



A survey of some medicinally important plants of the family euphorbiaceae from Baramati area of Pune district of Maharashtra, India

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Abstract

Family Euphorbiaceae is one of the largest families of flowering plants, composed of over 300 genera and 8000 species and about 195 species are found in India. In light of various Botany disciplines, the family Euphorbiaceae is assessed taxonomically and phylogenetically. The milky sap distinguishes the Euphorbiaceae family. The current study is an attempt to document different plant species belonging to the family Euphorbiaceae that are used by the local people to treat various ailments in the Baramati area. The extensive and intensive studies of the vegetation of area under study field survey was carried out for collection of plants. In this present investigation, total 26 plant species belongs to 7 genera of the family Euphorbiaceae were reported. The current study, which focuses on medicinal plants and their local uses in healthcare, may be a preliminary contribution to this area using standard research methods.

Keywords: euphorbiaceae, floral diversity, field survey

Introduction

Family Euphorbiaceae is one of the largest families of flowering plants, composed of over 300 genera and 8000 species and about 195 species are found in India. The family contains a wide variety of plants, ranging from large woody trees to climbing lianas to simple weeds that grow prostrate to the ground. (Baskey and Lal., 2019) [4]. *Euphorbia* species can be found all over the world (in both tropical and temperate climates) and range in size from small, annual or perennial herbaceous plants to woody shrubs, lianas, and trees, as well as large desert succulents. In general, chemical and pharmacological studies were conducted on *Euphorbia* species' entire plants, stems, leaves, latex, roots, and seeds. (Andrea and Judit, 2014) [1]. In light of various Botany disciplines, the family Euphorbiaceae is assessed taxonomically and phylogenetically. The milky sap distinguishes the Euphorbiaceae family. When present, the flower is unisexual (evolved), the ovary is trilocular and superior, and the placentation is axile. Gibbes (1974) summarised and reviewed the phytochemical constituents of the Euphorbiaceae plant family. He expressed an unusual interest in the stinging hairs.

Webster (1966) recognised that the seed fats of Euphorbiaceae reveal the family's heterogeneity. Evan and Kinghorn (1977) conducted a phytochemistry comparison of some *Euphorbia* species' diterpenes. Acharya *et al.* (1997) investigated ten *Euphorbia* species. Seigler and David S. (1994) identified a large number of compounds from various chemical classes from Euphorbiaceae members (Kothale K.V. *et al.*, 2011) [10].

The Euphorbiaceae family plant, according to Ali Esmail (2017) [16], contains valuable prescription drugs. Secondary metabolites, which are bio-synthetically derived from primary metabolites and are an important source of many nutrients, are abundant in plants. In the phytochemical screening of *Euphorbia hirta*, carbohydrates, terpenoids, alkaloids, hormones, tannins, proteins, fats, oils, gums,

mucilages, glycoside, saponin, coumarin, cardiac glycosides, anthroquinones, flavanoids, and phenolic compounds were discovered. (Duh *et al.*, 1999; Dragland *et al.*, 2003; Wang, 2003; Wu *et al.*, 2004). (Bijekar and Gayatri, 2014) [5].

Jatropha gossypifolia (Euphorbiaceae) has anticancer, hepatoprotective and pesticidal activity. (Sosa *et al.*, 2002; Panda *et al.*, 2009). *Chrozophora tinctoria* is used in dyeing (Paolo, 2006), (Shahwar *et al.*, 2010) [17]. *Euphorbia tithymaloides* reported to have activity to minimize nematode damage in mushrooms. (Srivastava and Soni, 2019) [18].

Dried leaves of *Euphorbia heterophylla* were used for extraction with three different solvents namely petroleum ether (60-80°C), butanol and ethanol. (falodun A *et al.*, 2003) [6].

The antifungal, antibacterial, antiulcer and antitumor properties of extracts of leaves of *Acalypha hispida* have been established (Ejechi and Soucey, 1999; Adesina *et al.*, 2000; Gutierrez-Lugo *et al.*, 2002), (Onocha *et al.*, 2011) [15].

