



## A Review on Pharmacological Activities and Chemical Constituents based on Various Analytical Estimation of *Euphorbia hirta*

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### ABSTRACT

The use of plant extract to cure diseases has been the traditional way used in many parts of the world. The synthetic drugs used now are more prone to cause side effects than curing the disease. *Euphorbia hirta* belonging to the Euphorbiaceae family contains more amounts of phenolic compounds, flavonoids, alkanes, triterpenes, phytosterols, tannins, polyphenols, gallic acid, rutin and quercetin which are responsible for the main pharmacological actions like anti-oxidant, anti-inflammatory, anti-dengue and anti-cancer. This review contains the detailed information about all the analytical estimation of *E. hirta*.

**Keywords:** *Euphorbia hirta*, analytical estimation, polyphenols, gallic acid.

### INTRODUCTION

**E***uphorbia hirta* (sometimes called asthma-plant) is a pantropical weed, possibly native to India. It is a hairy herb that grows in open grasslands, roadsides and pathways. It is widely used as a medicinal herb. *Euphorbia hirta* contains more amounts of phenolic compounds and flavonoids<sup>1</sup> which are responsible for the main pharmacological actions like anti-oxidant, anti-inflammatory, antidengue, and anti-cancer. The main aim of the study to determine the chemical constituents of euphorbia hirta by various analytical methods.

#### Chemical constituents from *Euphorbia hirta*<sup>2</sup>

Waseem Ahmad, et. Al., 2017 reported.

#### Saponins

Crude extract when mixed with 5ml distilled water in a test tube then it was shaken briskly. The formation of stable foam which indicate the presence of saponins.

#### Flavonoids

Crude extract when mixed with 10ml distilled water, 5ml of dilute ammonia solution were added to a portion of the aqueous filtrate solution then added 1ml concentrated sulphuric acid. Indication of yellow color shows the presence of flavonoids.

#### Steroids

The crude extract of selected plant was dissolved in 0.5mL dichloromethane to prepare a dilute solution and then 0.5 mL of acetic anhydride was added followed by four drops of concentrated sulphuric acid. A blue-green colouration indicated the presence of steroids.

#### Tannins

Curde extract of plant was mixed with small amount of water and heated on water bath. The mixture was filtered

and ferric chloride was added drop by drop to the filtrate. A dark green appear which indicates the presence of tannins.

#### Alkaloids

Curde extract was dissolved with 2ml of 1% HCl and heated gently. Wagners and Mayers reagents were added to the mixture. Turbidity of the resulting precipitate was taken as confirmation for the presence of alkaloids.

#### Carbohydrate

Both Felhing A and Felhing B solution were mixed in equal volume. These reagent are added in crude extract and smoothly boiled. A brick red precipitate is appeared at the bottom of the test tube and indicates the presence of reducing sugar.

#### Gallic acid, rutin and quercetin (suganthi etal 2016 reported)

HPTLC method for the standardization of *Euphorbia hirta*(L) using gallic acid, rutin and quercetin as phytochemical markers from its methanolic extract and herbal capsule formulation. The separation was performed on TLC aluminum Plates precoated with silica gel 60F254, good separation was achieved in the mobile phase of butyl acetate: 1,4-dioxane (5:5% v/v) and densitometric determination of gallic acid, rutin and quercetin was carried out at 266nm.

#### Quercetin-3-O-b-D-rhamnoside<sup>3</sup>

Quantitatively estimated by HPTLC, test samples and standard solutions were applied in tracks 1–6, and tracks 9–15 were test samples, each 10ml (100mg). The plate was kept in the above mentioned solvent system and allowed to run up to a distance of 9 cm. After drying, it was scanned densitometrically at 254nm.



**Minerals<sup>4</sup>**

The plants have been reported rich in nutrients such as crude protein, carbohydrate, crude lipids, starch and crude fiber respectively. The plants have also been reported rich in minerals such as Na, K, Ca, S, P, Fe, Mn, Cu and Zn. This solution was used for the estimation of minerals. Macro minerals viz., Na, K, Ca and Li were estimated by AIMIL, Flame Photometer while micro elements viz., Fe, Cu, Mn, Zn and Co were estimated by Atomic Absorption Spectrophotometer, model 4129, Electronic Corporation of India Ltd.

**Pharmacological Activities<sup>5-10</sup>**

The study reveals that *Euphorbia hirta* has many pharmacological actions like Anti-inflammatory activity, Sedative and Anxiolytic activity, Antidiarrhoeal activity, Antibacterial activity, Anticancer activity, Antidiarrhoeal activity, Diuretic activity, Antimalarial activity, Antiamoebic activity and Antispasmodic activity, Antiplasmodial activity, Molluscicidal activity, Galactogenic activity, Antifertility activity, Aflatoxin inhibition activity, Anti-*Helicobacter pylori* activity, Repellent and antifeedant effect, Immunomodulatory activity, Antifungal activity, Anti-anaphylactic activity, Antimicrobial activity, Serum biochemistry, anti bacterial activity, Antioxidant activity, Larvicidal activity.

**CONCLUSION**

In the present study of review we have discussed about chemical constituents determination based on analytical methods with their pharmacological activities. Analytical methods play vital role in conformation of each every chemical constituents.

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