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Preliminary Phytochemical Screening of Medicinal Plants used in Traditional Medicine

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ABSTRACT

Fundamental screening of phytochemicals is a significant advance, in the location of the bioactive standards present in restorative plants and therefore may prompt medication disclosure and improvement. In the current examination, chief phytoconstituents of the six chose restorative plants of various families were distinguished so as to relate their essence with bioactivities of the plants.Screening of six chose therapeutic plants was performed for the presence of tannins, flavonoids, terpenoids, saponins, steroids, phlobatannins, starches, glycosides, coumarins, alkaloids, proteins, emodins, anthraquinones, anthocyanins and leucoanthocyanins utilizing standard strategies.All the chose restorative plants were found to contain tannins and flavonoids. In addition, terpenoids were additionally present in all the chose plants aside from P. dactylifera. but P. dactylifera. Then again, saponins and steroids were missing in all plants aside from S. chirata and phlobatannins were missing in all plants aside from R. sativus. Likewise, starches, glycosides and coumarins were available in all the chose plants aside from P. dactylifera and R. sativus. Alkaloids were available in all the chose plants aside from F. religiosa, P. dactylifera and R. sativus. Proteins were available just in F. religiosa and S. chirata. Though emodins, anthraquinones, anthocyanins and leucoanthocyanins were missing in all the chose six plants.It is evident from the study that S. chirata is of highest therapeutic efficacy possessing majority of phytochemical classes of compounds and P. dactylifera is of lowest therapeutic potential due to the absence of majority of phytoconstituents.

KEYWORDS:*Medicinal plants, Preliminary, Screening, Phytochemical.*

INTRODUCTION

Restorative plants other than remedial specialists are likewise a major wellspring of data for a wide assortment of synthetic constituents which could be created as medications with exact selectivity. These are the repositories of conceivably valuable substance mixes which could fill in as more up to date leads and signs for current medication plan [1]. The most significant of these bioactive constituents of plants are alkaloids, tannins, flavonoids and phenolic mixes [2]. Relationship between's the phytoconstituents and the bioactivity of plant is attractive to know for the combination of mixes with explicit exercises to treat different wellbeing afflictions and ongoing infections too [3].

Inferable from the noteworthiness in the above setting, such starter phytochemical screening of plants is the need of great importance so as to find and create novel helpful specialists with improved adequacy. Various exploration bunches have likewise detailed such examinations all through

the world [4-8]. Consequently, the current examination manages the screening dependent on phytochemical trial of six therapeutic plants viz., Ficusreligiosa, Citrus limonia, Phoenix dactylifera, S. indicum, Swertiachirata and Raphanussativus for distinguishing their substance constituents. Every one of these plants has distinctive bioactivities which were later connected with the presence of some particular phytoconstituents.

METHODOLOGY

Plant materials

Fresh leaves of *F. religiosa*(Family: Moraceae) &*C. limonia*(Family: Rutaceae), seeds of *P. dactylifera*(Family: Arecaceae), stems of *S. chirata*(Family: Gentianaceae), black seeds of *Sesamumindicum*(Family: Pedaliaceae) and roots of *R. sativus*(Family: Brassicaceae) were collected locally from Shivamogga, Karnataka, India.

Preparation of extracts

The collected leaves (*F. religiosa*&*C. limonia*), seeds (*P. dactylifera*) and stems (*S. chirata*) were washed well, shade dried and powdered. Black seeds of *S. indicum*were extracted in mechanical oil expeller machine which yielded oil and blackish solid residue. This blackish powder so obtained is called as Khali and used for extraction. They were then extracted with hot distilled water using soxhletapparatus till the colorless solvent was obtained. Roots of *R. sativus*were crushed in an electric blender to obtain root juice. Extracts obtained were filtered, concentratedandallowedtodrytillconstantweightwa sobtained.

Phytochemical tests

Screening of the above six selected medicinal plants for various phytochemical constituents were carried out using standard methods.

RESULTS

The data shows screening of aqueous extracts of different parts of six medicinal plants viz., *F. religiosa*, *C. limonia*, *P. dactylifera*, *S. indicum, S. chirata and R. sativus*based on phytochemical tests. These tests reveal the presence of various bioactive secondary metabolites which might be responsible for their medicinal attributes. The observations and inferences made in the phytochemical tests are presented asfollows:

Tannins: A green precipitate was observed in all the extracts indicating thereby the presence of tannins in all six medicinal plants analysed.

Flavonoids: A yellow coloration was also observed in all the extracts indicating thereby the presence of flavonoids in all six medicinal plantsscreened.

Terpenoids: A deep red color was observed in five extracts out of six except *P.dactylifera*.

Saponins: Persistent frothing on warming the extract of *S. chirata*indicated the presence of saponins in this plant only. The same extract with few drops of olive oil formed a soluble emulsion, confirming the presence of saponins.

Steroids: A reddish brown ring at the interface was observed only with the extract of *S. chirata*out of six screened plants indicating the presence of steroids only in this plant.

Phlobatannins: Presence of a red precipitate in *R. sativus*root juice only was taken as an evidence for the presence of phlobatanninsin this.