India a land of enormous alters in soil along with weather condition is an idyllic position meant for the gardening of great number of plants with medicinal properties and which can be used in cosmetics, agrochemical and perfumery also in pharmaceutical industries (Nag Aushi *et al.*, 2018) [12]. Most medicinal plants are being formulated into Pharmaceutical dosage forms like tablets, creams, ointments, syrups and lotions. (Lakshmi and Vaidya, 2018) [11].

The various parts of the plant (leaves, roots, seeds and seed and seed oil) are widely used in a variety of ailments in traditional system of medicine such as Ayurveda, Unani and Siddha (Arulraj P. *et al.*, 2017) [3]. The aim of present research is, to determine the preliminary phytochemical constituents, antimicrobial activity of Ethanol, Methanol,

Hexane and water extracts of the leaves and stems of *Acalypha indica* (Indira Priya Darsini. A, 2015)^[7]. According to the World Health Organization (WHO), traditional medicine is used by up to 80% of the world's population for primary healthcare. The use of various diseases has significant economic benefits. Traditional medical knowledge of medicinal plants, as well as indigenous culture's use of them, is not only important for the preservation of cultural traditions and biodiversity, but also for community healthcare and drug development in the present and future (Arijit Sinhababu and Arpita Banerjee, 2016)^[2]

Materials and Methods

The study area

The current study is thus an attempt to document different plant species belonging to the family Euphorbiaceae that are used by the local people to treat various ailments in the Baramati area. Baramati tehsil is located in Maharashtra's western region. Baramati tehsil lies between 18°04' to 18°32' north latitudes and 74°26' to 74°69' east longitudes. It is located at altitude of 550 meters above mean sea level. Area of Baramati tehsil is 1382 sq.km. The climate of the Baramati tehsil is slightly different in irrigated and non-irrigated area. The mean minimum temperature is about 12°C and mean temperature about 39°C. The average annual rainfall the Baramati tehsil was 502mm.

