

A Review ON Medicinal Uses OF Different Plants OF Euphorbiaceae Family

Abstract

Euphorbiaceae is a important family which contain numerous medicinal plants. Today estimate that most of the people in developing countries still relays on traditional medicine based largely on species of plants in human being and animals for their primary healthcare. The family Euphorbiaceae is one of the largest family of flowering plants comprising of plants with over 300 genera and 8,000 species. *Acalypha indica* L, *Euphorbia hirta* L, *Euphorbia thymifolia* L, *Croton bonplandianumbail*, *Jatropha gossypifolia* L, *Ricinus communis* L are important plants of this family because these plants have different compounds like alkaloids, flavinoids, steroids, saponin, phenolic compounds, fatty acid, esters, minerals etc that have showed different activities in human being and animal. This study provides important data for identification of different plants in Euphorbiaceae family. Species of Euphorbiaceae are extensively used as remedies against several diseases and complaints such as cancer, diabetes, diarrhoea, heart diseases, hemorrhages, hepatitis, jaundice, malaria, ophthalmic diseases, rheumatism and scabies etc.

Keywords : Euphorbiaceae, Medicinal Plants, Activity, Uses

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Introduction:

Plants for human healthcare still remain the most widely used medication system in developing and least developed nation. Population rise, insufficient supply of drugs, unaffordable cost of treatments, side effects of several allopathic drugs and development of resistance to currently used drugs for diseases have led to increased emphasis on the use of plant materials as a source of medicines for a wide variety of human ailments. Different types of plants used to treat various types of diseases that reveals the most up to date findings in understanding of biological significance of their bioactive compounds used.^[1] Recently, dramatic changes have taken place in the health care system of world population through the development of science, technology and medical science but till to day 400 crores of people of the world are totally dependent on herbal medicines. Despite all the progress in synthetic chemistry and biotechnology, plants are still in an indispensable source of medicinal preparations both preventive and curative. WHO consultative body of medicinal plants has formulated a definition of medicinal plants in the following way,

“A medicinal plant is any plant which in one or more of its organ, contains substances that can be used for therapeutic purposes or which is a precursor for synthesis of useful drugs”.^[2] Medicinal plants, also called medicinal herbs, include a various types of plants used in herbalism and some of these plants have a medicinal activities. These medicinal plants consider as a rich resources of ingredients which can be used in drug development and synthesis^[3]. Besides that these plants play a critical role in the development of humancultures around the whole world. ^[4]The uses of plants in the indigenous culturesparticularly of developing countries, are numerous and diverse, forming an importantsocio-economic base^[5]. *Phytochemistry* is the study of phytochemicalsproduced in plants, describing the isolation, purification,identification, and structure of the large number of secondarymetabolic compounds found in plants.^[6] The Euphorbiaceae, the spurge family, is a large family of flowering plants. In common English, they are sometimes called euphorbias, which is also the name of a genus in the family. The Euphorbiaceae are mostly monoecious herbs, shrubs, and trees, sometimes succulent and cactus-like, comprising one of the largest families of plants with about 300 genera and 7,500 species^[7].

Aim of the review:

The main aim of this review study was to investigate the secret behind the medicinal uses of the plant ,to find out other medicinal uses which could be present in the plant to establish a scientific data on its medicinal value. Therefore , taking into consideration the traditional uses of the plant and facilities available for conducting the study, this research work was performed on the Euphorbiacea family plants. The principle aim of the present study was to investigate the scientific basis of the traditional uses of the plants. Euphorbiacea family plants to study other medicinal uses possible and in the same time to find out the chemical groups present in the active plant parts to get priliminary idea about the active constituents.

Methods And Materials

The methods and materials was performed through a systematic search related to Euphorbiacea includingthe ethnomedicinal practices, phytochemistry and pharmacological studies around theworld. The data was collected from online journals, research papers and books, all of which werepublished in different countries. Search engine websites such as Google, GoogleScholar, PubMed, Science Direct, Researchgate and other online collections were utilized inthis review to obtain information. The Euphorbiaceae has 65 genera and 577 species accepted taxa overall. But *Acalypha indica L*, *Euphorbia hirta L*, *Euphorbia thymifolia L*, *Croton bonplandianumbail*, *Jatropha gossypifolia L*, *Ricinus communis L* are important of this family because these plants shown different activity for different diseases. Plants have remarkable medicinal and traditional uses.

