

**PHYTOCHEMICAL COMPOSITION OF PSYCHOTRIA *DAILZELLI* LEAVES****ABHISHEK. M, KIRTI JAIN, KANIL KUMAR R.N AND SOMASHEKARAIH.B.V***Department Of Chemistry, St. Joseph's PG and Research Centre, Bangalore***ABSTRACT**

This study findings indicate that leaves *Psychotria dailzelli*, of possess significant pharmacological activities which comply with the claims made in the traditional medicinal texts. In the present work, the leaves of (family: Rubiaceae) have been investigated for screening phytochemicals. The qualitative and quantitative phytochemical analysis of *Psychotria dailzelli*. The fresh leaf extract were prepared using different solvents like Petroleum ether, Chloroform, Acetone, Ethyl acetate, Methanol to detect the active components. The presence of various phytochemical constituents in the extract is determined using standard screening tests and presence of alkaloids, terpenoids, tannins, saponins, are revealed. The phenolics and flavonoids content of *Psychotria dailzelli* species were determined in the present study. The phenolic content was determined using Folin-Ciocalteu assay. The total flavonoids were measured spectrophotometrically using the aluminum chloride colorimetric assay.

**KEY WORDS:** *Psychotria dailzelli*, Phytochemical assay, Phenolic and Flavonoids.**ABHISHEK. M**

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## INTRODUCTION

Plants contain organic substances and could be formed by both primary and secondary metabolic process and thus also provide a source of medicine since the ancient times.<sup>1</sup> Some plants are of medicinal use and can be used to prepare drugs for variety of diseases depending on the active component present. Phytochemicals are non-nutritive plant chemicals that have protective or disease preventive properties.<sup>2</sup> Phenols are one of the chief secondary metabolites present in the plant kingdom. They are generally found in both edible and non-edible plants, and has been

reported to have multiple biological effects including anti-oxidant activity<sup>3</sup>. Flavonoids are a class of phytochemical that possesses a wide range of biological activities. Flavonoids present an important class of antimutagens and anticarcinogens with high potential<sup>4</sup>. The plant shows habitat in India in hot and moist areas, especially in Karnataka. The physiological study of plant reveals it as a large shrub, up to 6 m tall. Leaves opposite, obovate-oblong. 12-24 x 5-8 cm, cuneate at base, rounded or obtuse at apex, coriaceous, glabrous; main nerves 12-20 pairs; petioles 1.0



Psychotria dailzellii Hook. f.

-2.0 cm long; stipules ca 2.0 cm long, broadly ovate. Flowers in terminal peduncled brachiate cymes, white. Bracts and bracteoles large and persistent. Calyx broadly campanulate, lobes 5. Corolla tube very short, densely bearded in the throat, lobes 5. Stamens 5, included, attached to the throat of corolla. Ovary 2-locular; style short; stigma bifid. Fruit a drupe, ovoid or subglobose, 1 cm diameter, smooth, succulent, black when ripe, crowned by the calyx-lobes. Seeds plan convex, rugose, albumen ruminant. Flowering & Fruiting: May - October.<sup>5</sup> In the present work, qualitative and quantitative, phytochemical analysis was carried out in *Psychotria dailzellii*.

## MATERIALS AND METHODS

### Plant

The plant was collected from Billi Ranga hills part of India and was taken for the study. The collected leaves were washed thoroughly with tap water followed with distilled water for the removal of dust and soil particles.<sup>6</sup> The leaves were shade dried and used for extraction.

### Preparation of Plant Extract

100g of *Psychotria dailzellii* leaves were first defatted using petroleum ether and extracted with varied proportion mixture of Chloroform, Acetone, Ethyl acetate, Methanol using Soxhlet apparatus. The extraction was carried out for 8 hours and the extract was thereafter concentrated by evaporation in rota-vacuum the work was carried out at the Department of Chemistry, St. Joseph's College PG and Research Centre, Bangalore.

### PHYTOCHEMICAL ANALYSIS QUALITATIVE ESTIMATION OF PHYTOCHEMICALS

Preliminary analysis of the phytochemicals were performed following the methods described by Harborne (1984)<sup>6</sup>, Trease and Evans (1989)<sup>7</sup> and Kokate (2001)<sup>8</sup>.

### Fehling's test for Reducing Sugars ( for Glycosides)

2ml extract and 1ml Fehling's solution was mixed in a test tube, shaken well and heated in a water bath for 10 minutes at 100<sup>0</sup>. A brick red

precipitate indicates the presence of reducing sugars.

#### **Frothing test for Saponins**

The extract in the test tube was shaken vigorously with 2ml distilled water and left to stand for 10 minutes. A thick persistent froth confirms the presence of saponins.

#### **Borntrager's test for Anthraquinones**

2 ml extract and 1 ml 10% ammonia was added and shaken well. Pink colour in the ammonical (lower) layer indicates the presence of anthracene derivatives.

