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## Preliminary phytochemical investigation of the leaves of *Cynodon dactylon* (L.) Pers., *Cyperus rotundus* L. and *Typha angustifolia* L

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### Abstract

Phytochemical constituents of plants with varied phytochemical, physiological and biochemical activity has received attention to use them as food, medicine. A major phyto-chemicals present in *Cynodon dactylon* (L.) Pers. are Proteins, Saponin, Amino acids, Cardial Glycosides. In *Cyperus rotundus* Linn. contains Tannin, Coumarin, Proteins, Flavonoids, Phenol, Cardial Glycosides. While in *Typha angustifolia* L. contains Saponin, Tannin, Coumarin, Flavonoids etc. Major phyto-chemical is Tannin, Saponin, Proteins and Cardial Glycosides present in their leaves of all these weeds. So they indicate that plant leaves contain a number of medicinally important compounds.

**Keywords:** Phytochemicals, *Cynodon dactylon* (L.) Pers., *Cyperus rotundus* Linn. and *Typha angustifolia* L.

### Introduction

Plants have always been a source of natural products for the treatment of various Diseases [6]. The 70 to 80% of the world populations, mostly in developing countries, rely on non-conventional medicine in their primary healthcare. Plant origin medicines have an great advantage than synthetic drugs in having low human toxicity. As per the WHO norms, botanical standards are the proposed as a protocol for the diagnosis of the herbal drug. The phytochemical studies of drugs done by making use of various parameters like phytochemical analysis help in standardizing the drug and authentication.

Plants have their own chemical constituents and medicinal value that may alter certain physiologic actions in the human body. The most important of these bioactive constituents of plants are terpenes, alkaloids, flavonoids and phenolic compounds.

*Cynodon dactylon* (L.) Pers. is a perennial grass belonging to family Poaceae that has a variety of medicinal properties. It is native to north and east Africa, Asia and Australia and southern Europe. It is cultivated throughout the tropics and subtropics. In Ayurveda *Cynodon dactylon* shows many pharmacological activities like antidiabetic, antioxidant, antidiarrheal, hepatoprotective, antiulcer, immunomodulator, CNS depressant, antimicrobial and germicidal [1]. Plants have always been a source of natural products for the treatment of various diseases [6]. The genus *Cyperus rotundus* Linn. belonging to family Poaceae. It was found as a common weeds found in upland and paddy fields in temperature to tropical regions. They are used as traditional folk medicines for treatment of stomach and inflammatory diseases [2, 8]. The *Cyperus rotundus* L. have been reported to contain oils, alkaloids, glycosides, saponins, flavonoids, tannins [3].

In recent years, Secondary plant metabolites (Phytochemicals), previously with unknown pharmacological activities, has been extensively investigated as a source of medicinal agents [5]. Nature has been a source of medicinal agents since times immemorial. The importance of herbs in the management of human ailments cannot be over emphasized. It is clear that the plant kingdom harbors an inexhaustible source of active ingredients invaluable in the management of many intractable diseases. Furthermore, the active components of herbal remedies have the advantage of being combined with many other substances that appear to be inactive. However, these complementary components give the plant as a whole a safety and efficiency much superior to that of its isolated and pure active components [7].

## Materials and methods

### Plant collection and identification

We collected *Cynodon dactylon* (L.) Pers., *Cyperus rotundus* Linn. And *Typha angustifolia* L. from different location of Kolhapur districts. These samples were free from disease. This plant materials were identified by stranded literature.

### Extraction of plant material

#### Preparation of aqueous extracts

We weighed 10 gm of sample using an electronic balance and 10 gm of plant material were crushed in 100 ml of distilled water and filter through muscline cloth. These samples are used for photochemical analysis.

### Preliminary Phytochemical Analysis

The individual extract was subjected to the qualitative phytochemical screening for the presence of some chemical constituents. Phytochemical test were carried out adopting standard procedure [9, 4].

#### Test for Alkaloids

A quantity (3 ml) of concentrated extract was taken into test cooled and filter, the filtrate was used for following test.

Dragen Droff's Test: 2 drops of Dragen droff's reagent were added to 1ml of the extract. The development of a creamy ppt was indicates of the presence of alkaloids.

#### Test for Saponin

5 ml extract was mixed with 20 ml of distilled water then agitated in the graduated cylinder. For 15 min formation of foam indicates Saponin.

#### Test for Steroids

1 ml extract was dissolved in 10 ml of chloroform and equal volume of concentrated H<sub>2</sub>SO<sub>4</sub> acid was added from the side of test tube. The upper layer turns red and H<sub>2</sub>SO<sub>4</sub> layer showed yellow with green fluorescence. This indicates the presence of steroid.

#### Test for Tannin

4ml of extract was treated with 4 ml FeCl<sub>3</sub> formation of green colour indicates that presence of condensed tannin.