Results and Discussion:

The total description and the medicinal uses of the plants of the Apocynaceae family are given below:

1st Species^[8] :

- **Botanical Name** : *A. indica* .
- **Binomial Name** : *Acalypha indica* L
- **Local Name** : Muktajhuri.
- **Family** : Euphorbiaceae.

Habit: Small herb, rarely sub-shrub.

Habitat: Waste, moist and shady places and river banks

Flower colour: Olive green.

Flowering season: December-April.



Fig : *Acalypha indica* L

Parts Utilized:

Leaves, stem, flowers, roots and seeds

Medicinal Uses:

- Plants are emetic, expectorant, laxative and diuretic; useful in bronchitis, pneumonia, asthma and pulmonary tuberculosis. Leaves are laxative and antiparasiticide; ground with common salt or quicklime or lime juice applied externally in scabies.
- Leaf paste with lime juice prescribed for ringworm. Leaf juice is emetic for children.
- Powder of the dry leaves is given to children to expel worms; also given in the form of decoction with little garlic.
- In homeopathy, the plant is used in severe cough associated with bleeding from lungs, haemoptysis and incipient phthisis.
- The plant is expectorant, diuretic, emetic and laxative. Fresh leaf juice is useful in arthritis and scabies. Dry leaf powder is used in bed sores.

2nd Species^[9]:

- **Botanical Name :** *E. hirta L.*
- **Binomial Name :** *Euphorbiahirta L.*
- **Local Name :** Dudhia.
- **Family :** Euphorbiacea.

Habit: Shrub.

Habitat: Gardens where it is cultivated as an ornamental plant.

Flower colour: Red.

Flowering season: December-February.



Fig: *Euphorbia hirta L*

Parts Utilized:

Leaves, stem and roots and flower

Medicinal Uses:

- The plant is astringent and haemostatic; as poultice applied to abscesses, inflamed glands, ulcers, oedemas and phlegmons and also used in affections of childhood, in worms, bowel complaints and cough.
- The juice is considered tonic, narcotic, antiasthmatic and febrifuge; effective against dysentery, diarrhoea and colic; especially in amoebiasis. Decoction is useful in asthma and chronic bronchial affections.
- The extract of this plant has sedative effect on the mucous membrane of the respiratory and genito-urinary tract and on cardiovascular system.
- The plant has as an analgesic to treat severe headache, toothache, rheumatism, colic, and pains during pregnancy.

3rd Species^[10]:

- **Botanical Name :** *E.thymifolia L.*
- **Binomial Name :** *Euphorbia thymifolia L.*
- **Local Name :** Dudhiya.
- **Family :** Euphorbiacea.

Habit: Herb.

Habitat: Open sunny places.

Flower colour: Reddish-purple.

Flowering season: April-August.



Fig : *Euphorbia thymifolia* L

Parts Utilized:

Leaves, roots, flowers and whole plant.

Medicinal Uses:

- The fresh plant is used in ophthalmia and other eye troubles, ardor, sores, atrophy, dysentery and breast pain.
- It is an effective drug for bronchial asthma.
- Juice of the plant is used for ringworm, diarrhea and dysentery; mixed with fresh goat milk is given to cure blood dysentery.
- Leaves and seeds are astringent, stimulant, anthelmintic and laxative; given to children in bowel complaints. Root is used in amenorrhea.
- *Euphorbia thymifolia* L is widely used in decoction or infusion against dysentery, enteritis, diarrhoea and venereal diseases. The dried leaves are used as a stimulant, astringent, antihelmintic and laxative.
- Fresh crushed plants are applied as a plaster for healing sprains.

4th Species^[11]:

- **Botanical Name :** *C. bonplandianumbail.*
- **Binomial Name :** *Croton bonplandianumbail.*
- **Local Name :** Bondhone.
- **Family :** Euphorbiacea.

Habit: herb.

Habitat: Dry and sandy exposed areas.

Flower colour: White.

Flowering season: April-September



Fig: *Croton bonplandianumbail*

Parts Utilized:

Leaves, fruits and flowers.