#### **Test for Flavonoids**

A small piece of magnesium ribbon was added to 2 ml of the extract. To this mixture 1 ml concentrated hydrochloric acid was added and observed. A magenta pink colour indicates the presence of flavonoids.

#### **Ferric chloride test for Tannins**

Extract of the sample was treated with 1ml of 15% ferric chloride solution and shaken well. The resultant blue black color shows the presence of hydrolysable tannins.

#### **Colour test for Alkaloids**

A few drops of Wagner's reagent were added to the extract in the test tube. Reddish brown precipitate indicates the presence of alkaloids.

#### **Test for Cardiac Glycosides**

2ml glacial acetic acid and a drop of ferric chloride were added to 2ml extract. On addition of concentrated sulphuric acid, red precipitate formed indicates the presence of cardiac glycosides.

#### **Test for Terpenoids**

2ml chloroform was added to 2ml of the few drops of concentrated sulphuric acid was carefully dropped along the sides of the test tube. Formation of reddish brown ring at the interference the presence of terpenoids.

### **QUANTITATIVE ESTIMATION OF PHYTOCHEMICALS**

#### **Estimation of total Phenolics**

Total phenolic content of different parts of the plant was measured using the method described by Bray and Trope (1954)<sup>9</sup>. The assay mixture containing 0.1mL plant extracts

and 4mL of 20% Sodium carbonate was shaken vigorously and 0.2ml of 1:1 diluted Folin's reagent was added. The mixture was incubated for 30minutes at ambient temperature and absorbance was measured at 750nm. The concentration of the extract was calculated using the standard calibration curve prepared using Gallic acid (20-100 $\mu\text{g mL}^{-1}$ ). The phenolic content was expressed in terms of mg of Gallic acid equivalents (GAE)  $\text{g}^{-1}$  of extract.

#### **Estimation of Flavonoids**

The Flavonoids content of each sample was estimated using the method described by Chang et al.,(2002)<sup>10</sup>. 5mL of the extract was mixed with 1.5mL 95% methanol, 0.1mL of 10%  $\text{AlCl}_3$  and 0.1mL (1M) potassium acetate. The volumes in all the fractions were made upto 5ml with milli Q water and incubated at room temperature. After 30minutes, the absorbance was measured at 415nm. The flavonoid content was determined using five point standard curve of Quercetin (20-100 $\mu\text{g mL}^{-1}$ ) in triplicate and expressed in terms of mg of quercetin equivalents (QE)  $\text{g}^{-1}$  of extract.

## **RESULTS AND DISCUSSION**

Phytochemical screening of different solvent extract of Leaf of *Psychotria dailzelli*, Table1 summarizes qualitative analysis of *Psychotria dailzelli*. Preliminary studies shows good activity for proportionate extract of ethyl acetate and methanol for presence of saponins, flavonoids, tannins, terpenoids, alkaloids. Table2 summarizes quantitative assay of different solvent leaf extract. Result shows acetone and methanol extract have more phenolic content as compared to other solvent extract. Flavonoids content was shown to be in significant amount in methanol and chloroform extracts. Plants are employed as an important source of medication in many traditional medications<sup>11,12,13</sup>. It is suggested that polyphenolic compounds have inhibitory effects on mutagenesis and carcinogenesis in humans when ingested daily from a diet rich in fruits and vegetables<sup>14</sup>. The flavonoids have aroused considerable interest recently because of their potential beneficial effects on human health - they have been reported to have antiviral, anti-allergic, anti platelet, anti-inflammatory, antitumor and antioxidant activities<sup>15</sup>.

**Table 1**  
**Qualitative Analysis**

Extract	Petroleum. Ether	Chloroform	Acetone	Ethyl Acetate	Methanol
Glycosides	-	-	-	-	-
Saponins	-	-	+	+	+
Anthraquinones	-	-	+	-	-
Flavonoids	-	-	+	+	+
Tannins	+	+	+	+	+
Alkaloids	+	+	+	+	+
Cardiac Glycosides	-	-	-	-	-
Terpenoids	-	-	+	+	+

*Present* : +  
*Absent* : -

**Table2**  
**Quantitative Analysis**

**Total Phenolics and Flavonoids content of different solvent extract of *Psychotria dailzelli***

Fraction	Phenolics content (mg/g of extract)	Flavonoids content (mg/g of extract)
Pet. Ether	336	176.65
Chloroform	28	151.60
Acetone	530.76	14.89
Ethyl acetate	166	77.16
Methanol	520	158.12

## CONCLUSION

In this study, methanol and ethyl acetate extract of *Psychotria dailzelli* shows the significant amount of phenolics and flavonoids content. Further analysis and purification of the leaf extract and In vivo and In vitro antioxidant activity may help in discovering the potential of the plant as source of antitumor and antioxidant activities. However, further research is required to isolate compounds using TLC, HPLC methods. Also, GC-MS can be carried out for characteristic identification of isolated compound.

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