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Review Article

Evaluation of phytochemical constituents of some indian Medicinal plants

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Article History	Abstract
Received on: 04-07-2021 Revised on : 21-07-2021 Accepted on : 31-07-2021	Phytochemical constituents (Alkaloids, tannins, saponins, steroid, terpenoid, flavonoids, and cardiac glycoside) of medicinal plant (<i>Aegle marmelos</i> , <i>Cynodon dactylon</i> , <i>Eclipta prostrata</i> , <i>Pongamia pinnata</i> , <i>Sida acuta</i> and <i>Tridax procumbens</i>)with different Families were Compared and Assessed.The Importance of these plants in ethnomedicine and their Significance in Traditional Medicine and there chemical constituents were discussed.
Keywords: Medicinal plant, Phytochemical, Analysis, Quantitative, Alkaloids.	
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Introduction

In The Health of individuals and communities Medicinal plants plays a vital role. The Physiological action on the Human Body is Produced by Some Chemical Substance which lies in these medicinal plants. alkaloids, tannins, flavonoids, and phenolic compounds [5].are the important bio constituents of plants.In india some of these medicinal plants are added to foods for pregnant

and nursing moethets for medicinal purposes [7,8]. In India Medicinal plants such as *Aegle marmelos*, *Cynodon dactylon*, *Eclipta prostrata*, *Pongamia pinnata*, *Sida acuta* and *Tridax procumbens* are used in Herbal medicine. In this study percentage of Phytochemical constituents present in these medicinal plants were investigated

Materials and Methods

Fresh leaves of *Aegle marmelos*, *Cynodon dactylon*, *Eclipta prostrata*, , *Sida acuta*, *Tridax procumbens* and stem barks of *Pongamia pinnata* were Collected and used in this study. The study plants were identified with the help of available Indian literatures

Preparation of Powder

Using a Mechanical Grinder The Collected leaves of *A. marmelos*, *C.dactylon*, *E. prostrata*, , *S.acuta*, *T. Procumbens* were Milled into Coarse Powder [4]. before that col-

lected leaves were shade dried at room temperature and sun dried for 3 days same procedure were Followed to Stem barks of *P.pinnata*.

Preparation of Aqueous Extract

In 200ml of distilled water 100 g of dried powdered samples were added and then soaked for 12hrs by this method aqueous extract was prepared. Whatmann Filter Paper No.42 (125 mm) [9], is used for filtering the extracts

Phytochemical Screening

In aqueous extract and on the powdered specimens chemical tests were carried out to identify the constituent's [3, 10, 11].

TEST FOR TANNINS

A quantity (0.5g) of the Powdered was boiled with 20ml of water for 5 min, The mixture was cooled and filtered. The Filtrate was subjected to the Following test

- (1) Ferric chloride test: A quantity (1 ml) of the filtrate was diluted with distilled water and added 2 drops of 0.1 % ferric chloride. A transient greenish to black colour indicates the presence of tannins.

Test For Saponin

A quantity (2g) of the powdered sample was boiled in 20ml of distilled water in water bath for 5min. The mixture was filtered. Filtrate was used for following test:

- (1) Emulsion test: A quantity (10 ml) of filtrate was added to 5ml o distilled water. The Mixture was shaken vigorously and observed for the formation of emulsion.

Test For Flavonoids

To determine the flavonoids presence in the extract three methods are followed [3, 10].

1. In the aqueous filtrate of extract add dilute ammonia solution of 4ml and add conc. H₂SO₄.The presence of flavonoids indicated by yellow coloured of the extract. Without Disturbance for few mins the yellow colouration of the extract were disappeared.
2. In the portion of the filtrate add few mL of aluminium solution which will shows yellow colour that indicates the presence of flavanoid in the plant extract.
3. 10 ml of ethyl acetate was added to the sample and heated on the water bath for 3 mins. Then cooled the extract in a room temperature. The solution was filter. Take 4 mL of filtrate and add 1 mL of ammonium solution (diluted) it

shows yellow coloured solution that indicates the presence of the flavonoids.

Test For Steroids

Add 2 mL of H₂SO₄ and 2 mL of acetic anhydride to the ethanolic extract of sample, the presence of steroids will indicated by the colour changes from violet to bluish green.

Test For Terpenoids (Salkowski Test)

Take 2 ml of chloroform and add 3 mL of concentrated H₂SO₄ in the 5 mL of extract and mixed well. The reddish brown colour of the interface show the presence of terpenoids.

Test For Cardiac Glycosides (Keller-Killani Test)

Add 2 mL of glacial acetic acid and add a few drops of ferric chloride solution in the 5 mL of extract. This was underlayed with few ml of concentrated sulphuric acid. For deoxysugar characteristics of cardenolides is indicates by a Formation of a brown coloured ring . In the acetic acid layer violet colour ring is formed below the brown ring and gradually green coloured thin layer is formed.