Medicinal Uses:

- The plant is used as antiseptic.
- The leaves, stems and seeds contain alkaloid.
- The paste of root with decoction of stem bark of *Terminalia arjuna* (3:2) used to treat cholera.
- The plant *Croton bonplandianum* (Euphorbiaceae) is used to treat liver disorders, skin diseases including ringworm infection, to cure the swelling of body, bronchitis and asthma.

5th Species^[12]:

- **Botanical Name :** *J.gossypifolia L*
- **Binomial Name :** *Jatropha gossypifolia L*
- **Local Name :** Lalbherenda.
- **Family :** Euphorbiaceae.

Habit: Shrub.

Habitat: Open sunny places.

Flower colour: Reddish-purple.

Flowering season: April-August.

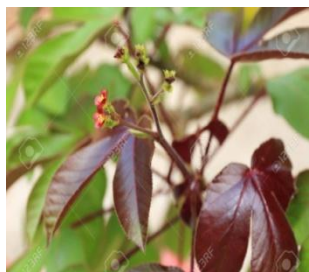


Fig: *Jatropha gossypifolia L*

Parts Utilized:

Leaves, flowers and root

Chemical Composition:^[40]

Classification	Chemical Constituents	Parts used	Result
<ul style="list-style-type: none">• Coumarin-lignoids	<ul style="list-style-type: none">→ Propacin→ Venkatasin	<ul style="list-style-type: none">• Whole plant	<ul style="list-style-type: none">• Present
<ul style="list-style-type: none">• Diterpenes	<ul style="list-style-type: none">→ Citlaltione→ Jatrophene		
<ul style="list-style-type: none">• Coumarin-lignoids	<ul style="list-style-type: none">→ Arylnaphthalene lignan→ Gadain→ Jatrophan	<ul style="list-style-type: none">• Stem• Roots• seeds	<ul style="list-style-type: none">• Present

Medicinal Uses:

- The leaves are used on boils and carbuncles, eczema and itches.
- The Seeds cause insanity and act as an emetic.
- It is also grown as an ornamental plant. The leaves and the seeds are used as purgative.
- The stem-juice in nostrils to cure headache
- The leaves and bark have the same purgative effect.
- The oil is applied to treat rheumatic conditions and a variety of skin infections, although its use on the skin may also cause an irritative rash.
- The sap has a widespread reputation for healing wounds, as a haemostatic and for curing
- Skin problems; it is applied externally to treat infected wounds, ulcers, cuts, abrasions, ringworm, eczema, dermatomycosis, scabies and venereal diseases.

6th Species^[13]:

- **Botanical Name** : *R.comanis L.*
- **Binomial Name** : *Ricinus communis L.*
- **Local Name** : Bherenda.
- **Family** : Euphorbiacea.

Habit: Small tree.

Habitat: Dry and sandy expose areas.

Flower colour: Red.

Flowering season: April-September.



Fig: *Ricinus communis L*

Parts Utilized:

Whole plants,leaves,flowers,fruits and seeds.

Medicinal Uses:

- Seed oil is a strong purgative; used externally as a massage for rheumatic pains, joint pain, paralysis and internally for the treatment of constipation.
- The leaves are used as galactagogue, and in headache.
- Seeds paste is used as counter irritant. Root bark and leaf also have purgative properties.

Summary⁽¹⁴⁾

Plants Name	Parts Used	Chemical components	Shows activity against diseases
<i>Acalyphain dicaL</i>	Leaves, stem, flowers, roots and seeds.	Alkaloids,Catachols, Phenolic compounds,Flavinoids, Saponin, Steroids and Tannin.	Analgesic, Antiinflammatoryactivity,Antibacterial,phytochemical activity, Antiulcer activity,Antioxidantcapacity,Antidiabetic activity, Post-coital antifertility activity, Antimicrobial activity.
<i>Euphorbia hirtaL</i>	Leaves, stem and roots and flower.	Quercitrin,Myricitrin,Quercetin,Leucocyanidin, <i>Quercitol</i> ,Friedelin,Kaempferol,Maleic acid, Tartaric acid,Rutin, α -Amyrin.	Antidiarrheal activity,Anti-inflammatory activity, Antimalarial,Anti-tumor activity, Hypertensive, Hepatoprotective, Antioxidant,Anti- microbial, Hypoglycemic, Antimutagenicactivities,Antifungal, Antibacterialactivities,Cytotoxicity, Immunoregulatory activity protein inhibition against cancer cell, Antifungal,Photosynthetic activity,Healing wound, Platelet aggregation,Antihyperglycemic activity as herbicide, fungicide,Antiulcer activity,Antibiotic in medicines,Anticancer, Antiparasitic, Antiallergenic activity,