#### Test for Anthocyanin

2 ml of aqueous extract is added to 2 ml of 2N HCl and NH<sub>3</sub>, the appearance of pink red turns blue violet indicates presence of the Anthocyanin.

#### Test for Coumarin

3 ml of 10% of NaOH was the added to 2 ml of aqueous extract formation of yellow colour indicates the presence of Coumarins.

#### Test for Emodins

3 ml of NH<sub>4</sub>OH and 3 ml of Benzene was added to extract appearance of the of the red colour which indicates the presence of Emodins.

#### Test for Protiens

Xanthoproteic Test: Extract was treated with few drops of concentrated HNO<sub>3</sub> formation of yellow colour indicates the presence of Protiens.

#### Test for Amino Acid

Ninhydrin Test: To the 2 ml of extract 2 ml on the Ninhydrin reagent was added and boil the for few minutes, formation of blue colour indicates the presence of the Amino Acid.

#### Test for Flavonoids

Alkaline Reagent Test: Extract was treated with 10% of NaOH solution, formation of intense yellow colour indicates the presence of the Flavonoids.

#### Test for Diterpenes

Copper Acetate Test: Extract were dissolved in water and treated with copper acetate solution, formation of the emerald green colour indicates presence of Diterpenes.

#### Test for Phytosterol

Salkowski's Test: Extract iwas treated with chloroform and filtered. The filtered was treated with few drops of concentrated H<sub>2</sub>SO<sub>4</sub> and shakes, allow the standing, appearance of golden red indicates the positive test.

#### Test for Phenol

Ferric chloride Test: Test extract were treated with 4 drops of Alcoholic FeCl<sub>3</sub> solution. Formation of bluish black colour indicates the presence of Phenols.

#### Test for Phlobatannins

Deposition of red ppt when aqueous extract of each plant sample is boiled with 10% aqueous HCl was taken evidence of presence of the Phlobatannins.

#### Test for Leucoanthocyanine

5 ml of isoamyl alcohol added to the 5 ml of aqueous extract, upper layer appear red in colour indicates presence of the Leucoanthocyanine.

#### Test for Anthraquinone

5 ml of extract was hydrolyzed with dilute H<sub>2</sub>SO<sub>4</sub>, then add the 1 ml of benzene and 1 ml of NH<sub>4</sub>, formation of Rose Pink coloration suggested that presence of Anthraquinone.

#### Test for Cardial Glycosides

Killer-Killani Test: Plant extract treaed with glacial acetic acid containing a drop of FeCl<sub>3</sub>. A brown coloured ring indicates the presence of the positive test.

#### Test for Carbohydrates

Iodine Test: Take 2 ml of extract were treated with 5 drops of Iodine solution, gives blue colour, indicates the positive test.

Benedict's Test: Filtrate were treated with the Benedict's reagent and heated gently, orange red ppt indicates the presence of reducing sugar.

## Results and Discussion

The present study was carried out to investigate the phytochemical profile of leaves of *Cyperus rotundus*, *Cynodon dactylon*, *Typha angustifolia*. The fresh leaves of every plant was extracted with water. A number of biologically active compounds have been isolated from the plant. The compounds like saponins, proteins, amino acids, tannin, flavonoids, phenol, cardial glycosides, cumarine, are present in all these weeds [10] and steroids, anthraquinone, anthracynin, alkaloids, emodins, diterpenes, phytostero, phlobatannin, leucoanthocyanin, carbohydrates absent in all these weeds.

Sr. No.	Phytochemicals	<i>Cynodon dactylon</i> Linn.	<i>Cyperus rotundus</i> Linn.	<i>Typha angustifolia</i> Linn.
1.	Alkaloids	-	-	-
2.	Saponin	+	*	+
3.	Steroid	*	*	*
4.	Tannin	-	+	+
5.	Anthrocyanin	-	-	-
6.	Coumarin	-	+	+
7.	Emodins	*	*	*
8.	Proteins	+	+	*
9.	Amino Acids	+	*	-
10.	Flavonoids	-	+	+
11.	Diterpenes	-	*	*
12.	Phytosterol	-	*	*
13.	Phenol	-	+	-
14.	Phlobotannins	-	*	*
15.	Leucoanthocyanin	-	-	*
16.	Antraquinone	-	*	*
17.	Cardial Glycosides	+	+	-
18.	Carbohydrates	-	-	*

Note: [(+)= Positive, (-)=Negative,(\*) Doutful]

### Conclusion

The presence of phytochemicals make the plant useful for treating different diseases and have a potential for providing a drug for human use. These plant can be used in the pharmaceutical industries. By performing more studies on the crude extract of these plants proper drug development is possible. Many evidences gathered in earlier studies which confirmed these identified phytochemicals to be bioactive.

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