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Phytochemical constituents of some selected medicinal plants

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Abstract:

Tannins, carbohydrate, saponins, alkaloids, flavonoids, terpenoids, steroids, and glycosides dissemination in two therapeutic plants have affinity to dissimilar families were explored and compared. The therapeutic plants examined are Euphorbia hirta (Linn.) and Acorus calamus (Linn.). Plants found to encompass flavonoids, steroids, sugars, terpenoids and glycosides. The extraction was done by using ethanol and undergo distillation techniques and the rate of production of concentrates by every strategy decided. The percentage yield of the ethanolic extracts by quantitative estimate showed the percentage yield of Euphorbia hirta (Linn.) is 1.6 % and Acorus calamus (Linn.) is 1.9%.

The noteworthiness of reputed plants in customary drug and the implication of the constituents were analyzed to play role in ethno medicine in India

Key words*: Euphorbia hirta (Linn.), Acorus calamus (Linn.), phytochemistry, concentrates*

Introduction

Therapeutic plants comprehend particular compounds that produces certain physiological activity on the human physique are such a bioactive constituents that incorporate tannins, alkaloids, starches, terpenoids, steroids and flavonoids. [1-10] A significant number of natural products obtained was found to have vibrant roles as intermediaries as go between of environmental associations. Such integrate being useful for pollinators, aimed against killers and pathogens. For instance Vasicine, a significant essential of the *Adhatoda vasica* and Tylophorine, present in *Tylophora asthmatica* have possess antiasthamatic properties. [12-18]

Phytochemistry is an impetus part of science, which includes the role of antidote. The acts of conventional prescription prolong of conviction and perceptions which precede spread of contemporary medical system. The conventional drugs remain an essential part of the proper

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wellbeing framework and exist at an equivalent footing with modern medicine. The technique for rehearsing of conventional prescription, some of them seem, to be variations in basic activities like healing, hygiene and drug cure. Conventional prescription assumes a significant role in human services. [19-22]

Table 1. Medicinal uses of *Euphorbia hirta (Linn.)* and *Acorus calamus (Linn.)*[25-28]

Species	Family	Uses
Euphorbia hirta *(Linn.)*	Euphorbiaceae	This plant has a relaxing activity on the muscles of the lungs. It additionally has a noticeable impact in asthma treatment and bronchitis. The entire plant is utilized for the treatment of infections of youngsters particularly in worms, insides gripe and hacks. Its juice is utilized in looseness of the bowels and colic and furthermore in warm disease. The decoction of leaves is utilized in bronchial asthma, contaminations and constant hacks. The latex of this plant is utilized as an application for moles. The ripe fruit of this plant is given to step spewing, where as its concentrates are spasmolytic, antihistaminic and anti-inflammatory. The roots of this plant are an anti-emetic.
Acorus calamus (Linn.)	Araceae	Its rhizome is utilized in emetic, stomach, looseness of the bowels, colic, remittest fever and as a nerve tonic in bronchitis and snakebite. It has likewise been utilized to improve memory retention. The rhizome of this plant is a strong sedative with neuroleptic and tension properties. It groups mitigating, antiepileptic, antihypertensive, calming, pain-relieving, antiulcer and antiherpes properties.

Materials and methods

Collection and preparation of plant materials

The roots of the plants *Acorus calamus (Linn.)* and *Euphorbia hirta (Linn.)* were gathered locally from the nursery of Jalandhar cantt and was distinguished by a botanist. The air-dried powdered roots 3.0 kg the plants chosen were extracted with ethanolic concentrate.

The ethanolic extract, concentrated under reduced pressure to a light darker syrupy mass was grown, which was then consecutively and progressively apportioned with pet-ether (60-80°C), benzene, chloroform, ethyl acetic acid derivation, $(CH3)_2CO$ and methanol. But the chloroform

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dissolvable portion of different divisions as pet-ether (60-80°C) benzene, ethyl acetic acid derivation, $(CH3)_2CO$ and methanol were not contemplated phytochemicals, they yielded limited amount which were inadequate for any substantive examination. The chloroform solvent portion was thought under the diminished weight. The concentrated chloroform remove was exposed to TLC assessment utilizing n-butanol: acidic corrosive: water (4:1:5) as a dissolvable framework and I¬2 fumes as an imagining specialist which showed two spots. The mixture was then subjected to column chromatography over silica gel G and gradient eluted with $CHCl_3$: MeOH in varying proportions.

Eluates gathered from $CHCl_3$: MeOH (9:1) were found to have the same Rf esteems and along these lines were blended. On the evacuation of the dissolvable, it gave a yellow compound. This compound was seen as homogeneous on TLC by using n-butanol: acetic acid: water (4:1:5) as a solvent system and visualizing agent I_2 vapors which exhibited two spots. It was crystallized from methanol as a yellow crystals

Screening of Phytochemical content [28-31]

Compound tests were subjected to the ethanolic concentrates to distinguish the constituents of both plants by using standard procedures as described

Test for Carbohydrates

Molish Test: Ethanolic concentrate was taken and employed with alcoholic solution α-naphthol afterward conc. sulphuric acid was intend cautiously at the edges of test tube. Violet ring was found to appear at the intersection that indicative of carbohydrates.

Benedict's test: Benedict's reagent of equivalent volume and concentrates were blended together in a test tube. Afterward heated on the water bath for almost 10 minutes. Appearance of green, yellow or red relying upon the amount of reducing sugar present in test tube which demonstrated the presence of reducing sugar.

Test for Proteins

Biuret's Test: 10% solution of sodium hydroxide was employed with ethanolic concentrates and heated. Afterward addition of 0.5% copper sulfate solution to the solution prepared. The appearance of violet colour indicative of proteins

Million's test: ethanolic concentrate was mixed in with million's reagent. White ppt formed which turned to brick red, indicates the appearance of proteins.

