

## Preliminary Phytochemical Screening of Some Weed Species of Kadapa District, Andhra Pradesh, India.

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### Research Article

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#### ABSTRACT

The phytochemical constituents present in weeds act as potential source of useful drugs to improve the health status of humans. Phytochemical surveys are now acted as the first step towards the discovery of useful drugs. Weeds are the richest resource of drugs and useful for the various biological activity. The present investigation includes the Phytochemical screening of some abundantly available weed species from the crop fields of Kadapa district. Phytochemical tests were carried out specially for screening secondary metabolites from the selected weed plants. 21 weed species belonging to 20 genera and 13 different families were phytochemically analyzed to find Different phytochemicals like alkaloids, steroids, phenols tannins, saponins, anthroquinones terpenoides, flavonoids, and glycoside.

#### INTRODUCTION

A weed is an unwanted plant growth in a place where some other plants are also growing or no other plant has to grown at all. The plants growing in a wrong place i.e. in agriculture fields are often referred to as weeds. The unwanted plants which are growing in crop fields and competing along with the crop plants and have a short vegetation phase with high reproductive potential. The progress of human beings has been associated with the use of plant resources for their livelihood. In ancient Indian literature it is observed that every plant on this planet is useful in industry, medicine and allelopathy [11]. The phytochemicals like flavonoids, alkaloids, amino acids, glycosides, saponins, steroids, tannins and many others present in the plants are the great reservoirs of many new and potential drugs. Phytochemical analysis is now acted as the essential part towards the discovery of useful and novel drugs. Screenings for biological activity using simple bioassays have now been added to give a better identification of the usefulness of weeds. So the present investigation has been taken up to evaluate the presence of different Preliminary phytochemicals from the collected weed species of Kadapa district.

#### MATERIAL AND METHODS

##### Collection and identification of plant material

Weed species were collected from the agricultural fields of Kadapa district. The plant samples were identified by Dr.Prayaga Murty Pargada, Department of Botany, Govt. Degree College, Porumamilla with the help of Flora of British India' by Hooker [6]; 'Flora of Presidency of Madras' by Gamble [5]; 'Forest flora of Andhra Pradesh' by Reddy et al. [10]; 'Flora of Andhra Pradesh' by Pullaiah & Chennaiah [9]; and Weed Flora of North Coastal Andhra Pradesh by Prayaga Murty [8]. The root portions were cut off and the plants were washed thoroughly under running tap water to free from debris. The leaves and shoot portion of the fresh plant material were chopped into small pieces and dried in shade, finely made powder using Mixer grinder. The leaf powders of the test weeds were stored in polythene bags for the further studies.

##### Phytochemical Screening

The present study is aimed to provide an inventory of the preliminary phytochemical screening for the detection of various plant constituents. The methodology adopted for the parameter is as follows.

### Test for Alkaloids

**Wagner's test:** A fraction of extract was treated with Wagner's test reagent [1.27 g of iodine and 2 g of potassium iodide in 100 ml of water] and observed for the formation of reddish brown colour precipitate.

### Test for Flavonoids

**NaOH test:** A small amount of extract was treated with aqueous NaOH and HCl, observed for the formation of yellow orange colour.

**H<sub>2</sub>SO<sub>4</sub> test:** A fraction of extract was treated with concentrated H<sub>2</sub>SO<sub>4</sub> and observed for the formation of orange colour.

**Lead acetate test:** A small amount of extract was treated with lead acetate and observed for the formation of white precipitate.

### Test for Tannins

**Braymer's test:** Few ml of extract was treated with 10% alcoholic ferric chloride solution and observed for formation of blue or greenish colour solution.

### Test for Saponins

**Foam test:** A small amount of extract was shaken with water and observed for the formation of persistent foam.

### Test for Glycosides

#### Legals test

Chloroform (3ml) and ammonia solution (10%) was added to 2ml plant extract. Formation of pink color indicated the presence of glycosides.

### Test for Terpenoids

**Liebermann – Burchard test:** Extract (1ml) was treated with chloroform, acetic anhydride and drops of H<sub>2</sub>SO<sub>4</sub> was added and observed for the formation of dark green colour.

### Test for Steroids

To 0.5 ml of the plant extract equal volume of chloroform was added and subjected with few drops of concentrated sulphuric acid (H<sub>2</sub>SO<sub>4</sub>). Appearance of brown ring indicates the presence of steroids

### Test for Phenols

**Ferric chloride test:** The fraction of extract was treated with 5 % ferric chloride and observed for formation of deep blue or black colour.

**Liebermann's test:** The extract was heated with sodium nitrite, added H<sub>2</sub>SO<sub>4</sub> solution diluted with water and excess of dilute NaOH was added and observed for the formation of deep red or green or blue colour.

### Test for Anthraquinones

**Borntrager's test:** About 50 mg of powdered extract was heated with 10% ferric chloride solution and 1ml concentrated HCl. The extract was cooled, filtered and the filtrate was shaken with diethyl ether. The ether extract was further extracted with strong ammonia; pink or deep red colourations of aqueous layer indicate the presence of anthraquinone.

