

SURVEY OF EUPHORBIACEAE FAMILY IN KOPERGAONTEHSIL OF MAHARASHTRA

Rahul Chine¹ & MukulBarwant²

¹Research Scholar, Department of Botany, Shri Sadguru Gangagir Maharaj Science College, Maharashtra, India

²Research Scholar, Department of Botany, Sanjivani Arts Commerce and Science College, Maharashtra, India

ABSTRACT

The survey of Family Euphorbiaceae from Kopergaon is done. In this we first collection of different member of Family Euphorbiaceae from different region of Kopergaon. An extensive and intensive survey at plants was carried out from village Pathare, Derde, Pohegoan, Kopergaon, Padhegaon, Apegoan during the were collected in flowering and fruiting period throughout the year done. During survey we determine 16 member of Euphorbiaceae from Kopergaon. Then we decide characterization on the basis of habit, flowering character, leaf and fruit character with help of that character and using different literature we identified each and every member of Euphorbiaceae. Species were identified with relevant information and documented in this paper with regard to their Botanical Name, family, Habitat, flowering Fruiting session and their medicinal value of some member of Euphorbiaceae that used in medicine respiratory disorder such as cough, asthma, bronchitis etc and some are toxic in nature due to their toxic latex that is showing itching reaction.

KEYWORDS: Family Euphorbiaceae, Respiratory Ailment, Identification, Characterization and Documentation

Article History

Received: 09 Apr 2020 / Revised: 10 Apr 2020 / Accepted: 18 Apr 2020

INTRODUCTION

The Euphorbiaceae, the spurge family, is one of the complex large family of flowering plants of angiosperm with 334 genera and 8000 species in the worlds (Wurdack 2004). It is one of the most diverse flowering plant groups on the earth. India 73 genera and 410 species (Divya et al 2011) This family occurs mainly in the tropics, with the majority of the species in the Indo-Malayan region and tropical America a strong second. It has nearly Cosmopolitan distribution with centers of diversity in South Africa, in Eastern and North Eastern Africa, in North and Central Mexico as well as in western Asia, but it is absent in subarctic areas and rain forest (Webster 1967; Carter and Radcliffe-Smith 1988; Govaerts et al, 2000). All flowers in the Euphorbiaceae are unisexual and they are very small in size. In genus *Euphorbia*, the flowers are reduced even more and then aggregated in to an inflorescence or cluster of flowers known as a “cyathium”. In India family Euphorbiaceae has been revised recently [Binojkumar & Balakrishnan 2012.] A large variety occurs in tropical Africa, but they are not as abundant or varied as in the two other tropical regions. However, Euphorbiaceae also has many species in nontropical areas such as the Mediterranean Basin, the Middle East, South Africa, and the southern United States. The family contains a large variety of phytotoxins (toxic substances produced by plants), mainly diterpeneesters, alkaloids, glycosides, and ricin-type toxins. Milky latex is a characteristic of the subfamilies Euphorbioideae and Crotonoideae, and the latex of the rubber tree *Hevea brasiliensis* is the primary source of natural rubber. The latex is poisonous in the

Euphorbioideae, but innocuous in the Crotonoideae. White mangrove (*Excoecaria agallocha*), or blind-your-eye mangrove latex causes blistering on contact and temporary blindness if it contacts the eyes. Other common names are milky mangrove, butabuta (Malay), and gewa (Bangladesh). The latex of spurge was used as a laxative. Recent molecular studies have shown that the enigmatic family Rafflesiaceae, which was only recently recognized to belong to order Malpighiales, is derived from within the Euphorbiaceae. Croton cultivar 'Petra' (Wurdack 2004).