Carbohydrates: Red violet ring appeared at the junction in most of the extracts was confirmed by the presence of carbohydrates except*P. dactylifera*and *R. sativus*.

Glycosides: Similarly**,** a color change from violet to blue to green confirming the presence of glycosides was also observed in all other extracts except *P. dactylifera*and *R. sativus*.

Coumarins: Interestingly, formation of yellow color as an indication of coumarinpresence was also found only in those four extracts which showed the presence carbohydrates and glycosides. The results were again negative for *P. dactylifera*and*R. sativus*indicating thereby the absence of coumarins in their extracts.

Alkaloids: A yellow precipitate was observed in three extracts confirming thereby the presence of alkaloids. Surprisingly, this time *F. religiosa*were also devoid of alkaloids in addition to *P. dactylifera*and *R. sativus*.

Proteins: White precipitate formation which turns yellow on boiling was only observed in the extract of *S. chirata*and *F. religiosa*showing thereby the presence of proteins and confirming thereby the absence of proteins in rest of theextracts.

Emodins: Absence of red color indicated the absence of emodins in all the six extracts.

Anthraquinones: Absence of a pink, violet or red coloration in ammonical layer indicated the absence of free anthraquinones in all the six extracts.

Anthocyanins: The absence of pink-red to blue-violet coloration indicated the absence of anthocyanins in all the six extracts.

Leucoanthocyanins: *Absence of red color in organic layer indicated the absence of leucoanthocyanins in all the six extracts.*

These secondary metabolites contribute significantly towards the biological activities of medicinal plants such as hypoglycemic, antidiabetic, antioxidant, antimicrobial, antiinflammatory, anticarcinogenic, antimalarial, anticholinergic, antileprosy activities etc. [12].

All the six selected medicinal plants for screening were found to possess tannins. Tannins have amazing stringent properties. They are known to hasten the healing of wounds and inflamed mucous membranes. Flavonoids are also present in all six selected medicinal plants as a potent water-soluble antioxidant and free radical scavenger, which prevent oxidative cell damage and also have strong anticancer activity [13-14]. It also helps in managing diabetes induced oxidative stress. Terpenoids have been found to be useful in the prevention and therapy of several diseases, including cancer. Terpenoids are also known to possess antimicrobial, antifungal, antiparasitic, antiviral, anti-allergenic, antispasmodic, antihyperglycemic, antiinflammatory and immunomodulatory properties [15-16]. In addition, terpenoids can be used as protective substances in storing agriculture products as they are known to have insecticidal properties as well.

But, surprisingly it was present in all other screened plants except *P. dactilyfera*, indicating thereby its low medicinal value in comparison to other screened plants. Numerous studies have confirmed that saponins possess the unique property of precipitating and coagulating red blood cellsand steroids are responsible for cholesterol-reducing properties. Steroids also help in regulating the immune response. Interestingly, both saponins and steroids are present only in *S. chirata*which is supposed to be of maximum medicinal value out of the six investigated plants as it possesses majority of identified phytoconstituents. In traditional system of medicine, *S. chirata*has been regularly used as a blood purifier and also as a blood glucose lowering agent.

Phlobatannins have been reported to possess astringent properties and it was found only in *R. sativus*out of all the screened plants. Though, majority of analysed natural products were found to be absent in *R. sativus*except the most common ones viz., tannins, flavonoids and terpenoids. Out of fifteen phytoconstituents for which these six mediinal plants were screened carbohydrates, glycosides and coumarins were found to be absent in *P. dactilyfera*as well as *R. sativus*suggesting thereby the absence of therapeutic efficacies associated with these phytoconstituents in these two plants. Plants containing carbohydrates, glycosides and coumarins are known to exert a beneficial action on immune system by increasing body strength and henceare valuable as dietary supplements. Coumarinscan be suggested to be beneficial for hyperproliferativeskin diseases on the basis of their antimicrobial and antiinflammatoryeffects]. Glycosides also have vast therapeutic efficacy as they are found in almost every medicinalplant.

Moreover, alkaloids represent a class which affects the central nervous system, reduces appetite and behaves as diuretic. It was found only in *C. limonia*, *S. indicum*and *S. chirata*. Proteins are the building blocks of life. The body needs protein to repair and maintain itself. Since it was present only in *S. chirata*and *F. religiosa*therefore nutritional power of these plants as protein supplements cannot be ignored. Thus, from the present investigation medicinal properties of the selected six plants can be identified based on the phytoconstituents present inthem.

CONCLUSION

Screening of six selected medicinal plants clearly reveals that the maximum classes of phytoconstituents are present in *S. chirata*extract as compared to other five selected plant extracts. Hence, the above plant extract could be explored for its highest therapeutic efficacy by pharmaceutical companies in order to develop safe drugs for various ailments. The other five studied plants are of equal importance due to the presence of most of the tested major phytoconstituents. Since these plants have been used in the treatment of different ailments, the medicinal roles of these plants could be related to such identified bioactive compounds. Thequantitative analyses of these

phytocompounds will be an interesting area for further study. Efforts should be geared up to exploit the biomedical applications of these screened plants due to the presence of certain class of phytocompounds for their full utilization.

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