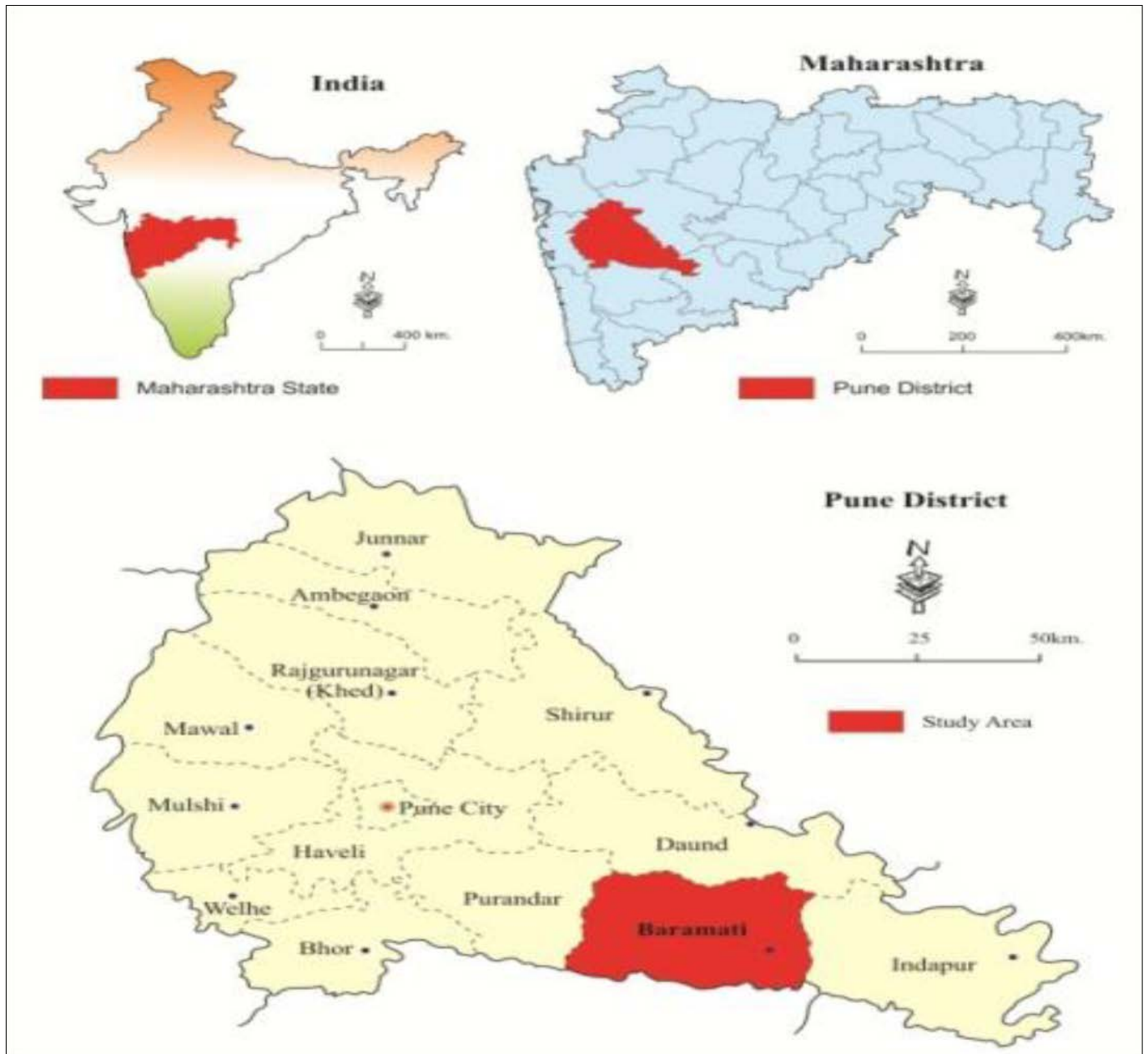


Fig 1: Map of the Study Area (Baramati tehsil)

The study on angiosperms of family Euphorbiaceae from the Baramati tehsil, Maharashtra is based on the results obtained from both extensive and intensive studies of the vegetation of area under study. Field survey was carried out for collection of plants. Identification of plant species during field work was done by compiling different floras available

and authenticated by experts from University department and research institutes. The methods employed during the study were designed with the sole purpose of eliciting the precious wealth of information on the medicinal uses of plants practiced by the local people. The collected specimens were identified by studying related taxonomic

books and booklets. The major collected materials were identified and described up to species with the help of the consulted documents. For the current name and up to date nomenclature were also consulted.

Result and Discussion

In this present investigation, total 26 plant species belongs to 7 genera of the family Euphorbiaceae were collected. Such as *Euphorbia hirta*, *Ricinus communis*, *Jatropha gossypifolia*, *Acalypha indica*, *Euphorbia milli*, *Codiaeum variegatum*, *Jatropha integerrima*, *Acalypha hispida*, *Euphorbia tirucalli*, *Acalypha wilkesiana*, *Euphorbia lactea*, *Euphorbia ingens*, *Euphorbia maculata*, *Euphorbia pulcherrima*, *Euphorbia alluaudii*, *Euphorbia celastroides*, *Euphorbia resinifera*, *Euphorbia tithymaloides*, *Euphorbia nutans*, *Euphorbia prostrata*, *Euphorbia serpens*, *Euphorbia dentata*, *Chrozophora tinctoria*, *Euphorbia heterophylla*, *Euphorbia lophogona* and *Manihot esculenta* etc. Each medicinal plant species is identified by its scientific name, common name, plant parts (such as leaf, root, stem, fruit, latex, whole plant, seed, inflorescence, and bark), and uses.

The investigation finding must be studied widely for medicinal applications in order to validate their authenticity and future prospects. The paper only records the herbal health remedies that are presently popular in the region and does not prescribe or recommend their use until further evaluation by the pharmacologist.

Data on traditional uses of plant species, especially for asthma, abscess, antihelminthic, astringent, bronchitis, bedsores, cancer, cough, diuretic, diarrhea, dysentery, eczema, headache, earache, inflammations, jaundice, kidney

disease, leprosy, paralysis, skin diseases, scabies, toothache, ulcers, ringworm and others, have been gathered.

