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Phytochemical Screening of whole plant extract of *Euphorbia hirta* L.

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Abstract
Euphorbia hirta belongs to the family Euphorbiaceae. It is a small annual herb and grows upto height of 40 cm. It is used in the treatment of many diseases such as bronchitis, skin diseases, cough, hay asthma, bowel disease, worm infestation, kidney stones, bronchial disease, as sedative, anxiolytic, analgesic, antipyretic etc. The phytochemical screening of petroleum ether and methanolic extracts shown the presence of components i.e., alkaloids, flavonoids, terpenoids, glycoside, saponin, tannins, carbohydrate and amino acid were present in the methanolic extract. It suggests that plant can be used in treatment of many diseases.

Keywords: *euphorbia hirta*, euphorbiaceae, phytochemical screening

Introduction
Euphorbia hirta belongs to the family Euphorbiaceae is a small annual herb. It can grow to a height of 40 cm. The stem of the plant is slender, reddish in color, covered with yellowish bristly hairs. The leaves are about 5 cm long, lanceolate, oppositively arranged and are usually greenish or reddish in color. The stem and leaves produce white or milky latex on cutting [1].

The flowers are unisexual, small, crowded together in dense cyme and green in color. The male flowers are sessile, linear bracteoles, fringed, lack perianth, and possess one stamen, whereas the female flowers have short pedicel, the perianth is rimmed, with superior ovary. Fruits are yellow in colour which contains three brown, four-sided, angular, wrinkled seeds. *Euphorbia hirta* L. is used in the treatment of many disease including bronchitis, skin diseases, cough, hay asthma, bowel disease, worm infestation, kidney stones, bronchial disease, to decrease lactation; as sedative, anxiolytic, analgesic, antipyretic, and as anti inflammatory agent [2].

E. hirta also possesses various pharmacological actions including anti inflammatory, antifungal, antibacterial, antidiarrhoeal, sedative, anxiolytic, analgesic, antipyretic, antioxidant, antiasthmatic, antitumor, antimalarial, larvicidal, diuretic etc [3].

Materials and methods
Collection of Plant Material
The Indigenous plant *Euphorbia hirta* L. were collected from different locations of Bhopal (M.P.) region. The plants were acknowledged by a senior Botanist Dr. Tayaaf Safi Principal Gandhi P.R. College Bhopal.

Preparation of Extract
Plant material was washed with water and then allowed to dry in shade for about 3 to 4 weeks. Dried plant materials were grinded by using the electronic grinder. The powder of the whole plants of *Euphorbia hirta* L. was extracted according to (Harborne and Baxter., 1995) [4]. The dried plants sample was powered and filed into the soxhlet using petroleum ether and methanol respectively. Almost all the chlorophyll and lipid was deposited on the side of the flask and removed carefully. The extracts were stored in refrigerator till any further use.

Phytochemical Screening of crude extracts of Petroleum ether, and methanol from *Euphorbia hirta*
This property of selective reactivity of photochemical present in extracts forms the basis of chemical tests for identification of compounds. Phytochemical screening is done for analyzing secondary metabolites, which are responsible for curing ailments. Phytochemical screenings of the extracts were investigated according to the standard procedures **(**Trease and Evans., 1989 and Kokate C.K. *et al*., 2006) [5, 6].

Test for Carbohydrates
- **Molish Test:** 2 ml of aqueous extract was treated with two drops of alcoholic α-naphthol solution in a test tube and then 1 ml of conc. Sulphuric acid was added carefully along the sides of the test tube. Formation of violet ring at the junction indicates the presence of carbohydrates.
- **Benedict's test:** Equal volume of benedict's reagent and extract were mixed in a test tube and heated in the water bath for 5-10 minutes. solution appears green, yellow or red depending on the amount of reducing sugar present in the test solution which indicated the presence of reducing sugar.

Test for Proteins
- **Biuret's Test:** The extract was treated with 1 ml of 10% sodium hydroxide solution in a test tube and heated. A drop of 0.7% copper sulphate solution was added to the

above mixture. The formation of violet or pink colour indicates the presence of proteins.

- **Million's test:** 3ml of extract was mixed with 5ml of million's reagent. White precipitate formed which on heating turned to brick red, indicating the presence of proteins.

Test for amino acids

- **Ninhydrin test:** 3 ml of the test solution was heated with 3 drops of 5% Ninhydrin solution in a water bath for 10 minutes. Formation of blue colour indicates the presence of amino acids.

