

# Preliminary Phytochemical Screening of *Calotropis gigantea* Leaf

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**Abstract-** Herbals plants are effective source of traditional and modern medicines, useful for primary health care. Plants are richest source of bioactive organic chemicals on earth. The active metabolites like Phytochemicals from the medicinal plants were under exploration for the development of novel and biodegradable effective drugs as an alternative to the ineffective contemporary medicine. *Calotropis gigantea* has great medicinal importance to treat fever, indigestion, cold, cough, cardio tonic, asthma, scabies etc. Phytochemical properties of leaf of *Calotropis gigantea* obtained from methanol and petroleum ether extracts were investigated. The results suggest that the Phytochemical properties of the leaf for using various ailments.

**Index Terms-** *Calotropis gigantea*, Phytochemical

## I. INTRODUCTION

A medicinal plant is any plant which, in one or more of its organ, contains substance that can be used for therapeutic purpose or which is a precursor for synthesis of useful drugs. The plants possess therapeutic properties or exert Beneficial Pharmacological effects on the animal body are generally designated as "Medicinal Plants". It has now been established that the plants which naturally synthesis and accumulate some secondary metabolites, like alkaloids, glycosides, tannins, volatiles oils and contain minerals and vitamins, possess medicinal properties. Plants contain useful constituents, including vitamins, minerals, proteins, carbohydrates, essential oils, tannins, alkaloids, bitters and flavonoids. Each part of the plant contains distinct properties and is used for different purposes (Rahman et al, 2013).

The Asclepiadaceae is a large family comprising of 175-180 genera and 2200 species distributed mainly in the tropical and subtropical region of the world, represented in India by 23 genera and 41 species. Several genera of this family contain biologically active compounds. Among these are the species of *Asclepias* and *Calotropis* which contain cardenolides toxic to vertebrates. Certain insects notably monarch butterflies and milk weed bugs sequester these cardenolides from *Asclepias* host plants and apparently utilize them for defense against vertebrate predators (Shirsat et al, 2013). *Calotropis* is a small genus of about 6 species of shrubs or small trees, distributed in tropical and subtropical Africa, Asia and central and South America, represented in India by only two species namely *Calotropis procera* and *Calotropis gigantea* Linn. Both the species closely resemble each other in structure and find similar uses (Kirtikar et al, 1994). *Calotropis gigantea* Linn is a glabrous or hoary,

laticiferous shrubs or small trees, about 3-4 m tall commonly known as the swallow-wort or milkweed. Its stems are erect, up to 20 cm in diameter. The leaves are broadly elliptical to oblong-ovate in shape, with the size of 9-20 cm x 6-12.5 cm but subsessile. The cymes are 5-12.5 cm in diameter. The inflorescence stalk is between 5-12 cm long, the stalk of an individual flower is 2.5-4 cm long. Sepal lobes are broadly eggshaped with a size of 4-6 mm x 2-3 mm. Petal is 2.5-4 cm in diameter. It has clusters of waxy flowers that are either white or lavender in colour. Each flower consists of five pointed petals and a small, elegant "crown" rising from the centre, which holds the stamens. The plant has oval, light green leaves and milky stem (Carol et al, 2012). The flower of the plant contains the cardiac glycosides, calotropin, uscharin, calotoxin, calactin, uscharidin and gigantol. The flower also contains the protease calotropin DI and DII and calotropin FI and FII (Dhivya et al, 2013).

It is estimated that only one percent of 2,65,000 flowering plants on earth have been studied exhaustively for their chemical composition and potential against important medicinal value (Cox et al, 1994). Here an attempt has been made to investigate the chemical present in the leaf for curing various diseases.

## II. MATERIAL AND METHODS

### 1. Plant material:

*Calotropis gigantea* leaf collected in January 2013 from Rewa. The plant material was identified at the field using standard keys and descriptions.

### 2. Method of extraction:

Solvent – Petroleum ether, Methanol

Method – Maceration

### Procedure:

Leaf powder was weighed 500 gm and kept in a container in contact with pet ether for seven days, with vigorous shaking at regular interval. Material was filtered a first with muslin cloth and then with filter paper. Filtrate was collected and dried in water bath till no further reduction in mass of extract was observed. Dried extract was weighed and packed in air tight container and the marc was air dried then kept in a container in contact with methanol for seven days, with vigorous shaking at regular interval. Material was filtered a first with muslin cloth and then with filter paper. Filtrate was collected and dried in water bath till no further reduction in mass of extract was observed. Dried extract was weighed and packed in air tight container.

### 3. Phytochemical Screening-

Phytochemical Screening was carried out using standard methods to detect the bioactive compounds like alkaloids, tannins, phenols, steroids, flavonoids, saponins (Trease et al, 1989).

### III. RESULT AND DISCUSSION

**TABLE 1: Phytochemical Screening of *Calotropis procera* Leaf**

Phyto chemicals	Petroleum ether extract	Methanol extract
Alkaloids	-	+
Carbohydrates	-	-
Reducing Sugar's	-	-
Flavonoids	-	+
Glycoside	+	-
Tannin and Phenolic	-	+
Saponin	+	-
Protein and amino acid	-	-
Fats and oils	+	-
Triterpenoids and steroids	-	+

(+) indicates presence

(-) indicate absence

A Preliminary study has reported the leaves extracts contains large number of bioactive secondary molecules like alkaloids, tannins, saponin, flavonoids, glycoside (Table-1). The presence of these components in this species is an indication that it may have some medicinal potential. The leaves of *Calotropis gigantea* are used traditionally for treatment of abdominal tumors, boils, syphilis, leprosy, skin diseases, piles, insect bites and elephantiasis (Habib et al, 2009). Kumar 2013 have studied the Phytochemical assessment on various extracts of *Calotropis gigantea* (L.) R.Br. through GC- MS.

Different parts of the plant have immense potential to cure various diseases and disorders . It is used in various polyherbal preparations. *Calotropis* is used alone and sometimes with other plants to cure variety of human and animals ailments (Kumar et al, 2013). This research has been proved as a path to many scientists who may implement the result of the present work in developing drugs from *Calotropis gigantea* against human pathogenic microorganisms.

### IV. CONCLUSION

The plant *Calotropis gigantea* is a plant with many curative principles and other economic values with the following features: a perennial shrub, distributed up to 900m elevation in the tropical and subtropical areas, growing in all types of soils and environmental conditions, requiring no cultivation practices. The investigation concluded that the stronger extraction capacity of methanol and petroleum ether could have produced number of active constituents which are responsible for many biological activities. So that it might be utilized for the development of traditional medicines and further investigation is in need to elute novel active compounds from the medicinal plants which may create a new way to treat many incurable diseases.

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