In addition, the structural diversity exhibited by some rare compounds requires studies about their potential bioactivities and their chemotaxonomic roles. (Kemboi *et al.*, 2020)^[8]

The medicine varies according to the symptoms and with the tribal communities as well as place. It means that a particular plant is sometimes prescribed for different ailments in different localities and sometimes they apply a mixture of plants for remedy of diseases.

(Kone and Onifade, 2020)^[9]. Each medicinal plant species is provided with its scientific name, vernacular name, and useful part of the plant, plant habit and ethnomedicinal uses, phytochemistry and pharmacological activities. (Mali and Panchal, 2017)^[14].

The use of herbal medicines is wide spread in this region with higher percentage of tribal as well as non-tribal population relying on it. This is due to high cost of medicinal system for treatment that is unaffordable by tribes. Herbal medicine is not just a poor man's substitute for conventional medicine but also low cost, effectiveness (Nunning *et al.*, 2019)^[13] and valuable source for modern medicine. Medicinal plants play an important role in the field of ethno botany and ethno pharmacology, so this research article will attract the attention of ethno botanists, phytochemists and pharmacologists for further critical investigation of medicinal plants present baramati tehsil.

Photographs of plant species



Fig 2

The examined plant materials collected from the study area accumulated are described below. using the identification methods and other information was

Table 1: List of recorded species of Euphorbiaceae and their medicinal use:

Sr. no.	Botanical Name	Common Name	Habit	Plant Parts used	Medicinal Uses
1.	<i>Euphorbia hirta</i>	Dudhni	Shrub	Leaves, stem, root, flower	Asthma, tuberculosis, stomach trouble
2.	<i>Ricinus communis</i>	Bherenda	Small tree	Whole plant, Leaves, flower, fruits, seeds	Relief from cough, Eye infection, jaundice
3.	<i>Jatropha gossypifolia</i>	Lal bherenda	Shrub	Leaves, flowers, roots	Leaf juice to cure sores on the tongue of babies, dental
4.	<i>Acalypha indica</i>	Indian Copper leaf	Small herb rarely sub-shrub	Leaves, stem, flowers, roots and seed	Diuretic, Pneumonia, Vomiting
5.	<i>Euphorbia milli</i>	Crown of Thorns	Small shrub	Whole plant, stem, root	Cancer, tumors, hepatitis
6.	<i>Codiaeum variegatum</i>	Garden Croton	Evergreen shrub	Root, Leaves	To treat gastric ulcers,
7.	<i>Jatropha integerrima</i>	Spicy Jatropha	Tall shrub	Leaves, stem, bark, root	Eczema and ringworm, toothache, scabies
8.	<i>Acalypha hispida</i>	Red cattail	Small shrub	Leaves, flower	In the treatment of leprosy and kidney ailments
9.	<i>Euphorbia tirucalli</i>	Pencil tree, Indian tree spurge	Shrub or small tree	Whole plant	Snake bite, Vertebrate poison, arthritis
10.	<i>Acalypha wilkesiana</i>	Copper leaf	Evergreen herb	Leaf	Antimycotic and Antibacterial
11.	<i>Euphorbia lactea</i>	Mottle candlestick	Shrub or Small tree	Stem, Lvs, Whole plant	It is used to treat warts,
12.	<i>Euphorbia ingens</i>	Candelabra tree Naboom	Tall succulent tree	Leaves, stem, root, whole plant	Mental disorders, eye tumor, etc.
13.	<i>Euphorbia maculata</i>	Spotted spurge	-	Milky sap	Injuries, cholera, diarrhea
14.	<i>Euphorbia pulcherrima</i>	Poinsettia Flame leaf flower	Shrub with milky latex	Latex, whole plant	Purgative, skin diseases
15.	<i>Euphorbia alluaudii</i>	Stick cactus	Shrub or Small tree	Whole plant	It is used as a medicinal plant
16.	<i>Euphorbia celastroides</i>	Akoko by Hawaiians	Shrub	Latex, flower	Laxative
17.	<i>Euphorbia resinifera</i>	Resin spurge	Succulent shrub	Dried latex	Healing wound
18.	<i>Euphorbia tithymaloides</i>	Redbird flower	Succulent shrub	Root, stem, Leaves, whole plant	Venereal diseases, abortifacient, emetic
19.	<i>Euphorbia nutans</i>	Eyebane, Nodding spurge	Annual herb	Latex	This species is used as a medicinal plant
20.	<i>Euphorbia prostrata</i>	Prostrate sandmat	Annual herb	Leaves, latex, whole plant	Dibetes, genitourinary disorders
21.	<i>Euphorbia serpens</i>	Matted sandmat	Annual herb	Whole plant	Used as a blood purifiers for paralysis,
22.	<i>Euphorbia dentata</i>	Toothed spurge	Annual herb	Whole plant	Species is used for medicinal properties
23.	<i>Chrozophora tinctoria</i>	Suryavarti, Dyer's croton	Annual herb	Flower	Emetic, Fever, cathartic
24.	<i>Euphorbia heterophylla</i>	Milkweed	Small annual herb	Stem, Leaves, whole plant	Insect bite, hay fever, erysipelas
25.	<i>Euphorbia lophogona</i>	White crown of Thorn,	Shrub	Whole plant	Used as a medicinal properties
26.	<i>Manihot esculenta</i>	Cassava	Woody shrub	Lvs, stem, root, whole plant	It is a source of carbohydrates and Proteins