Test for amino acids

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Ninhydrin test: 3 ml of the solution to be tested was heated with 3 drops of 5% Ninhydrin solution on a water bath for 10 minutes. Appearance blue color indicated the presence of amino acids.

Tests for Glycosides

Legal,s test: 1ml of solution to be tested was dissolved in pyridine to which 1ml of nitroprusside solution was added. This made the solution alkaline, 10% sodium hydroxide solution was added to it. Appearance of blood red colour indicative of glycosides.

Keller-Killiani test: To the solution to be tested (2 ml), (3ml) glacial acetic acid was added followed by drop of 5% ferric chloride. Cautiously added concentrated sulphuric acid (Benedict's reagent). Blue colour was appeared in the layer of acetic acid that indicative of glycosides.

Test for Saponins

Froth test: distilled water was added to dilute the concentrate and shaken for 20 minutes. Layer of foam was found to appeared that indicates saponins.to be present.

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: Mayer's reagent was added to solution to be tested. Appearance of white precipitate indicates the presence of alkaloids.

Wagner's test: Wagner's reagent were added to extract in a test tube. Appearance of reddish brown precipitate indicates the presence of alkaloids.

Dragendroff,s test: Dragendroff,s reagent were added to the tested solution in a test tube. Formation of red precipitate shows the presence of alkaloids.

Hager's Test: Hager's reagent, added to the filtrate which can show appearance of yellow color precipitate that shows the alkaloids to be present in extracts.

Test for Terpenoids and Steroids

Salkowski's test: Concentrate was employed with chloroform. To the filtrate obtained, few drops of concentrated H_2SO_4 was added, shaken well and let it allowed to stand. If the bottom layer turns red, steroids are indicative. Formation of golden yellow layer at bottom indicates the presence of Terpenoids.

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Libermann-Burchard's: chloroform was employed with the concentrates Boil, the mixture after the addition of acetic anhydride. Concentrated sulphuric acid was employed after cooling the mixture. Brown ring was appeared at the junction of two layers. Upper layer turned green, that indicate steroids and appearance of deep red color indicate triterpenoids to be present.

Test for Flavonoids

Lead acetate test: lead acetate solution was added to the solution in distilled water. Appearance of white precipitate indicative phenolic group

Shinoda test: To the concentrate, 2ml (95%) of ethanol was intended. The mixture was reacted with turning of magnesium, followed by adding of concentrated hydrochloric acid. Appearance of pink uncovered flavonoids.

Ferric chloride test: (2 ml) 7% ferric chloride solution was added to the extract in distilled water. Appearance of blue colour shows the occurrence of phenolic compounds.

Lead acetate test: lead acetate solution was added to the concentrated solution in distilled water. Appearance of white precipitate indicates presence of phenolic compound.

Table 2. Phytochemical constituents of the concentrates of *Euphorbia hirta (Linn.)* and *Acorus calamus (Linn)*

Chemical constituent	*Euphorbia hirta (Linn)*	*Acorus calamus(Linn)*
Alkaloids	+	-
Glycosides	+	+
Saponins	+	+
Tannins and Phenolic compounds	+	-
Carbohydrates	+	+
Amino acid and proteins	+	+
Fat and Oils	-	+
Flavonoids	+	+
Terpenoids and Steroids	+	+

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Result

The phytochemistry attributes for two restorative plants are researched and pruned in Table 2. Outcomes uncover therapeutically active ingredients in the plants were examined. From Table 2, it has been uncovered that carbohydrate , flavonoids, steroids, terpenoids and glycosides were found to be occur in these plants while alkaloids were found to be absent in both *Acorus calamus (Linn.) and Euphorbia hirta (Linn.).*After underwent the quantitative estimation the yield of the ethanolic extracts obtained *Euphorbia hirta (Linn.)* is 1.6 % and *Acorus calamus (Linn.)* is 1.9%.

Discussion

Phytochemical screening of the ethanolic concentrate of *A. calamus* rhizomes indicated the presence of saponins, starches, glycosides, monosaccharide's and reducing sugar. The ethanol concentrate of *Euphorbia hirta (Linn.)* was indicated significant antianaphylactic properties. The ethanol extract possessed an anti-histaminic, anti-inflammatory, and immune-suppressive properties the water and ethanolic decoctions showed a maximum percentage of protection for inflammation. The ethanolic concentrates of the plant parts indicated plant parts showed anti-oxidant properties which are comparable to green and black teas. Anti-bacterial activity was ascribed to polyphenols, tannins, flavonoids, alkaloids, glycosides, proteins, sterols, polysaccharides and saponins. The occurrence of glycosides was detected in *A. calamus.* Glycosides found to lower the blood pressure.

The presence of glycosides was recognized in *Acorus calamus*. Glycosides have been known to bring down circulatory strain. Secondary metabolites present in restorative plants can create a unique physiological activity on the human physiques. In the present examination, stem of *Euphorbia hirta (Linn.)* were separated subjectively. Alkaloids, flavonoids, steroids, glycosides and starches are the auxiliary metabolites present in *Euphorbia hirta (Linn.)* whereas fats, protein as well as saponins are found to be mislaid in ethanolic concentrate of *Euphorbia hirta.* Alkaloids are significant chemical compound present in stem of *Euphorbia hirta (Linn.)* and are defensive for the plant against pathogenic. [32-33]

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Conclusion

Results obtained uncover the occurrence of restoratively constituents present in plants are contemplated. Investigation of therapeutic compound are distinguished to have bioactive content. Thus it has been adequacy that stem have found to contemplated in treatment of various illnesses. The plant concentrates could viewed to have hotspot for medication.

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