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PHYTOCHEMICAL AND GC-MS ANALYSIS OF *EUPHORBIA HIRTA LINN.LEAF*

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ABSTRACT

The aim of the study was to investigate the *Euphorbia hirta* leaf for phytochemical compounds and GC-MS analysis. The presence of phytochemical compounds was screened by qualitative method. The results showed the presence of phytochemical compounds of saponin, carbohydrates, protein, lipid, phenol, steroids, flavonoids and tannin. In GC-MS analysis, 8 bioactive Phytochemical compounds were identified in the ethanolic extract of *Euphorbia hirta*, the components were identified by comparing their relation indices and mass spectra Fragmentation patterns with those stored on the MS-Computer library and also form the published literatures. The major constituents viz.,phytol, Vitamin-E and diazoprogesterone along with other same minor constituents were detected.

INTRODUCTION

The Plants are used in traditional medicine for the treatment of several ailments in different parts of the world. Such ailments include., gonorrhea, tuberculosis, cough, rheumatic pains, stomach trouble, corneal opacity, wounds and insect bites [1]. Some of the therapeutic properties of this plant have been established by various workers. For instance, the non-volatile extracts of the plant are known to possess antimicrobial and anti-inflammatory activities [2,3]. Plants efficiency in the treatment of wounds has also been reported by okolico et al.[4]

Euphorbia hirta is a member of Euphorbiaceae family. *Euphorbia hirta* (Tamil name Amman paccharisi) Annual, branched herb, Leaves opposite, distichous, simple, stipules lines. Inflorescence a terminal or axillary cluster of Flowers, called a "Cyathium". Cyathia with a shaped involucres C. one female flower surrounded by many male flowers, Flowers unisexual, male flower sessile, bracteoles linear, Fringer perianth absent, stamen 1, female flowers with short pedicel, periantha rim, ovary short-hairy, 3-celled, styles 3. Fruit a just exserted, acutely 3-lobed capsule, Seeds oblong-conical, C. Slightly wrinkled pinkish brown, without caruncle. [5,6].

Hence in this present study has been carried out to analysis the presence of phytochemical compounds and GC-MS analysis of *Euphorbia hirta* leaf which may provide information for the use in medicine.

MATERIALS AND METHODS

Collection of Plant Material

Leaves of *Euphorbia hirta* was collected from Vadivel nagar, near Karur District in Tamilnadu.

Preparation of Plant Extract

The leaves of *Euphorbia hirta* was shade dried at room temperature. The dried material was then homogenized to obtain coarse powder and stored in air-tight bottles for further analysis. The shade dried, powdered leaves were extracted[7] with ethanol solvent by hot extraction using soxhlet apparatus collected and stored in a vial for further analysis.

Phytochemical Screening

The leaf extract was subjected for qualitative phyto chemical analysis [8-9].

Gas Chromatography-Mass Spectrometry Analysis

The Gas Chromatography-Mass Spectrometry (GC-MS) analysis of the extracts was performed using a clarus 500 Perkin Elmer gas chromatography equipped with a Elite-5 capillary coloumn

[5% Phenyl and 95% methyl Polysaccharides Siloxane] and mass detector turbomass gold of the compant which was operated in E1 mode. Elite wax (Polyethylene glycol) (30mmx0.25mm X0.25umdf) is a polar coloumn used in the estimation)

An insert gas such as Hydrogen or Nitrogen or Helium is used as a carrier gas at a flow rate of 1ml/min, split 10:1. The components of test sample is evaporated in the injection part of the GC equipment and segregated in the coloumn by adsorption and desorption technique with suitable temperature programmes of the over controlled by software different components are eluted from based on the boiling point of the individual components [10].

The GC coloumn is heated in the oven between 110^0C-280^0C. The time at which each component eluted from the GC coloumn is termed as retention time (RT). The total GC running time is 36 min. The eluted component is detected in the mass detector. The spectrum of the known components stored in the NIST library and ascertains the name, molecular weight and structure of the components of the test material in GC-MS study.

Identification of components was based on comparison of their mass spectra with those of Wiley and NIST Libraries and as well as on comparison of their retention indices with literature [11,12].

Table 1: Qualitative Analysis of Phytochemical Components

Sl.No	Phytochemical Components	Ethanal extract
1	Saponin	+
2	Carbohydrates	+
3	Protein	+
4	Lipid	+
5	Phenol	+
6	Tannin	+
7	Steroids	+
8	Cardiacglycosides	-
9	Flavonoids	+
10	Terpenoids	-
11	Phlobatannins	-
"+" Referred to Presence		
"-" Referred to Absence		

Table 2: Phyto compounds identified from the leaf of *Euphorbia hirta*					
Sl.No	**RT**	**Name of the Compound**	**Molecular Formula**	**M W**	**Peak Area%**
1	7.34	Butane, 1-nitro-	C4H9NO2	103	3.55
2	11.60	1,6-Octadiene, 3,7,-dimethyl-,(s)-	C10H18	138	4.44
3	12.09	3-octen-1-ol,(E)-	C8H16O	128	0.89
4	14.93	Phytol	C20H40O	296	13.61
5	28.91	Vitamin-E	C29H50O2	430	4.73
6	32.23	Diazoprogesterone	C21H30N4	338	8.88
7	33.03	3,5-Dimethyl-5-hexen-3-ol	C8H16O	128	5.03
8	34.05	1,6,10,14-Hexadecatetraen-3-ol,3,7,11,15-tetramethyl-,(E,E)	C20H34O	290	58.88

RESULTS AND DISCUSSION

The present study was carried out to know the presence of medicinal active constituents of *Euphorbia hirta* leaves Phyto Chemical screening of the ethanolic extract indicated the presence of saponin, carbohydrates, protein, lipid, phenol, steroids, flavonoids and tannin by qualitative analysis and the results are presented in Table-1.

In the GC-MS analysis, 8 bioactive phytochemical compounds were identified in the ethanolic extract in this plant (Table-2). The identification of phytochemical compounds is based on the peak area, molecular weight and molecular formula. The identified high peak area (1,6,10,14-Hexadecatetraen -3-ol,3,7,11,15-tetramethyl-,(E,E)-C20H34O with RT 34.05 has peak area 58.88%., Phytol (C20H40O) with RT 14.93 has peak area 13.61% was identified as major constituents. This study has revealed the presence of many secondary metabolites and bioactive phytocompounds in the leaf of *Euphorbia hirta* and might be of a very important medicinal value and further plan of study include isolation and Purification of active phyto compounds [13].

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