=+++, moderately present=++,poorly present=+, Absent=-)

Table 2: Protein concentration in *Cynodon dactylon* and *Ficus bengalensis*

Standard BSA (ml)	**D/w**	**Biuret reagent**	**Incubate at room temperature for 30 min.**	**O.D at 530 nm**	
				Cynodon dactylon	***Ficus bengalensis***
0.0	2.5	2.5		0.12	0.12
0.5	2.0	2.5		0.18	0.18
1.0	1.5	2.5		0.23	0.23
1.5	1.0	2.5		0.26	0.26
2.0	0.5	2.5		0.30	0.30
2.5	0.0	2.5		0.34	0.34
UK(three set)	0.5	2.5		0.36	0.30
UK(three set)	0.5	2.5		0.35	0.30

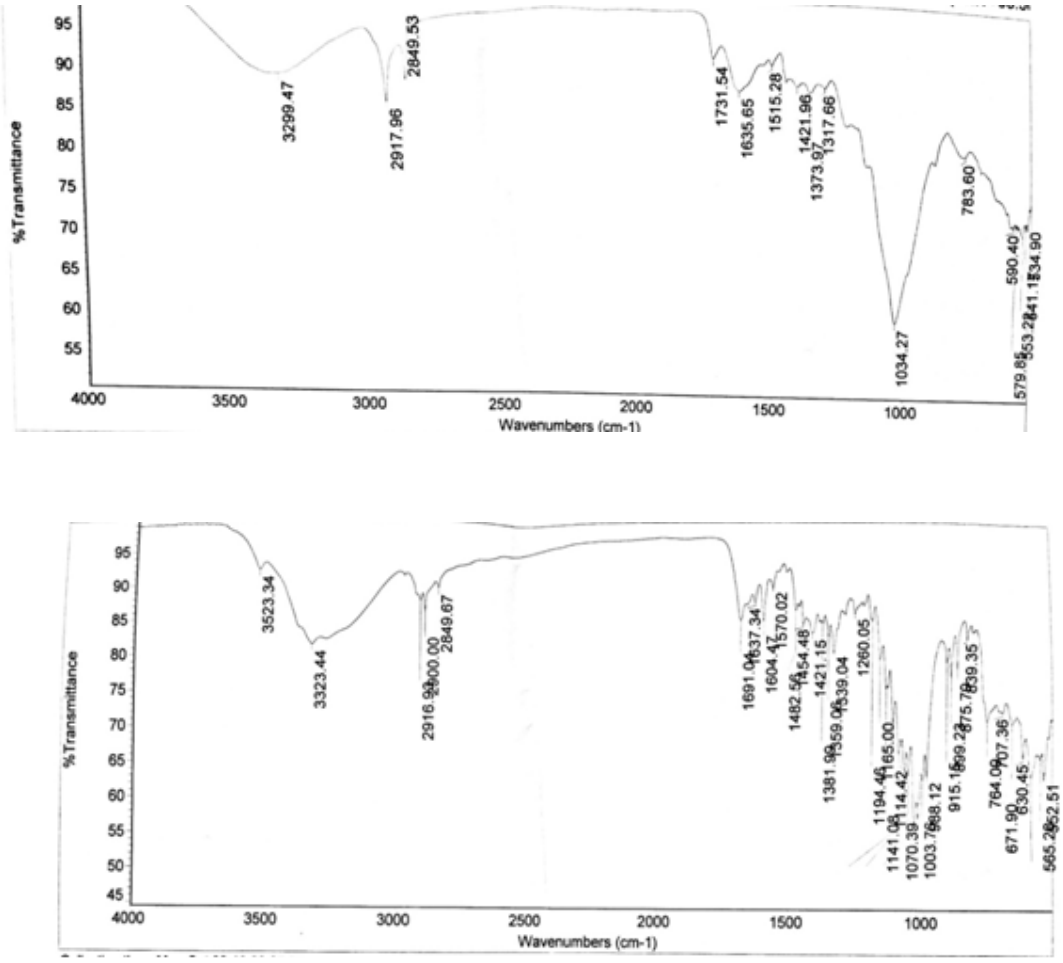

Figure 1: FTIR analysis of *Ficus bengalensis* and *Cynodon dactylon*

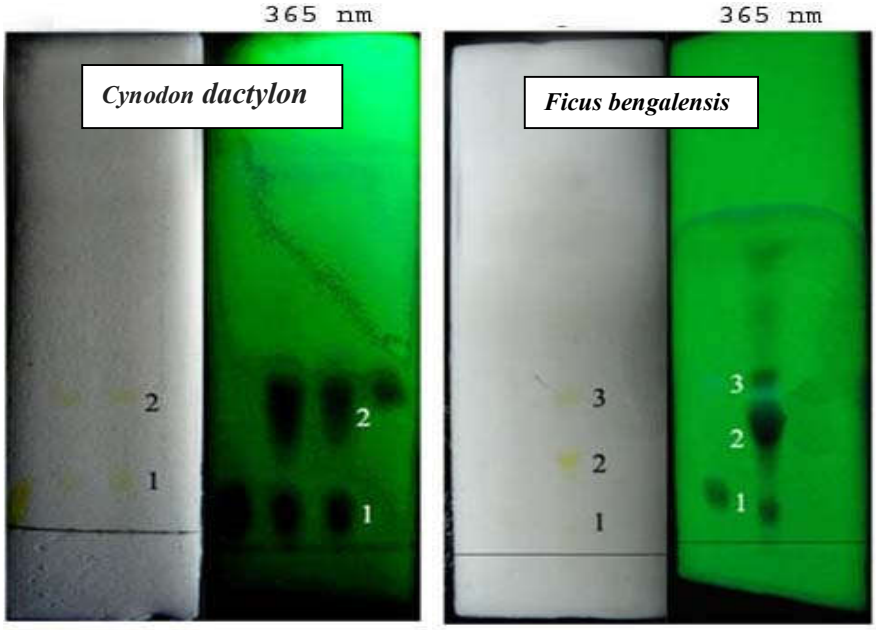

Figure 2: TLC analysis for presence of folic acid

RESULTS

Present findings provide experimental evidence that the leaf extract of *Cynodon dactylon* and bud extract of Ficus *bengalensis* in D/W and methanol are used as a traditional remedy, as it shows presence of secondary metabolites according to table no. 1. Presence of alkaloids, saponins, tannins, flavonoids, glycosides, coumarins, flavonoids, carbohydrates, Reducing sugars, Monosaccharides, amino acids and protein were recorded in the present study. As compared to distilled water extract, secondary metabolite test are more positive in methanol extract. The protein concentration was found more in *Cynodon dactylon* as compare to *Ficus bengalensis* i.e. 0.36 and 0.30 respectively, also both of the species are tested for presence of folic acid. Both the plant samples are compared with standard folic acid CRS. It was found that both species are rich in folic acid content having the Rf values 0.13 and 0.12 for *Cynodon dactylon* and *Ficus bengalensis* bud respectively. Secondary metabolites are the compounds which are known to show curative activity against several human as well as animal ailments and therefore could explain the use of herbal medicinal plant for treatment various diseases. Also as they are rich sources of folic acid they can be used to reduce anaemic patients as well as diseases caused by anaemia, it is found that *Cynodon dactylon* and *Ficus bengalensis* buds are rich source of secondary metabolites, proteins and folic acid, which helps to increases amount of blood and helps in normal growth of fetus.

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