It commonly called euphorbias, which is also the name of a genus in the family. Most spurges such as *Euphorbiaparalias* are herbs, but some, especially in the tropics, are shrubs or trees, such as *Euphorbia pulchirima*. *Euphorbia* is a genus of family Euphorbiaceae. It includes about 2100 species. It is one of the most diverse flowering plant groups on the earth (Mabberley, 2005). Some are succulent like *Euphorbia canariensis*, and resemble cacti because of convergent evolution. A number of spurge family plants have economic importance plants include Casava, castor oil plant (*Ricinus communis*), barbodus nuts (*Jatropha curcus*), Para rubber tree. Many of ornamental grown plants such as pionsetta (*Euphorbia Pulchirima*). The Euphorbiaceae species used in local population use as medicine, remedies against several disease such as cancer, diabetes, diarrhea, heart disease, hemorrhage, hepatitis, jaundice malaria ophthalmic disease. In India genera of Euphorbiaceae are reported as medicinal used such as *Acalypha*, *Aleurites*, *Andrachne*, *Antidesma*, *Bridelia*, *Chrozophora*, *Hippomaneae*, *Hura*, *Jatropha*, *Mallotus*, *Phyllanthus*, *Putranjiva*, *Ricinus*, *Tragia*, *Trewia*. The leaves are alternate, seldom opposite, with stipules. They are mainly simple, but where compound, are always palmate, never pinnate. Stipules may be reduced to hairs, glands, or spines, or in succulent species are sometimes absent. The plants can be monoecious or dioecious. The radially symmetrical flowers are unisexual, with the male and female flowers usually on the same plant. As can be expected from such a large family, a wide variety exists in the structure of the flowers. The stamens (the male organs) number from one to 10 (or even more). The female flowers are hypogynous, that is, with superior ovaries. The genera in tribe Euphorbieae, subtribe Euphorbiinae (*Euphorbia* and close relatives) show a highly specialized form of pseudanthium ("false flower" made up of several true flowers) called a cyathium. The main defining feature of the cyathium is the floral envelope or involucre that surrounds each group of flowers. The involucre almost always has one or more special glands attached to it, most often on the upper margin & their appendages vary greatly in size & shape. Geophytic species worked from India. He stated that all the geophytic species of euphorbia are endemic to India. [Soumen Aditya (2010)] There may be specialized leaves called cyathial leaves that surround the cyathium & give an overall flower-like appearance to the whole inflorescence. Inside the involucre are the flowers. Usually with a number of extremely simplified generally there is a single female flower in the center consisting of a pedicel, a three-lobed ovary, & no petals or sepals associated with it.

This is usually a small, cup-like involucre consisting of fused-together bracts and peripheral nectary glands, surrounding a ring of male flowers, each a single stamen. In the middle of the cyathium stands a female flower: a single pistil with branched stigmas. This whole arrangement resembles a single flower. The fruit is usually a schizocarp, but sometimes a drupe. A typical schizocarp is the regma, a capsular fruit with three or more cells, each of which splits open at maturity into separate parts and then breaks away explosively, scattering the small seeds

Distinguishing Characters of the Family:

- Plants are mostly herbs or shrubs with milky latex.
- Leaves are generally opposite- decussate or superposed, alternate.

- Presence of Latex
- Inflorescence is the special type i. e. cyathium. Cyathium is the floral envelope or
- Involucre bract that surrounds each group of flower. At the upper margin of involucre
- bract the gland are present & they varies from species to species.
- Flowers are unisexual.
- Tricarpellarytrilocular superior ovary with Pendulous ovule on axile placenta.
- Schizocarpic fruit.
- Carunculate seed.

MATERIAL AND METHODS

An extensive and intensive survey at plants was carried out from village Pathare, Derde, Pohegaon, Kopergaon, Padhegaon, Apegaon during the were collected in flowering and fruiting period throughout the year (2018) from this region. The method of plant collection and their identification was done through methods used earlier by different literature. The collection done in different region of kopergaon tehsil in different village photographs and field note done on field such flowering habit, fruiting. The collected specimens were identified with the help of available literature, matching with standard herbarium and relevant books The plants of this family mostly found in open area as well as in fallow field.

RESULT AND DISCUSSIONS

As mentioned earlier, the above study has been carried out to know the species abundance of the members of family Euphorbiaceae. As it is shown in above observation table 16 members of family from Kopergaontehsil were recorded. The species like *Euphorbia hirta*, *Euphorbia parviflora*, *Euphorbia geniculata*, *Chrozophorarottleri*, *Ricinuscomminis*, *Phyllanthusfraternus*, are abundantly found in Kopergaontehsil while *Croton bonplandis*, *Euphorbiathymifolia*, *Euphorbia dracunloides*, restall were found to be in least of number The some members of family Euphorbiaceae are cultivated plants for ornamental purposes. They are *Euphorbia milli*, *Jatrophaintegerima*, *Acalyphawilkesiana*, *Codiacumvariegatum*, *Euphorbiapulcherima* etc.

The current survey state that the variation in the climatic and geographic condition also changes the flowering and fruiting period of the species and their number from the study area recorded are listed in the following table 1

Table 1: Observation of List of Plant and their Habit, Locality and Flowering Season

Sr No.	Botanical Name	Habit	Collected Region	Flowering Season
1	<i>Euphorbia geniculata</i> Orteg	Herb	Pathare	Sept-Jan
2	<i>Euphoorbiahirta</i> L.	Herb	Pathare	Throughout year
3	<i>Euphorbia parviflora</i> L.	Herb	Pohegaon	Oct-May
4	<i>Euphorbia heyneana</i> SprengSyst	Herb Prostrate	college campus	Sept-Dec
5	<i>Ricinuscomminis</i> L.	Shrub	Derde	Aug-Oct
6	<i>Jatrophaintegerima</i> Jacq.	Shrub	College Garden	Throught year
7	<i>Jatrophagossipifolia</i> L.	Shrub	Sai corner	July-february
8	<i>Phyllanthusamarus</i> Schum and Thumm	Herb	Apegaon	September-December
9	<i>Phyllanthusfraternus</i> Webster	Herb	College campus	September-December

