

# Phytochemical Investigation of Different Plant Parts of *Calotropis procera*

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**Abstract:** *Calotropis procera* are widely used traditional medicinal plant to treat various ailments. It is an erect, perennial shrub luxuriantly thriving in wastelands. Plants are the richest sources of bioactive organic chemicals on earth. They are the store house of secondary metabolites such as alkaloids, terpenoids, steroids and flavonoids etc. The traditional medicine involves the use of different plant extracts or bioactive chemicals. The results suggest that the Phytochemical properties of the stem, leaves and flower for curing various ailments.

**Index Terms:** *Calotropis procera*, Phytochemical, Traditional medicine.

## I. INTRODUCTION

*Calotropis procera* belongs to the family Asclepiadaceae and is a soft wooded, evergreen perennial shrub. It is a xerophytic erect shrub, growing widely throughout the tropical and sub-tropical regions of Asia and Africa. This plant is popularly known because it produces large quantity of latex. Medicinal plants have no doubt remained the major sources of traditional medicine worldwide (Goyal et al, 2011).

Many higher plants accumulate extractable organic approaches substances in quantities sufficient to be economically management of disease. Plants have been a rich source of medicines because they produce wide array of bioactive molecules, most of which probably evolved as a chemical defence against predation or infection (RamaPrabha et al, 2012). 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). All the parts, viz, root, stem, leaf and flowers of *Calotropis procera* are in common use in indigenous system of medicine (Mukherjee et al, 2010). Here an attempt has been made to investigate the chemical present in the plant for curing various diseases.

## II. MATERIAL AND METHODS:

### 1. Plant material:

*Calotropis procera* ( stem, leaves and flowers) collected in November 2012 from Rewa. The plant material was identified at the field using standard keys and descriptions. Its botanical identity was further confirmed at Pinnacle Biomedical Research Institute, Bhopal, India.

### 2. Method of extraction:

Solvent – Petroleum ether, Methanol

Method – Maceration

### Procedure:

Plant part (leaf, stem and flower) 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*

S.No.	Experiment						
		Pet ether extract of <i>Calotropis procera</i> leaves	Methanolic extract of <i>Calotropis procera</i> leaves	Pet ether extract of <i>Calotropis procera</i> stem	Methanolic extract of <i>Calotropis procera</i> stem	Pet ether extract of <i>Calotropis procera</i> flower	Methanolic extract of <i>Calotropis procera</i> flower
<b>1. Alkaloids</b>							
1.1	Mayer's reagent test	-ve	-ve	-ve	-ve	+ve	-ve
1.2	Wagner's reagent test	-ve	-ve	-ve	-ve	+ve	-ve
1.3	Hager's reagent test	-ve	-ve	-ve	-ve	+ve	-ve
<b>2. Carbohydrates</b>							
2.1	Molish's test	-ve	+ve	-ve	-ve	-ve	+ve
2.2	Barfoed's test	-ve	+ve	-ve	-ve	-ve	+ve
<b>3. Test for Reducing Sugar's</b>							
3.1	Fehling's test	-ve	-ve	-ve	-ve	-ve	+ve
3.2	Benedict's test	-ve	-ve	-ve	-ve	-ve	+ve
<b>4. Flavonoids</b>							
3.1	Alkaline reagent test	-ve	+ve	-ve	+ve	-ve	+ve
3.2	Shinoda test	-ve	+ve	-ve	+ve	-ve	+ve
3.3	Lead acetate test	-ve	+ve	-ve	+ve	-ve	+ve
<b>5. Glycoside</b>							
4.1	Borntrager test	+ve	+ve	-ve	+ve	+ve	+ve
4.2	Legal's test	+ve	+ve	-ve	+ve	+ve	+ve
4.3	Killer- Killiani test	+ve	+ve	-ve	+ve	+ve	+ve
<b>6. Tannin and Phenolic compound</b>							
6.1	Ferric chloride test	-ve	+ve	-ve	+ve	-ve	+ve
6.2	Lead Acetate test	-ve	+ve	-ve	+ve	-ve	+ve
6.3	Dilute Iodine solution	-ve	+ve	-ve	+ve	-ve	+ve
<b>7. Saponin</b>							
7.1	Faom Test	-ve	-ve	+ve	+ve	+ve	+ve

