

# A REVIEW ON: PHARMACOLOGY USES OF MEDICINAL PLANT IN *ACALYPHA INDICA* LINN

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**Abstract:** The present study was conducted to provide information on the pharmacology uses of *Acalypha indica*, a flowering plant belonging to family *Euphorbiaceae*. It is a weed herb, found mostly in waste places on road sides as well as forest localities. It is valuable medicinal plant with multifarious drug properties and hence the tribals and people of other communities use this plant to cure several diseases and ailments. Plants are the reservoirs of the number of the complicated metabolites of the medicinal values. They have been utilized by the number of the workers from time to time for the beneficitation of the treatment of the disease in different era. The review aspect of the one of the weed entitled as the *Acalypha indica*, this is the rural weed which grows on the different part of the world in the rainy seasons, it has been utilized by the different tribes for the various values and for the medicinal significance. Prolongs studies lead to the development of the treatment of the many kinds of the diseases.

**Keywords:** pharmacology, *Acalypha indica*, antioxidant, medicinal plant, phytochemicals.

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## 1. INTRODUCTION

*Acalypha indica* is a flowering weed plant of the family *Euphorbiaceae* and is well known for its multifarious medicinal uses. The plant comprises about 460 species and are mostly found in warm temperate regions, excluding Europe[1]. It is widely distributed through out the plains of India, and is also used in traditional medicinal system of India. The innumerable medicinal properties and therapeutic uses of *Acalypha indica* as well as its phytochemical investigation prove its importance as a valuable medicinal plant. It is locally known as “Kaphgajri”, “Kaphkarturi”, In English it is called as “Indian Copper leaf”, “Indian Mercury”, In hindi “kuppi” and in Sanskrit it is called as “Harita manjari”. *Acalypha indica* is a popular medicinal plant in Ayurveda. It has been reported to possess hepato protective, anti-inflammatory, anti bacterial, anti fungal and have also wound healing properties[2]. Some earlier study on this plant result that the different plant parts such as root is used as tonic, astringent, febrifuge and strong purgative[3]. The roots are used in chest pain, joint pain, dysentery, and lowering blood sugar[4]. Root is useful in fever, heart diseases, retained excretions and biliousness[5]. Leaves are used in jaundice, piles, rheumatism, ulcers, ring worms, and leaves extract are applied to insect bites[6]. Juice of leaves is used scabies and other skin diseases[7]. The plant extract is useful in asthma, pneumonia and rheumatism[8].

## PHARMACOLOGY USES OF *ACALYPHA INDICA* ANTI CANCER ACTIVITY

*Acalypha indica* has been reported to possess anticancer activity against various cancer cell lines. The plant extracts and compounds have been found to induce apoptosis, inhibit cell proliferation, and modulate signaling pathways that are involved in cancer development and progression. *Acalypha indica* plant extract also has the ability to become an anticancer plant as reported by amarnath[9]. Aerial part extracts of *Acalypha indica* were investigated for antioxidant activity, anticancer activity, and cytotoxicity. Isolation and purification of the methanolic extract of the aerial part produced substantial amounts of L-quebrachitol, which was characterized by ID and ZD NMR experiments and the MS data[10].

### ANTI-INFLAMMATORY ACTIVITY

*Acalypha indica* plant extract can behave as an anti-inflammatory medicine in the human body. Identified this activity of the *Acalypha indica* in the long even rats by using ethanolic extract. The anti-inflammation effects were comparable with the standard until five hours after the injection of the carrageenan solution [11]. The *Acalypha indica* plant extracts stabilized the membrane by inhibiting hypotonicity-induced lysis of an erythrocyte membrane, analogous to a lysosomal membranes[12].

### HEPATOPROTECTIVE ACTIVITY

*Acalypha indica* has been reported to possess hepatoprotective activity. The plants extracts and compounds have been found to protect the liver from various hepatotoxic agents, such as carbon tetrachloride and paracetamol. This activity is attributed to the presence of bioactive compounds, such as flavonoids, tannins and terpenoids. *Acalypha indica* extracts and synergy with other plant/bio active compounds shown protective effect on thioacetamide, paracetamol, CCL4, rifampicin-isoniazid and hypoxia induced hepatotoxicity in experimental animals. Methanolic extract (300 mg/kg) and methanolic fraction (250 mg/kg) protected the thioacetamide (100 mg/kg) induced hepatic tissue in wister strain albino rats by decreasing albumin and total protein in serum, recovered the architecture of hepatic tissue[13].