10	<i>Euphorbia thymifolia</i> L.	Herb Prostrate	College campus	September-December
11	<i>Euphorbia pulcherima</i> Wild	Shrubs	Kopergaon	September-December
12	<i>Euphorbia milli</i> Ch	Shrub	College Garden	September-December
13	<i>Codiaicum variegatum</i> L.	Shrub	College Garden	July-february
14	<i>Chrozophora rotterli</i> Juss	Herb	Derde	September-December
15	<i>Croton bonplandianus</i> Baill	Herb	Sai corner	July-february
16	<i>Euphorbia dracunculoides</i> Lam	Herb	Apegaon	September-December

Taxonomic Account

Chrozophora rotterli Juss

Errect, hairy, annual herb, leaves thick, sometime shallowly 3-lobed. Flower in terminal, densely stellate hairy raceme. Petals greenish, white, shorter than calyx. Ovary globose, style 2-fid upto the middle, red or pink. fruit globose densely stellate hairy

Codiaicum variegatum L

Evergreen shrubs, leaves alternate, shiny green and often variously spotted yellow or red above. Flowers is unisexual, axillary raceme. Petals 5-6, minute, dentate at apex. stamen 15-25, distinct, Ovary ovoid, style elongate filiform, connate at base

Croton Bonplandianus Baill

Errect, hispid, herbs, Leaves alternate, Flowers numerous in terminal paniculate raceme, female flowers at the base and male towards top of raceme, Male disk of scarlet red glands stamen many, Female disk of scarlet red glands, Style white, bifid, clasping the ovary fruits green, rather oblong, trigonous, stellate hairy.

Euphorbia Dracunculoides Lam

Errect, dichotomously branched, herbs, cyathia solitary, terminal sessile, involucres broadly campanulate, glabrous outside, pubescent, with distinct style bifid at apex, seeds are ellipsoid, grooved on one side, arillate near the apex.

Euphorbia hirta L

Annual, procumbent, herbs, stem hispid with long, yellowish crisped hairs, leaves are unequal sided and cordate at base, cyathia many, crowded in small axillary, sessile cyme, fruits globose, hispid, seedsovoid, trigonous, transversely rugose, reddish brown.

Euphorbia Genuiculata Orteg

Errect, glabrous, annual herbs, often tinged with and red, Cyathia many in dense terminal clustered cymes subtended by a whorl of leaf like bracts, involucres green, globose, fruits ovoid globose, 3 lobed, cocci seeds ovoid, quadrangular, rugose, truncate at both ends.

Euphorbia Heyneana Spreng Syst

Prostrate, nearly glabrous, annual herbs, leaves opposite, with pink margin; stipules lacinate, minute, cyathia subsolitary, axillary, glands are shortly, spatulate with small petaloid appendages, fruit trigonous, globose, glabrous, keeled, seeds obtusely quadrangular.

Euphorbia Parviflora L

Annual herbs, stem procumbent, glabrous nearly so, leaves opposite, obliquely cordate at base, cyathia many axillary and terminal, peduncle cyme, petaloid appendages, of the glands orbicular, often white or pinkish, entire fruit are subglobose.

Euphorbia Millich

Woody, somewhat scandent shrubs, armed with stout, sharp prickles, cyathia in long peduncle dichotomous cyme, each closely subtended by two, broadly ovate or suborbicular, bright red bract.

Euphorbia Pulcherima Wild

Shrub, stem erect, leaves alternate, cyathia many in terminal, dichotomous cyme, subtended by leaf like, vermilion red bract, rarely light yellow, involucre globose, green with red lobes, glands orange yellow.

Euphorbia Thymifolia L

Prostrate, annual herb, pubescent often with tinged red, leaves are opposite, stipules laminate, cyathia axillary, 1-3 short cymes, involucre communculate without petaloid appendages, fruit ovoid globose, 3-lobes, lobe obtusely angled densely hairy, seeds obtusely quadrangular, obtuse at both ends, transversely rugose.

Jatropha integerima Jacq

Shrubs, stems is erect with sticky juice, often tinged with brown purple, leaves alternate, usually crowded at the end of branches, flower in terminal, corymbose panicle, petals crimson or pink red, clawed, disk of 5 pink glands, stamens 10, monodelphous in two series, style distinct, bifid at apex, seeds oblong, obtuse.

Jatropha gossypifolia L

Much branched shrubs, with yellow juice, leaves alternate, 3-5 fold beyond the middle green or more often dark purplish-red ciliate with stalked glands, stipules modified into decurrent rows of stalked glands, flowers in terminal, corymbose panicle, calyx green with purple tinge, gland ciliate, petals dark red, seeds trigonous, glabrous, greenish yellow, seed oblong carnaculate.