Quantitative Determination of Thechemical Constituency

Preparation of Fat Free Sample

100 mL of diethyl ether is added with 2 g of the plant extract and defatted with the use of soxhlet apparatus for 2 hr.

Determination of Total Phenols By Spectrophotometric Method

For the extraction of phenolic component 50ml of ether is boiled with fat free sample for 15min.in 50ml flask 5ml of extract was pipette and add 10ml of distilled water ,To this 5ml of concentrated amylnalcohol and 2ml of ammonium hydroxide solution was added.The sample was kept aside for 30 min for colour development upto the mark.505 nm was measured.

Alkaloid Determination Using Harborne (1973) Method

The sample (5g) was weighed into a 250 ml beaker and 200 ml of 10% acetic acid in ethanol was added. Beaker was covered and allowed to stand for 4 h. Then it was filtered and the extract was concentrated on a water bath to one quarter of its original volume. To the Extract Concentrated ammonium hydroxide was added drop wise until the completion of precipitation. The whole solution was allowed to settle. Using dilute ammonium hydroxide collected precipitate was washed and then filtered.Residue is the alkaloid which was dried and weighed

Tannin Determination By Van-Burden And Robinson (1981) Method

In 50ml of plastic bottle 500mg of sample was weighed to this 50ml of distilled water was added and shaken for 1 h in a mechanical shaker. In 50ml volumetric flask this was filtered and made up to mark and then 5ml of the filtered was pipette out into a test tube and mixed with 2 ml of 0.1 M FeCl₃ in 0.1 N HCL and 0.008 M potassium ferrocyanide. The absorbance was measured at 120 nm within 10 min.

Result

The present study carried out on the plant samples revealed the presence of medicinally active constituents.

The phytochemical characters of the medicinal plants investigated are summarized in Tables 1 and 2.

- ✓ Flavonoids were present in all the plants.
- ✓ Alkaloids were absent in *C. dactylon* and *P. pinnata*.
- ✓ Tannin, saponin were absent in *C. dactylon* and *S. acuta*.
- ✓ Steroid and terpenoid were present in all plants except *S. acuta* and *T. procumbens*.
- ✓ Only *A. marmelos*, and *S. Acuta* showed the presence of cardiac glycoside (Table 1).

Quantitative estimation of the percentage of crude chemical constituents in these medicinal plants studied is summarized in (Table 2).

- ✓ *marmelos* contained the highest percentage crude yield of alkaloids (1.08%)
- ✓ *dactylon* and *P. pinnata* contained no alkaloids.

The highest yield of tannin (15.32%) were contained in *A. mormelos*.

Table 01: Qualitative Analysis of The Phytochemicals of The Medicinal Plants

Plants	Alkaloids	Tannin	Saponin	Steroid	Terpenoid	Flavonoid	Cardiac Glycoside
<i>A. marmelos</i>	+	+	+	+	+	+	+
<i>C. dactylon</i>	-	-	-	+	+	+	-

<i>E. prostrata</i>	+	+	+	+	+	+	-
<i>P. pinnata</i>	-	+	+	+	+	+	-
<i>S. acuta</i>	+	-	-	-	-	+	+
<i>T. procumbens</i>	+	+	+	-	-	+	-

(+) Presence

(-) Absence

Table 02: Percentage of Alkaloids, Phenols And Tannin Plants Investigated

Plants	Alkaloids (%)	Phenols (%)	Tannin(%)
<i>A. marmelos</i>	1.11 ± 0.24	0.88 ± 0.12	15.32 ± 0.11
<i>C. dactylon</i>	-	0.16 ± 0.10	-
<i>E. prostrata</i>	0.39 ± 1.17	-	12.04 ± 0.45
<i>P. pinnata</i>	-	-	6.26 ± 0.24
<i>S. acuta</i>	1.05 ± 0.21	0.09 ± 0.13	6.09 ± 0.25
<i>T. procumbens</i>	0.56 ± 0.23	0.10 ± 0.34	7.47 ± 0.24

Discussion and Conclusion

The phytochemical screening and quantitative estimation of the percentage crude yields of chemical constituents of the plants studied showed that the leaves and barks were rich in alkaloids, flavonoids, tannins and saponins. They were known to show medicinal activity as well as physiological activity [10].

It has been found that some of these investigated plants contained steroidal compounds. It should be noted that steroidal compounds are of importance in pharmacy due to their relationship with sex hormones [8]. Both *S. acuta*, *A. marmelos* possessed very high levels of alkaloids and flavonoids and are employed in medicinal uses.

They are also widely employed as livestock and poultry feed [2]. The plants studied here can be seen as a potential source of useful drugs. Further studies are going on these plants in order to isolate, identify, characterize and elucidate the structure of the bioactive compounds. The antimicrobial activities of these plants for the treatments of the diseases as claimed by traditional healers are also being investigated.

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Conflict of Interest

“The authors declare no conflict of interest.”

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