Tests for Glycosides

- **Legal,s test:** 1ml of test solution was dissolved in pyridine. 1ml of nitropruside solution was added and made alkaline using 10% sodium hydroxide solution. Formation of pink to blood red colour indicates the presence of cardiac glycosides.
- **Keller-Killiani test:** To 2ml of test solution, 3ml of glacial acetic acid and 1 drop of 5% ferric chloride were added in a test tube. Add carefully 0.5ml of concentrated sulphuric acid by the side of the test tube. Formation of blue colour in the acetic acid layer indicates the presence of cardiac glycosides.

Test for Saponins

- **Froth test:** The extract was diluted with distilled water and shaken in graduated cylinder for 15 minutes. The formation of layer of foam indicates the presence of saponins.

Test for Alkaloids

To the extract, dilute HCl was added, shake it well and filtered. With the filtrate, the following tests were performed.

- **Mayer's test:** To 2-3 ml of filtrate, few drops of Mayer's reagent were added along the sides of tube. Formation of white or creamy precipate indicates the presence of alkaloids.
- **Wagner's test:** To 1-2 ml of filtrate, few drops of Wagner's reagent were added in a test tube. Formation of reddish brown precipitate indicates the presence of alkaloids.
- **Dragendroff,s test:** To 1-2ml of filtrate, few drops of dragendroff,s reagent were added in a test tube. Formation of red precipitate indicates the presence of alkaloids.
- **Hager's Test:** To 1-2 ml of filtrate, few drops of Hager's reagent were added in a test tube. Formation of yellow color precipitate indicates the presence of alkaloids.

Test for Terpenoids and Steroids

- **Salkowski's test:** The extract was treated with chloroform and filtered. The filtrate was added with few drops of concentrated H_2SO_4, shaken and allowed to stand. If the lower layer turns red, steroids are present. Presence of golden yellow layer at bottom indicates the presence of Terpenoids.
- **Libermann-Burchard's Test:** The extract was treated with chloroform. To this solution few drops of acetic anhydride were added, boiled and cooled. Concentrated sulphuric acid was added through the sides of the test tube. Formation of brown ring at the junction of two layers, if upper layer turned green, indicate presence of steroids and formation of deep red color indicate presence of triterpenoids.

Test for Flavonoids

- **Lead acetate test:** The extract was treated with few drops of lead acetate solution. Formation of yellow precipitate indicates the presence of flavonoids.
- **Shinoda test:** To the extract, 5 ml (95%) 0f ethanol was added. The mixture was treated with few fragments of magnesium turning, followed by drops wise addition of concentrated hydrochloric acid. Formation of pink colour indicates presence of flavonoids.

Tests for Tannins and Phenolic compounds

- **Ferric chloride test:** Some amount of extract was dissolved in distilled water. To this solution 2 ml of 5 % ferric chloride solution was added. Formation of blue, green or violet colour indicates the presence of phenolic compounds.
- **Lead acetate test:** Some amount of extract was dissolved in distilled water. To this solution few drops of lead acetate solution was added. Formation of white precipitate indicates presence of phenolic compound.

Results and Discussion

The phytochemical screening of petroleum ether and methanolic extracts shown that the main components i.e., alkaloids, flavonoids, terpenoids, glycoside, saponin, tannins, carbohydrate and amino acid were present in the methanolic extract.

Table1: Showing Phytochemical Screening of crude extracts of Petroleum ether and methanol from *Phyllanthus amarus* Schum.
(+) =Presence, (-) =

Phytochemicals	Tests	*Euphorbia hirta* L.	
		Pet ether extract	Methanolic extract
Alkaloids	Mayer's Test	-	+
	Wagner's Test	-	+
	Hager's Test	-	+
Flavonoids	Lead Acetate Test	-	+
	Alkaline Reagent Test	-	+
	Shinoda Test	-	+
Terpenoids and Steroids	Salkowski Test	-	+
	Libermann Burchards Test	-	+

Glycosides	Killer Killians Test	-	+
	Legal's Test	-	+
	Bortrager's Test	-	+
Saponins	Froth Test	-	+
Tannins and Phenolic compounds	$FeCl_3$ Test	-	+
	Lead Acetate Test	-	+
Carbohydrates	Molish Test	-	+
	Bendict's Test	-	+
Amino acid and proteins	Biuret's Test	-	+
Fat and Oils	Solubility Test	+	+

Conclusion

Phytochemical screening of both extract i.e; methanolic & petroleum ether extract confirmed the presence of several bioactive compounds like alkaloid, flavonoids, Terpenoids, glycosides, saponin, and carbohydrate. The presence of these compounds suggests that plant having various medicinal properties which can be used in the treatment of various diseases. Thus there is need of more study in order to evaluate the effects of these compounds on biological system.

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