			Antispasmodic activity.
<i>Euphorbia thymifolia</i> L	Leaves, roots, flowers and whole plant.	Quercetin galactoside, β -amyryn, β -sitosterol, cholesterol, kaempferol, salicylic acid esters, n-alkanes, sterol, glycoside, Taraxerol, sterols, Crude protein, fat & fiber, total carbohydrate, starch, amylase, amylopectin, cellulose, acid insoluble and soluble ash, Macro-minerals viz, Na, K, Ca, Li and micro-minerals viz, Fe, Cu, Mn and Co.	Anti-inflammatory and proven to encourage healthy cell growth and function , Analgesic, Haemostatic, Antithrombic, Antioxidant, Vasoprotective actions, Antiviral, Anti-allergic, Antitumour properties, Antioxidant, Antihelminthic Antibacterial activities, Antidiabetic, Antihyperlipidemic activity, Antibacterial, Antifungal, Antimicrobial, Anti-anxiety activity, <u>Anti-nociceptive activities</u> .
<i>Croton bonplandii</i> -num baill	Leaves, fruits and flowers.	1-Dodecene, 1-Dodecanol, 1-Tetradecene, 2,4-bis(1,1-dimethylethyl)-phenol Methyl stearate, n-Tetracosanol-1, Triterpene e.g. Squalene (2,6,10,15,19,23-hexamethyltetracosane), 18,22-hexaene), Linoleate e.g. octadeca-9,12-dienoic acid Oxo (Keto), Fatty Acid esters e.g. methyl 12-oxooctadec-9-enoate, Cardenolides, Diterpene e.g. Phytol, Alkaloids, Terpenoids, Flavonoids, Tannins, Steroids.	Wound healing activity, Anti-tuberculosis activity, Anti-fungal activity, Antioxidant, Antinflammatory activity, Antibacterial, Anti-tubercular, Cytotoxic activities, Cancer preventive, Immunestimulant, Chemo preventive, Lipoxygenase-inhibitor, pesticide, Hypocholesterolemic, Nematicide, Antiarthritic, Hepatoprotective, Antiandrogenic, Hypocholesterolemic 5-alpha reductase inhibitor, Antihistaminic, Anticoronary, Insectifuge, Antieczemic, Antiacne.
<i>Jatropha gossypifolia</i> L	Leaves, flowers and root.	Coumarin, lignoids, Diterpenes, Flavonoids, Fatty acid, Lignans, Saponin, Phenol, Glycoside, Esters.	Anti-inflammatory activity, Antimicrobial activity, Antibacterial activities, Antidiarrhoeal activity, Antifungal activity, Phytochemical activity, Allelopathic activity, Antioxidant activity, Analgesic activity.
<i>Ricinus communis</i> L	Whole plants, leaves, flowers, fruits and seeds.	Palmitic, Stearic, Oleic C _{18:1n9} , Oleic C _{18:1n10} , Linoleic, Ricinoleic, Dihydroxy stearic acid, Unsaturated fatty acid (UFA), Saturated fatty acid (SFA).	Mutagenicity, Cytotoxic and Antioxidant activities, <i>Anti fertility</i> , Antibacterial activity, <i>Antimicrobial activity</i> , Analgesic activity, Catalytic activity, Larvicidal activity, Resistance-modifying Activity in Vinblastine-resistant Human Breast Cancer, Photosynthetic activity. Anti-inflammatory, Anticancer activities, Insecticidal Activities, Antifungal activities.

Conclusion

The review given here is to be used for identification of the medicinal and economical plants commercially. Active principles isolated from different plants can be utilized as leads for further drug development by the pharmaceutical industry. To summarize this effort, it is so far indicated that external and internal anatomy studies conducted. This study provides important data for identification of different plants in Euphorbiaceae family. In conclusion, it was obtained that different plants of this family have showed different activities like antioxidant, antidiabetic, anti-inflammatory, anticancer etc. in human being and animal.

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