Qualitative Phytochemical analysis of *Euphorbia hirta* Root

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***Abstract*: The plant species *E. hirta* from the family Euphorbiaceae is a vital healthful and medicated herb found throughout in India. Although most of its components are employed in ancient systems of medicines such as Laves, roots and shoots are foremost necessary components that are used for treatment of disease. The objective of this research is to conduct the preliminary phytochemical screening, of *Euphorbia hirta*. *Euphorbia hirta* Root were collected in March. Extracts of plants parts were prepared using solvents like organic solvents like water (cold and hot) and organic solvents (methanol, ethanol, ethyl acetate, acetone). It prepare to the extraction, screening and identification of the medicinally active substances found in plants. Some of the bioactive substances that can be derived from plants are carbohydrate, protein, flavonoids, alkaloids, tannin, and phenolic compounds.**

I. INTRODUCTION

Euphorbia 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 used in traditional herbal medicine. his erect or prostrate annual herb can grow up to 60 cm (24 in) long with a solid, hairy stem that produces an abundant white latex. There are stipules present. The leaves are simple, elliptical, hairy (on both upper and lower surfaces but particularly on the veins on the lower leaf surface), with a finely dentate margin. Leaves occur in opposite pairs on the stem. The flowers are unisexual and found in axillary cymes at each leaf node. They lack petals and are generally on a stalk. The fruit is a capsules with three valves and produces tiny, oblong, four-sided red seeds. It has a white or brown taproot.

II Materials and Methods

A. SAMPLE COLLECTION

The entire plant samples were collected in March 2018.

B. PREPARATION OF PLANT EXTRACTS USING AQUEOUS AND ORGANIC SOLVENTS

Extracts of Root of *Euphorbia hirta* were prepared using solvents like organic solvents like water (cold and hot) and organic solvents (methanol, ethanol, ethyl acetate, acetone). Fresh plant parts collected were surface sterilized with 0.1% HgCl2 and washed repeatedly with sterile phosphate buffer saline (pH 7.2) followed by distilled water. Plant parts were than dried at 50^0C using electric drier and crushed with the aid of a mechanical grinder to powdered form. These powdered plant parts were used to prepare different extracts as described below.

1) Organic solvent extracts

The dried samples were ground to coarse powder form and phyto-constituents were extracted by Soxhlet extractor at 60˚C using various solvents like methanol, ethanol, ethyl acetate and acetone. The extracts were evaporated to dryness on the rotary evaporator and stored in a refrigerator at 4˚C until required for use. Dry weight of powder before and after extraction was taken to calculate expected total amount of phyto-constituents extracted with given solvent.

C. QUALITATIVE ESTIMATION OF PHYTOCONSTITUENTS

These extract were subjected to chemical test for different phytoconstituents viz. alkaloids, carbohydrates, phenolics, flavonoids, proteins, amino acids, saponins using the standard procedures described (Gupta and Sharma, 2011; Tease and Evans, 1989).

Test for *Proteins* & Amino acids

a) Ninhydrin test: To the 2 ml extract 2 ml on ninhydrin reagent was added & boil for few minutes, formation of bluish purple colour indicates the presence of amino acid.

b)* Biuret's Test*: To 1 ml of test extract, 4% of sodium hydroxide solution and few drops of 1% copper sulphate solution were added. Formation of a violet red colour indicated the presence of proteins.

Test for Carbohydrates

a) Molisch's Test: Filtrates were treated with 2 drops of alcoholic alpha-naphthol solution in a test tube. Formation of the violet ring at the junction indicates the presence of carbohydrates.

b) Fehling's Test: Filtrates were hydrolyzed with dil. HCl, neutralized with alkali and heated with Fehling's A&B solutions. Formation of red precipitate indicates the presence of reducing sugars.

Test for Coumarin

3 ml of 10% NaOH was added to 2 ml of aqueous extract formation of yellow colour indicates coumarins.

Test for Diterpenes

Copper acetate Test: Extracts were dissolved in water and treated with 3-4 drops copper acetate solution. Formation of emerald green colour indicates the presence of diterpenes. (Roopashree, et al., 2008 and Audu, et al., 2007).

Test for saponins

One mL of the tepal extract was diluted with distilled water to 20 ml and shaken in a graduated cylinder for 15 minutes. The formation of one centimeter layer of foam indicates the presence of saponins.

Test for Alkaloids

a) Mayer's Test: Filtrates were treated with Mayer's reagent (potassium Mercuric Iodide). Formation of a yellow colored precipitate indicates the presence of alkaloids.

b) Wagner's Test: Filtrates were treated with Wagner's reagent (Iodine in Potassium Iodide). Formation of brown/reddish precipitate indicates the presence of alkaloids.

Test for Flavonoids

a) Alkaline Reagent Test: Extracts were treated with few drops of sodium hydroxide solution. Formation of intense yellow colour, which becomes colourless on addition of dilute acid, indicates the presence of flavonoids.

Test for *Tannins*

a) Lead acetate Test Few drops of 1% lead acetate were added to 2 ml of extract. The formation of yellowish precipitate indicated the presence of tannins.

b) Ferric Chloride Test

Extract solutions were treated with 5% ferric chloride solution. As per Culet et al., (2010) formation of blue colour indicated the presence of hydrolysable tannins and formation of green colour indicated the presence of condensed tannins.

III. RESULT AND DISCUSSION:

Table 1

Preliminary phytoconstituents analysis of *Euphorbia hirta* Root

		***Euphorbia hirta* Root Extracts**					
S.No.		**Methanol**	**Ethanol**	**Ethyl acetate**	**Acetone**	**Aqueous(Cold)**	**Aqueous(Hot)**
1.	**Carbohydrate test**						
a.	Molish's test	+	+	+	+	+	+
b.	Fehling's test	+	+	+	+	+	+
2.	**Protein test**						
a.	Ninhydrin test	+	+	+	+	+	+
b.	Biuret test	+	+	+	+	+	+
3.	**Tannins**						
a	Lead acetate Test	+	-	-	+	+	+
b	Ferric Chloride Test	-	+	-	+	-	-
4.	**Saphonin**	+	+	+	+	+	+
5.	**Flavanoid**	+	+	+	+	+	+
6.	**Alkaloid test**						
a.	Mayer's test	-	+	-	+	-	-
b.	Wegner's test	+	+	+	+	-	-
7.	**Coumarin**	+	+	+	+	+	+
8.	**Diterpenes**	-	+	-	-	+	+

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