

## Phytochemical screening of some Euphorbiaceae members

Kothale K. V., Rothe S. P. <sup>1\*</sup> and Pawade P. N. <sup>2</sup>

Department of Botany, Govt. Vidarbha Institute of Science & Humanities, Amravati, India

<sup>1</sup>Department of Botany, Shri. Shivaji College of Arts, Commerce & Science, Akola, India

<sup>2</sup>Department of Botany, Arts, Commerce & Science College, Kiran Nagar, Amravati, India

### Abstract

The present investigation includes the Phytochemical screening of some medicinally important plants from the family Euphorbiaceae. All the members studied are exotic but naturalized except *Ricinnus communis* L. which is commercially cultivated in India. Plant extracts were prepared in various solvents and phytochemically they were tested in the solvent where the good extraction or active extraction observed, Phytochemical tests were carried out specially for screening secondary metabolites from the selected exotic medicinal plants from family Euphorbiaceae. Six genera and seven species of Euphorbiaceae were phytochemically analyzed to find secondary metabolites.

**Keywords:** Phytochemical Screening, Exotics and Euphorbiaceae

### INTRODUCTION

Medicinal plants are a source of great economic value. In the earliest Indian records of Indian medicine (Ayurveda) include the detailed information about hundreds of medicinal plants. India has rich heritage of knowledge of plants based drugs preventive and curative medicines (Trivedi, P.C 2007). In India many exotic plants are introduced from other countries through civilization, social forestry and gardening. Now these plants are naturalized along roadsides, in forest as weed occurring regularly in cultivated fields and in gardens. From the large number of diverse types of plants here are studied some plants from the family Euphorbiaceae. The family Euphorbiaceae is assessed taxonomically and phylogenetically in the light of different disciplines of Botany. It is heterogeneous palynologically chemically and embryologically. Euphorbiaceae is generally distinguished by the milky sap. (When present) unisexual (evolved) flower, ovary trilocular and superior, Placentation axile. Gibbs (1974) summarized and reviewed

phytochemical constituents of Euphorbiaceae. He pointed out peculiar interest in the stinging hairs. Webster (1966) recognized that the seed fats of Euphorbiaceae reveal the heterogeneity of the family. Evan and Kinghorn (1977) made a comparative phytochemistry of diterpenes of some species of Euphorbia. Acharya, Hemlata and Radhakrishnan, (1997) Studied 10 species of Euphorbia. Seigler & David S. (1994) recorded large number of compounds from different chemical classes from the members of Euphorbiaceae.

In his opinions, chemistry of the family is the most diverse and interesting and is comparable to be biological diversity of the family. He further stated that of all chemical classes the alkaloids, cyanogenic glycosides, diterpenes, glucosinolates, seed and other lipids, tannins and triterpenes are the useful for chemotaxonomic purpose at the generic level. In Amravati district Euphorbiaceae is one of the dominant family in the dicotyledons. It consists of herbs, shrubs, climbers and tree plants. For the preliminary Phytochemical investigations following plants were selected.

Table I. List of plants

S. N.	Name of the plant	Local name	Native
1	<i>Acalypha ciliata</i> Forssk.	Kupi, khokli	Paleotropical
2	<i>Croton bonplandianum</i> Baill.	Jangli Jamalgota	S. America
3	<i>Euphorbia geniculata</i> Orteg.	Dudhi choti	Pan tropical
4	<i>Euphorbia hirta</i> L.	Dudhi badi	Pan tropical
5	<i>Jatropha gossypifolia</i> L.	Chandrajyoti	Trop. America
6	<i>Pedilanthus tithymaloides</i> (L.) Poir.	Vilayati sher	Trop. America
7	<i>Ricinnus communis</i> L.	Erand	Trop. America

### MATERIALS AND METHODS

Exotic medicinal plants were collected from different localities of the Amravati district, during the different phenological state. After collection of plant materials in sufficient quantity plant parts were washed and dried in the shade. The dried plant powder used for the phytochemical screening. In some plants instead of dried plant material, fresh plant materials was used for the tests.

Detection of various secondary metabolites was done by standard prescribed methods. (Anonymous 1966, Harborne 1998,

Received: Oct 11, 2011; Revised: Nov 2, 2011; Accepted: Dec 11, 2011.

\*Corresponding Author

Rothe S. P.  
Department of Botany, Shri. Shivaji College of Arts, Commerce and Science,  
Akola, India

Tel : +91- 9822239825  
Email: sprothe@rediffmail.com

Gibbs 1974, Evans 1997, Kokate *et al.*, 1998; Sadashivan and Manikam 2005).

Responses to various tests were denoted by + and +++ signs indicating weak, moderate and strong reactions respectively.