8. Test for Proteins and amino acid							
8.1	Ninhydrin test	+ve	+ve	+ve	+ve	+ve	+ve
8.2	Biuret test	+ve	+ve	+ve	+ve	+ve	+ve
9. Test for Fats and Oils							
9.1	Solubility test	-ve	-ve	+ve	+ve	+ve	+ve
10. Test for Triterpenoids and Steroids							
10.1	Salwonski Test	+ve	+ve	-ve	-ve	-ve	+ve
10.2	Libberman and Burchard's test	+ve	+ve	-ve	-ve	-ve	+ve

(+) indicates presence

(-) indicate absence

Herbal medicines have been used from the earliest times to the present day. Herbal medicines exhibit a remarkable therapeutic diversity. *Calotropis procera* Linn. is an Ayurvedic plant which is used in several traditional medicines to treat a variety of diseases. The extracts from different parts of the plant have significant therapeutic value. The leaves are used to treat joint pain and reduce swelling. It is also used as a homeopathic medicine (Meena et al 2011).

Chemical investigation of this plant has shown the presence of triterpenoids, cardiac glycosides, calotropin, calactin, calotoxin (Ahmed et al, 2005). The parts of the plant used in Ayurvedic medicine are leaves (fresh or dried), the roots, root bark and the flowers. The powered leaves are used for the fast healing of wounds, as a purgative and to treat indigestion. They are used to treat skin disorders and liver problems. The dried leaves are used to promote sexual health including penile dysfunction and are reputed to be an aphrodisiac. The flowers are used as a milk drink to treat a variety of complaints including coughs and catarrh, asthma and indigestion, as well as cholera. Traditionally, the plant has been used as an antifungal (Larhsini et al, 1997), antipyretic (Al. Yahya et al, 1985) and analgesic agent (Mohsin et al, 1989). Phytochemical estimation of *Calotropis procera* agrees with the work of Kuta (2008) who evaluated Phytochemical and antifungal effect of *Calotropis procera* stem bark on *Epidermophyton floccosum* and *Trichophyton gypseum*. The result of Kuta (2008) suggested that *Calotropis procera* stem could be a potential source of chemotherapeutic drugs for the treatment of tinea associated with *E. floccosum* and *T. Gypseum*. Sharma et al (2011) studied the Pharmacognostical aspects of *Calotropis procera*. Murti et al, (2010) analysed Pharmacognostic standardization of leaves of *Calotropis procera*. Phytochemical and antimicrobial evaluation has been carried out on other species of *Calotropis*. Varahalarao et al (2010) examined bioassays for antimicrobial activities using stem, leaves and flowers of *Calotropis procera*. Different parts of *Calotropis procera* have been reported to exhibit medicinal and nutritional properties while Phytochemical evaluation of the plant parts revealed the presence of essential and trace elements in varied quantities (Olasupo et al, 2004). The present work reports the Phytochemical properties of *Calotropis procera* with the view to further substantiate the earlier claims by various researchers on its potential use in traditional medicine (Kawo et al, 2009).

This research has been proved as a path giver to many scientists who may implement the result of the present work in developing drugs from *Calotropis procera* against human pathogenic microorganism.

#### IV. CONCLUSION

Since, ancient times, the plants have been a veritable source of drugs. Different extracts from traditional medicinal plants have been tested to identify the source of the therapeutic effects. *Calotropis procera* (stem, leaf and flowers) extract made in Methanol, Petroleum ether contains different secondary metabolites (Phytochemicals) with biological activity that can be of therapeutic index.

Table 1 showed preliminary Phytochemical screening of plant parts of *Calotropis procera*. It is interesting to note that the action of the extracts of *Calotropis procera* is non toxic. The obtained result provide a support for the use of this plant in traditional medicine and suggest its further advance investigation. Phytochemical screening of the crude

extracts revealed the presence of saponins, tannins, alkaloids, other phytoconstituents which were reported during present investigation were cardiac glycosides, flavonoids, glycosides, steroids, terpenes and tannins. The consequences of this work has clarified that many active bioconstituents of *Calotropis procera* consist effective qualities in its tending action. Thus it may be exploited by Scientists in the development of human medicines and drugs.

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