### ANTIDIABETIC ACTIVITY

*Acalypha indica* has been shown to possess significant antidiabetic activity. The plant extracts and compounds have been found to lower blood glucose levels, improve insulin sensitivity, and protect pancreatic B-Cells. This activity makes *Acalypha indica* a potential candidate for the development.

### ANTI-ULCER ACTIVITY

There are phytochemicals in the methanolic extract of *Acalypha indica* that are capable of inhibiting ulcer activity based on the treatment of the swiss albino rats. They identified the ulcer inhibition activity by studying the reactions of pylorus ligation and swim stress swiss albino rats. The comparison between extract and standard showed that *Acalypha indica* plant extract has anti-ulcerogenic properties since the different value is small. Major secondary metabolites in the extract such as the alkaloid and steroid provide basic information for anti-ulcer activity[18].

### ANTI-VIRAL ACTIVITY

A study was conducted by ali *et. al.*, to find the growth inhibition activity of a virus from indigenous plant medicine. *Acalypha indica* methanolic extracts was tested against two types of virus that is herpes simplex virus, type and vascular stomatitis virus on the HELA cells. Further studies is required with different virus species to gather more information related to *Acalypha indica* plant that can act as an anti-viral agent[19].

### WOUND HEALIN ACTIVITY

*Acalypha indica* has been shown to possess significant wound healing activity. The plant extracts and compounds have been found to accelerate the healing process, increase the tensile strength of wounds, and reduce scar formation. This activity is attributed to the presence of bioactive compounds, such as alkaloids, flavonoids and tannins[20].

### GASTRO PROTECTIVE ACTIVITY

*Acalypha indica* has been reported to possess gastroprotective activity. The plant extracts and compounds have been found to protect the gastric mucosa from various ulcerogenic agents, such as ethanol and indomethacin[21].

### ANTHELMINTIC ACTIVITY

An anthelmintic is a drug used to expel parasitic worms that usually induced in the human body parts. The parasitic worm can penetrate animal and human bodies through any available cavities like the skin and mouth. An anthelmintic drug derived from easily available herbal medicine is encouraged since it can save costs in treatment [22]. Both used a similar method to study the anthelmintic activity [23]. From their studies, the extract from methanol and water could kill pheretima posthuman 20 minutes after its introduction and completely killed after 40 minutes. In these study the concentration of 100 mg/ml methanolic root extract was dissolved and tested in a medium.

**IMMUNOMODULATORY ACTIVITY**

*Acalypha indica* has been reported to possess immunomodulatory activity. The plant extract and compounds have been found to modulate the immune response by regulating the production of cytokines and the activation of immune cells. The activity makes *Acalypha indica* a potential candidate for the development of immunomodulatory drugs[24].

**ANTIMICROBIAL ACTIVITY**

*Acalypha indica* has been reported to possess antimicrobial activity against a wide range of micro organisms, including bacteria, fungi and viruses. The plant extracts and compounds have been found to inhibit the growth of various pathogens. This activity is attributed to the presence of bio active compounds, such as alkaloids, flavonoids and tannins[25].

**2. CONCLUSION**

*Acalypha indica* is a well known traditional medicinal plant with significant pharmacological potential. Its various parts have been used for centuries in traditional medicine to treat a wide range of ailments. Recent scientific studies have validated many of these traditional uses and have also revealed new therapeutic potentials of this plant.

The plant is rich in various phytochemicals such as alkaloids, flavonoids, terpenoids, and phenolics that are responsible for its diverse pharmacological actions. *Acalypha indica* exhibits a range of pharmacological actions, including antioxidant, antiinflammatory, antimicrobial, wound healing, immunomodulatory, anti diabetic, and anti cancer activities among others.

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