Phyllanthus amarus Schum and Thumm

Erect annual herbs, leaves distichous, flower small in leaf axils, 1-2 together, perianth segment 5 or 6, green with broad scarious margin, enlarged fruiting, stamen bifid at the apex, fruit globose, trigonous depressed at the apex, seed trigonous with 5-7 sub parallel longitudinal ribs.

Phyllanthus fraternus Webster

Erect annual herbs, leaves distichous, flower small in leaf axils, 1-2 together, perianth segment 5 or 6, green with broad scarious margin, enlarged fruiting, stamen 3 filament entirely connate, style bifid at the apex, fruit globose, trigonous depressed at the apex, seed trigonous with 5-7 sub parallel longitudinal ribs.

Ricinus communis L

Erect small tree, stem erect hollow swollen at node, leaves are spirally arranged, peltate, palmately 5-11 lobed flowers in narrow, terminal panicle consisting of sessile cyme of lower male and the upper female flower, female cyme 1-7 flower, fruit covered with soft prickles, seeds carunculate at base, mottled with gray brown

Figures



Figure 1: Chrozophora rotleri.



Figure 2: Codium variegatum.



Figure 3: Croton Bonplandianus.



Figure 4: Euphorbia Dracunculoides.



Figure 5: Euphorbia hirta.



Figure 6: Euphorbia Geniculata.



Figure 7: Euphorbia Heyneana.



Figure 8: Euphorbia Parviflora.



Figure 9: Euphorbia Milli.



Figure 10: Euphorbia Pulcherima.



Figure 11: Euphorbia Thymifolia.



Figure 12: Jatropha gossypifolia.



Figure 13: Jatropha integerima.



Figure 14: Phyllanthus amarus.



Figure 15: Phyllanthus fraternus.



Figure 16: Ricinus communis.

CONCLUSIONS

In the survey of of Euphorbiaceae family from kopergaontehsil we observed 16 member where identified base on detailed generated. These are collected and identified on the basis of literature these member collected at different region of kopergaon tehsil in different village *Euphorbia geniculate*, *Euphorbia hirta*, *Chrozophorarottleri*, *Phyllanthusamrus*, *Euphorbiaheynema*, found in maximum number in kopergaontehashil followed by *Euphorbia dranculoides*, *Phyllanthusfraternus*, *Croton bonpladinus*

REFERENCES

1. Binojkumar, M. S. & Balakrishnan, N. P. 2010. The genus *Euphorbia* L. (Euphorbiaceae)
2. In India. A taxonomic revision. Bishen Singh Mahendra Pal Singh, Dehra Dun, 430 pp.
3. Carter S., & Radcliffe-Smith R.A. 1988. Euphorbiaceae (part 2). In: Polhill RM (ed)
4. Flora of tropical East Africa. A.A. Balkema, Rotterdam, pp 409-597.
5. Cooke. T. 1905. Flora of the Presidency of Bombay. Volume-II, Botanical Survey of India. Calcutta, pp.310
6. Cooke. T. 1907. Flora of the Presidency of Bombay. Volume-III, Botanical Survey of India. Calcutta, pp.196-198.
7. Divya S, Naveen Kreeshnak, Ramchandran S, Dhanaraju M.D. Wound healing and InvitroAntioxidentActiviti of *Croton bonplandianum* leaf extract in Rats, *Global Journal of Phrmacology*,5(3),2011,159-163
8. N.P. Singh, P. Lakshminarashimhan, S. Karthikeyan and P.V. Prasanna. 2001 *Flora of Maharashtra State Dicotyledones Volume II*, pp 876-886.
9. N.P.Singh 2004 *Flora of Presidency of Maharashtra state Vol.2 Botanical Survey of India Kolkattapp*,437-473
10. Steinmann V.W., and Felger R.S. 1997. The Euphorbiaceae of Sonora, Mexico. *Aliso*. Vol. 16:1, 1-71
11. Radcliffe _Smith A, *Genera Eubhorbiacaerum*, Royal Botanical Garde, Kew (2001)-464
12. Webster G.L. *Synopsis of genera and supragenerictaxa Euphorbiaceae*, *Annals or Massuri Botanical Garden*,81(1994)33-144.

13. Wudrack K J, Hoffman P, Samuel R, Brujn A, Vander Bank M, & Chase M.W. Molecular phylogenetic analysis of *Phyllanthaceae* (*Phyllanthoidea* parte *Euphorbiaceae* 5.1) using plastid rbcL sequence, *American Journal of Botany*, 91(11)(2004)1882-1900
14. Yadav.S.R and Sardesai.M.M. 2002 *Flora of Kolhapur District*, Shivaji University Kolhapur, pp 429-434.
15. *Euphorbiaceae.in.org*