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QUALITATIVE PHYTOCHEMICAL SCREENING OF *GNIDIA GLAUCA* (FRESEN) GILG. PLANT EXTRACT

SANJAY S. KHARAT[*1], PRADEEP B. KUMKAR[2], SIDDHESH R. RAJPURE[3] AND KISHOR S. SONAWANE[4]

Modern College of Arts, Commerce and Science, Ganeshkhind, Pune-16, (MS), India. (University of Pune, Pune.)

ABSTRACT

The present study was undertaken to find out the phytochemicals present in plant *Gnidia glauca* belonging to the family Thymelaeaceae. Plant extract of dried leaves, bark and stem was prepared and qualitative phytochemical analysis was performed for the presence of Flavonoids, Quinone, Steroids, Tannin, Alkaloids, Phlobatanins, Anthrequinones, Glycosides, Terpenoides, Saponins using standard procedures. Phytochemicals from this plant, *Gnidia glauca* shows more potential in drug design and it requires further study.

KEYWORDS: ***Gnidia glauca*, plant extract, phytochemicals, analysis.**

SANJAY S. KHARAT
Modern College of Arts, Commerce and Science, Ganeshkhind, Pune-16, (MS), India. (University of Pune, Pune.)

Corresponding author

INTRODUCTION

The evaluation of all the drugs is based on phytochemical and pharmacological approaches which lead to drug discovery referred as natural product screening [1]. Any part of the plant may contain active components like bark, leaves, flowers, roots, fruits, seeds, etc. [2]. The effect of the plant materials result when the secondary products such as phytochemicals get combined. In recent time focus on plant research has increased all over the world. Plant have played a significant role in maintaining human health and improving the quality of human life for thousands of years and have served humans as well as valuable components of medicines, seasonings, beverages, cosmetics and dyes, [3].Phytochemicals are the chemicals produces by plants, of these bioactive constituents of plants are steroids, terpenoids, carotenoids, flavanoids, alkaloids, tannins and glycosides. These compounds have various activities like antimicrobial or antibiotic, some have been reported to exhibit heamolytic and foaming activity, [4], Anti-inflammatory, [5], fugistatic, [6] and molluscidal, [7]. Thus the plants have played important role in drug development, [8]. *Gnidia glauca,* commonly called "Rametha", vernacular name *Datpadi,* is a semi- woody herb of Thymelaeaceae family, an inhabitant along margin of evergreen forests found in the Western Ghats- throughout India, Sri Lanka and also in Africa. Different parts (Stem and bark) of the herb are used in fishing techniques followed by some tribes in Maharashtra. The present investigation was undertaken to study qualitative chemical tests for establishing profile of *Gnidia glauca* with different solvents such as aqueous, chloroform, methanol and buffer extract.

MATERIALS AND METHODS

Plant materials

Fresh leaves stem and bark of *Gnidia glauca* were collected in bulk from Tamhini region of Western Ghats, Maharashtra, 18°27' latitude and 73°25' Longitude, during the month of October- November in the year 2012. The plant was identified and authenticated from Botanical Survey of India, Western Regional Centre. 7, Koregaon Road, Pune and herbarium was kept at Department of Zoology, Modern College of Arts, Science and Commerce, Ganeshkhind, Pune as PK-1 specimen. Cleaned leaves, stem and bark were then dried under shade and were ground into a fine powder formed using mortar pestle and domestic mixer grinder machine. The fine powder of the plant leaves and aerial parts obtained was stored in sterile plastic bags at room temperature for further processing.

Chemicals and instruments

Chloroform, Methanol, Sodium Phosphate buffer and distilled water, hydrochloric acid, Wagner's reagent, Fehling`s solution, ferric chloride reagent, sulphuric acid, benzene, ammonia solution, Conical flask, Test tubes, Bumper tubes, Stirrer, Burner, Water bath, pH meter, etc.

Preparation of extracts

Plant tissue homogenization

Plant tissue homogenization in solvent has been used. Dried fresh plant parts are grinded in a blender to fine particles, put in a certain quantity of solvent and shaken vigorously for 5 min and left for 24 h after which the extract is filtered and used for phytochemical screening [9].

Qualitative phytochemical screening

A number of phytochemical studies have demonstrated the presence of several classes of chemical compounds. Following different qualitative chemical tests were performed to investigate the chemical composition of *Gnidia glauca* plant extracts. Chemical test were carried out for alkaloids [10], glycosides [11] and quinines [12] . flavonoids [13], tannins [14], saponins [15] and anthroquinnones [16] , terpenoids [8] and phlobatannins [8] and for Steroids [13] .

Test for Alkaloids

5 ml of the extract was added to 2 ml of HCl. To this acidic medium, 1 ml of Wagners

reagent was added. A reddish precipitate brown produced immediately indicates the presence of alkaloids.