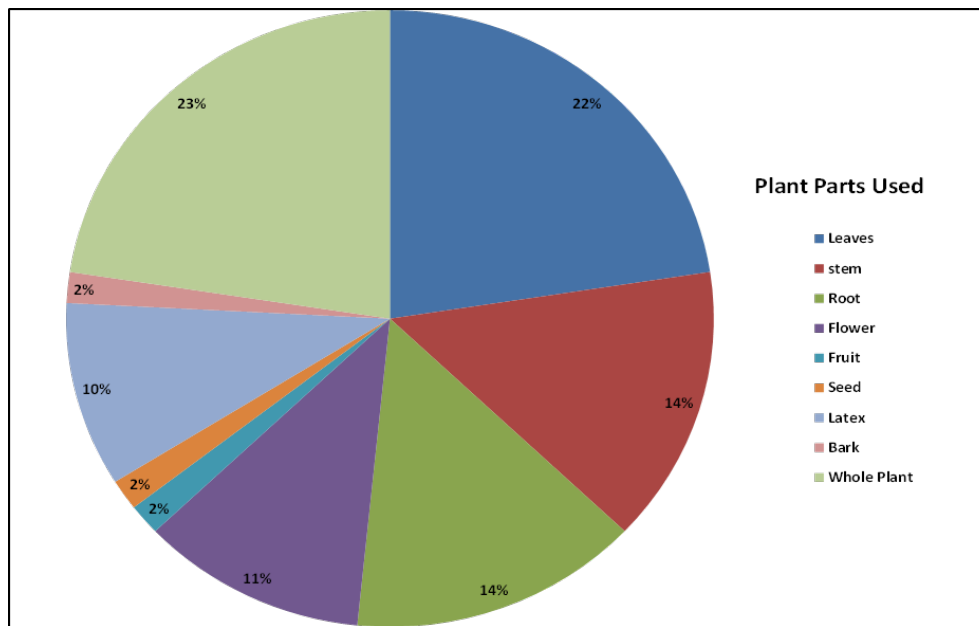


Fig 1: Medicinal Plant Parts Used:

Conclusion

A total of 26 species from the Euphorbiaceae family were identified and photographed. The current study, which focuses on medicinal plants and their local uses in healthcare, may be a preliminary contribution to this area using standard research methods.

This detailed information will aid pharmacognosists, botanist, ethnobotanist, and pharmacologists in the identification and collection of plant photography for future research. According to the finding of the study, the young generation frequently disregards ancient traditional practices.

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