## DISCUSSION

Various Phytochemical test were carried out and screened out various secondary metabolites from selected plants. As per notified by different taxonomist members of the family Euphorbiaceae shows heterogeneous characters in chemical investigation. All above mentioned genera are closely similar with each other due to absence of Saponin, Tannins and Phlobatannins. While Iridoids and

Flavonols found only in *Jatropha*. Steroids not found in *Ricinus* while Cardenolides lacks in *Acalypha* and *Euphorbia geniculata*. It is poorly visible in the *Euphorbia hirta*, *Croton* and *Ricinus*. Anthraquinone is strongly found in *Jatropha gossypifolia*, lacking in rest of the members. Presences of alkaloids are the common character of all members in Euphorbiaceae. Leucoanthocyanin was not detected in *Ricinus* and *Pedilanthus*. Phenolics are found in *Ricinus* and *Pedilanthus* but poorly visible in *Croton*. Flavonols, Flavones and Flavonols are totally absent in *Acalypha* and poorly visible in *Pedilanthus*.

## OBSERVATION AND RESULTS

Table II. Phytochemical screening of Euphorbiaceae members

Sl.No	Phytochemical test	A	B	C	D	E	F	G
1	Saponins	---	---	---	---	---	---	---
2	Tannins	---	---	---	---	---	---	---
3	Phloba-tannins	---	---	---	---	---	---	---
4	Iridoids	---	---	---	---	+++	---	---
5	Steroids	+ ++	+ ++	++-	+--	++-	+ ++	---
6	Unsaturated steroids	+++	+++	+--	+--	+++	+ ++	---
7	Cardenolides	---	+--	---	+--	++-	++-	+--
8	Anthraquinone	---	---	---		+++		---
9	Alkaloids	+++	+++	+++	+++	+--	+ ++	+++
10	Phenolics	+++	+++	+++	+++	+++	+++	+++
11	Leucoantho-cyanin	+++	+--	+++	+++	+++	---	---
12	Flavonoides I. Shinoda test	+--	+--	+--	---	+++	---	---
	II. Flavononols	---	---	---	---	+++	---	---
	III. Flavanols	---	---	+++	++-		+--	+++
	IV. Flavones and Flavonols	---	++-	+++	+++	+++	---	---
	V. Rao Sheshadri	---	---	---	---	---	---	---

Note: A:- *Acalypha ciliata* Forssk., B:- *Croton bonplandianum* Baill. C:- *Euphorbia geniculata* Orteg. D:- *Euphorbia hirta* L. E:- *Jatropha gossypifolia* L. F:- *Pedilanthus tithymaloides* (L.) Poir. G:- *Ricinus communis* L.

## CONCLUSION

It is concluded that, the genera studies for phytochemical screening shows that they show closely resemblance with each other by the presence of phenolics and alkaloids. While, Saponin and tannin are lacking in all genera. Steroids are found to be present in all except *Ricinus communis* L. and Iridioides are found in *Jatropha species*.

## REFERENCES

- [1] Acharya, Hemlatha and Radhakrishnaiah (1997) Some observations on the chemotaxonomy of Euphorbia. Acta Botanica Indica 25: 219 – 222.
- [2] Anonymous (1966) The Indian Pharmacopoeia, 2nd Edn., Government of India Publication, New Delhi.
- [3] Ashutosh Kar (2007) Pharmacognosy and Pharmacobiotechnology Second edition, New Age International Publishers, New Delhi.
- [4] Evans, F. J., Kinghorn, A. D. (1977) A comparative phytochemical study of the diterpenes of some sps. of genera Euphorbia and Elaeophorbia (Eupho.) Bot. J. Linn. Soc. 74: 23 – 35.
- [5] Gibbs, R. D. (1974) Chemotaxonomy of flowering plants. Vol. 1 – 4. Mc. Gill Queens University Press Montreal and London, England.
- [6] Harborne J. B. (1998) Phytochemical Methods. 3rd Edn., Chapman & Hall Publication, London.
- [7] Kokate C.K., A.P. Purohit and S.B. Gokhale (1998) Pharmacognosy, Nirali Prakashan, Pune.
- [8] Sadashivan S. and Manickam A. (2005) Biochemical Methods. 2nd Edn., New Age International (P) Ltd., Publisher, New Delhi.

- [9] Seigler, David S. (1994) Cytoembryological studies in some Indian Euphorbiaceae. *Ann. of the Missouri Bot. Gard.* 81(2) : 380 –401.
- [10] Trivedi P.C. (2007) *Medicinal plants, Traditional knowledge*, I. K. International Publishing House, New Delhi.