Test for Glycosides
To a small amount of extract, 1ml of Fehling`s solution was added and heated, orange precipitate indicates the presence of glycosides.

Test for Flavonoids
4ml of extract solution was treated with 1.5 ml of 50% methanol solution. The solution was warmed and metal magnesium was added. To this solution, 5-6 drops of concentrated hydrochloric acid was added and red color was observed for flavonoids and orange color for flavones.

Test for Tannins
Ferric chloride reagent added to the filtrate. A blueblack, green, or blue-green precipitate was taken as evidence for the presence of tannins.

Test for Saponins
Frothing test was used to detect the presence of saponins. 0.5 gm of extract from each part was taken in test tube containing water. Solutions were warmed, resulted in to mass of bubbles indicates presence of saponins.

Test for Quinones
To a small amount of extract, concentration of sulphuric acid is added. Appearance of red color indicates the presence of quinones.

Test for Terpenoids
5 ml of each extract was mixed in 2 ml of chloroform. 3 ml of concentrated H2SO4 was then added to form a layer. A reddish brown precipitate colouration at the interface formed indicated the presence of terpenoids.

Test for Phlobatannins
Deposition of a red precipitate when an aqueous extract of each plant sample was boiled with 1 % aqueous hydrochloric acid was taken as evidence for the phlobatannins.

Test for Anthraquinones
Approximately 5g of each herbal extract was boiled with 10ml aqueous sulphuric acid and filtered while hot. The filtrate was shaken with 5 ml of benzene. The benzene layer was then separated and 10% ammonia solution was added to half of its volume. A pink, red or violet coloration in the ammonia phase (lower layer) indicated the presence of anthraquinone derivatives in the extracts.

Test for Steroid
Extract was treated with 2.5 ml of acetic anhydride and 2.5 ml of chloroform. Then concentrated solution of sulphuric acid was added slowly and red violet color was observed for terpenoid and green bluish color for steroids.

RESULTS

Phytochemical studies
Qualitative analysis of phytochemicals was carried out in four extracts of stem, leaves and bark of *Gnidia glauca*. Maximum extraction of phytochemicals were found to be present in Methanolic extract when compared with chloroform, aqueous and buffer extracts of *Gnidia glauca*. The phytochemical screening of all extracts of leaf showed that it contains flavonoids, steroids, tannins, terpenoids. The phytochemical screening of all extracts of stem showed that it contains steroids, quinones, alkaloids, terpenoids and the extract of bark showed that it contains steroids, terpenoids, quinones. The phytochemical screening of all extracts showed that the whole plant was rich in quinones, terpenoids, Tannins and Steroids. These compounds may used for several medicinal activities.

DISCUSSION

A number of phytochemical screening of plant material have been carried out[18,19] and demonstrated the presence of several classes of chemical compounds. The various studies carried out on *Gnidia glauca* and recorded as piscicidal, arrow poison, insecticidal and molluscidal, [20]. Andelhave further reported that rotenone is chemical

compound present in *Gnidia glauca* for ichthyotoxic[21], reported *Gnidia glauca* as magical plant that makes the painful tooth drop[22]. It seems that various phytochemicals present in *Gnidia glauca* are showing the effects, as illustrated by various workers. Efficiency of *Gnidia glauca* inhibit amylase and glucosidase activity[23] and are showing positive results. Present study is supported by the above finding of various authors as the *Gnidia glauca* showing constituents as listed in the table. Further study is genuinely required to find out the importance of *Gnidia glauca* in drug design.

Table 1
Qualitative phytochemical analysis of extracts of Leaves, stem and bark of Gnidia glauca in different solvent system.

No	Solvents / Phytoconstituent	Leaf Extract				Stem Extract				Bark Extract			
		Chloroform	Methanol	Buffer	Aqueous	Chloroform	Methanol	Buffer	Aqueous	Chloroform	Methanol	Buffer	Aqueous
1	Flavonoids	+ve	+ve	+ve	+ve	-ve	+ve	+ve	-ve	-ve	+ve	-ve	-ve
2	Quinones	-ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
3	Steroids	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
4	Tannins	+ve	+ve	+ve	+ve	+ve	+ve	+ve	-ve	+ve	+ve	+ve	-ve
5	Alkaloids	+ve	+ve	-ve	-ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	-ve
6	Phlobatanins	-ve	-ve	-ve	-ve	+ve	+ve	-ve	-ve	+ve	+ve	-ve	-ve
7	Anthrequinones	-ve	+ve	+ve	+ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve
8	Glycosides	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	+ve	+ve	-ve	-ve
9	Terpenoides	-ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
10	Saponin	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve

(-ve) Absent , (+ve) Present

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