## RESULTS AND DISCUSSION

The Preliminary Phytochemical Analysis of 21 weed species belonging to 20 genera and 13 different families were presented in table-1. These 21 weed species were abundantly available in all crop fields of kadapa district. Information collected on chemical analysis of different weed species were present in Table-1. Weeds were subjected to various chemicals such as alkaloids, flavonoids, Glycosides, Phenol, saponins, steroids, tannin and terpenoids are screened and presented. Anthroquinones are present in the samples of *Acalypha indica* L, *Aerva lanata* (Linn.) Juss. and *Phyllanthus amarus* K.Schum only and are absent in all tests. Phenols are reported in *Aerva lanata* (Linn.) Juss. and *Argemone maxicana* L. only. The phytochemicals like alkaloids, saponins, flavonoids and phenolic compounds present in plants are responsible for many biological activities. The five weeds *Aerva lanata* (Linn.) Juss., *Argemone maxicana* L., *Cleome viscosa* L., *Commelina benghalensis* L. and *Convolvulus*

*arvensis* L., were found to contain Alkaloids, Saponins, Tannins, Steroids and Flavonoids. *Aerva lanata* (Linn.) Juss. contain Alkaloids, Saponins, Tannins, Steroids, Flavonoids, Anthroquinones, Terpenoides and Phenols but the glycosides were absent in *Aerva lanata*. In Table -1 all weeds were contain alkaloids except few weeds like *Ageratum conyzoides* Linn, *Alternanthera sessilis* (L.) R.Br. *Cyperus difformis* L. *Cyperus rotundus* L. and *Echinocloa crusgalli* (L.) P. Beauv. In *Aerva lanata* (Linn.) Juss. The same results were reported by Abbas et al [1], Dhole et al. [3], Ebrahim Gholamalipour & Alamdari [4], Kothale et al [7], Thamaraiselvi et al [12], Vijayalakshmi & Ravindhran [13].

**Table 1: Preliminary Phytochemical analysis of some weed species**

S. No	Name of the plant	Local name	Family	Preliminary Phytochemical analysis								
				Alk	Sap	Tan	Ste	Fla	Ter	Gly	Anth	Phe
1	<i>Acalypha indica</i> L.	Muripindi	Euphorbiaceae	+	+	-	+	-	-	+	+	-
2	<i>Achyranthus aspera</i> L.	Uttareni	Amarantaceae	+	+	+	+	-	-	+	-	-
3	<i>Aerva lanata</i> (Linn.) Juss.	Kondapinda	Euphorbiaceae	+	+	+	+	+	+	-	+	+
4	<i>Ageratum conyzoides</i> Linn	Vaasana mokka	Asteraceae	-	-	-	+	+	-	+	-	-
5	<i>Alternanthera sessilis</i> (L.) R.Br.	Chenchalakura	Amarantaceae	-	+	+	+	-	-	-	-	-
6	<i>Amaranthus spinosus</i> L.	Mullathotakura	Amarantaceae	+	-	-	+	+	-	-	-	-
7	<i>Argemone maxicana</i> L.	Balurakkasi	Pepavaceae	+	+	+	+	+	-	+	-	+
8	<i>Arundo donax</i> Linn.	Sannagaddi	Poaceae	+	-	-	+	-	+	-	-	-
9	<i>Bacopa monnieri</i> (L.)Wettst.	Brahmi	Scrophulariaceae	+	+	+	-	-	-	-	-	-
10	<i>Cardiospermum helicacabum</i> L.	Budda kakara	Sapindaceae	+	+	+	-	-	-	-	-	-
11	<i>Celosia argentea</i> L.	Kodijuttupuvulu	Amarantaceae	+	-	+	-	-	-	-	-	-
12	<i>Chenopodium album</i> L.	Pappukura	Chenopodiaceae	+	-	+	-	-	-	-	-	-
13	<i>Cleome viscosa</i> L.	Kukka vaminta	Capparidaceae	+	+	+	+	+	-	+	-	-
14	<i>Commelina benghalensis</i> L.	Venna veduru	Commelinaceae	+	+	+	+	+	-	-	-	-
15	<i>Convolvulus arvensis</i> L.	Elakajemudu	Convolvulaceae	+	+	+	+	+	-	-	-	-
16	<i>Corchorus olitorius</i> L.	Naramokka	Tiliaceae	+	-	-	-	+	-	-	-	-
17	<i>Cynodon dactylon</i> (L.) Pers.	Gariki	Poaceae	+	-	-	+	+	+	-	-	-
18	<i>Cyperus difformis</i> L.	Tunga	Cyperaceae	-	+	+	+	+	+	+	-	-
19	<i>Cyperus rotundus</i> L.	Tunga	Cyperaceae	-	+	+	+	+	+	+	-	-
20	<i>Echinocloa crusgalli</i> P. Beauv	Udara gaddi	Poaceae	-	+	+	+	+	+	-	-	-
21	<i>Phyllanthus amarus</i> K.Schum.	Nela usiri	Euphorbiaceae	+	-	-		+	+	+	+	-

Alk = Alkaloids

Sap = Saponins

Tan = Tannins

Fla = Flavonoids

Gly= Glycosides

Anth=Anthroquinones

Phe= Phenols

Ste= Steroids

Ter=Terpenoides

## CONCLUSION

According to World Health Organization (WHO) the macroscopic and microscopic description of a medicinal plant is the first step towards establishing its identity and purity and should be carried out before any tests are undertaken (Anonymous 1996). Weeds are unwanted and commonly found everywhere. The phytochemical constituents present in weeds act as potential source of useful drugs to improve the health status of humans. Phytochemical surveys are now acted as the first step towards the discovery of useful drugs. Weeds are the richest resource of drugs and useful for the various biological activity. After present investigation it can be concluded that the phytochemical studies of weed species yielded a set of qualitative and quantitative pharmaco-botanical parameters or standards that can serve as an important source of information to ascertain the identity and to determine the quality and purity of the plant material in future studies

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