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Qualitative phytochemical analysis of medicinal plants selected from Kolli hills Namakkal

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Abstract
Medicinal plants have been used for centuries before the advent of orthodox medicine. The plant kingdom represents an enormous reservoir of biologically active compounds with various chemical structures and protective / disease-preventive properties. They synthesize and preserve various biochemical products, which are extractable and used as chemical feedstock's or raw materials for various scientific investigations. Leaves, flowers, stems, roots, seeds, fruits, and bark all can be constituents of herbal medicines. This study aims to provide an overview of extract ants and the extraction process of *Laportea Crenulata, Glycyrrhiza Glabra, Adhatoda Vasica, Cynodon Dactylon, Cyperus Rotundus, Croton Laciferus, Solanum Trilobatum, Aancyclus Pyrethrum, Commiphora Myrra and Rhus Succedaanea* to focus to the evaluation of phytochemical components- Methanol extracts of various medicinal plants. Our research shows medicinal plants containing secondary metabolites such as tannin and saponins flavonoids steroids, phenolic compounds, alkaloids, glycosides, and Anthraquinone.

Keywords: Medicinal plants, methanol, and phytochemicals flavonoid alkaloids.

Introduction
Nature has been a source of medicinal agents since time immemorial. Herbal products today symbolize safety In contrast to the synthetics that are considered unsafe to humans and the environment. Traditional systems of medicine continue to be widely practiced on many accounts. Population rise, inadequate supply of drugs, the prohibitive cost of treatments, side effects of several allopathic drugs, and development of resistance to currently used drugs for infectious disease diseases have led to increased emphasis on the use of plant material as a source of medicines for a variety of human ailments. The blind dependence on synthetics is over, and people are returning to the natural, hoping for safety and security (Doss A *et al*., 2009) [1].

The medicinal values of these plants lie in their phytochemical components which produce definite physiological actions on the human body. These phytochemicals, often secondary metabolites in smaller quantities in higher plants include alkaloids, steroids, flavonoids, terpenoids, tannins, and many other components. Secondary metabolites of plants are commercially important to use in several pharmaceutical compounds. These phytochemicals are extensively found at different levels in various medicinal plants and used in herbal medicine to treat diverse ailments such as cough, malaria, toothache, and rheumatic disease.

Within recent years infection has increased to a great extent and antibiotic resistance effects become an ever-increasing therapeutic problem (Mahesh B 2008) [4]. Infectious diseases are the leading cause of death throughout the world accounting for nearly one-half of all deaths in tropical countries. In addition, antibiotics are sometimes associated with adverse effects including hypersensitivity, immune suppressant, and allergic reaction. Given the alarming incidence of antibiotic resistance in bacteria of medical importance, there is a constant need for new and effective agents (Hammer *et al*., 1999) [3].

Materials and Methods
The present investigation of the study phytochemical analysis of medicinal plants of Kolli Hills was carried out by the Department of Biochemistry PGP Institute of Allied Health Sciences, Namakkal.

Collection of samples
Plant materials were collected from Kolli Hills Namakkal district, Tamil Nadu.

Table 1: Scientific and plant part used

S. No	Scientific Name	Plant Part Used
1.	*Laportea Crenulata*	Root
2.	*Gycyrrhiza Glabra*	Root
3.	*Adhatoda Vasica*	Root
4.	*Cynodon Dactylon*	Root
5.	*Cyperus Rotundus*	Root
6.	*Croton Laciferus*	Root
7.	*Solanum Trilobatum*	Root
8.	*Ancyclus Pyrethrum*	Root
9.	*Commiphora Myrra*	Root
10.	*Rhus Succedaanea*	Root

Preparation of extract

The samples were shade-dried for 15 days and then pulverized into a fine powder using pestle and mortar. The extraction was done by the Soxhlet technique. Methanol solvents were used successfully with gradient polarity. The extracts were evaporated to complete dryness by vacuum distillation. The dried extract is dissolved in 10% dimethyl sulfoxide and stored in the refrigerator for further use (Mohanta *et al*., 2007) [5].

Phytochemical Analysis

The extracted compounds were analyzed for the presence of tannins, saponins, flavonoids, steroids, glycosides, alkaloids, anthraquinone, and phenolic compounds based on the protocols available in the literature

Test for tannins

About 0.5 ml of plant root extract was added to 1 ml of distilled water. A few drops of ferric chloride were added and observed for blue or green-black coloration.

Test for Saponin

About 2ml of plant root extract vigorously shaken with water in a test tube and heated to boil.

Frothing was observed as preliminary evidence for the presence of saponins.

Test for flavonoid

About 2ml of plant root extract was treated with 1.5ml of 50% methanol solution. The solution was warmed and metal magnesium was added. To this solution, a few drops of concentrated hydrochloric acid were added and a red color was observed for flavonoids and an orange color for flavones.

Test for steroids

About 2ml of plant root extract was treated with 5 drops of concentrated sulfuric acid and observed for red coloration.

Test for glycoside

About 4 ml of the extract was dissolved in 2 ml of glacial acetic acid and one drop of ferric chloride solution. This was treated with concentrated sulphuric acid and observed for a reddish brown coloration at the junction between the layers indicating the presence of deoxy sugar characteristics of cardioids.

Test for alkaloids

About 4 ml of the extract filtrates and a drop of Mayer's reagent were added to observe the creamy yellow or white precipitate indicating the experiment was positive.

Test for phenolic compounds

About 2 ml of the extract was diluted to 5 ml of distilled water to this few drops of neutral 5% ferric chloride solution were added. The dark green color indicates the presence of phenolic compounds

Test for Anthraquinone

About 4 ml of the plant extract was treated with 10 ml of carbon tetra chloride and then carbon tetra chloride was taken off. 5ml of water and 5ml of diluted ammonia solution were added. The pink to cherry red color indicates the presence of Anthraquinone in plant extract that was treated with 10 ml of carbon tetra chloride and then carbon tetra chloride was taken off. 5ml of water and 5ml of diluted ammonia solution were added. The pink to cherry red color indicates the presence of Anthraquinone. (Debashisha Panda *et al*., 2010) [6].

Results and Discussion

Extracts of plant species were tested for phytochemical analysis activity. The preliminary qualitative phytochemical analysis results are summarized in Table 2 and 3. As is shown saponins, sterioids glycoside, and alkaloids are present in all studied plants. Whereas tannins and phenolic compounds show negative results in *Cynodon Dactylon Commiphora Myrrha* and *Rhus Succedane* show negative results for Anthraquinone.

Table 2: Plant extract, tannin, saponin, flavonoids and steroids

S. No	Plant Extract	Tannin	Saponin	Flavonoids	Steroids
1.	*Laportea Crenulata*	+ +	+ +	+	++
2.	*Gycyrrhiza Glabra*	+ +	+ +	+ + +	+ ++
3.	*Adhatoda Vasica*	+ +	+	+	+
4.	*Cynodon Dactylon*	-	+	+	+ +
5.	*Cyperus Rotundus*	+ +	+ +	+	+ + +
6.	*Croton Laciferus*	+	+ + +	+ +	+ +
7.	*Solanum Trilobatum*	+	+	+	+ + +
8.	*Ancyclus Pyrethrum*	+	+	+	+ + +
9.	*Commiphora Myrra*	+ +	+ +	+ +	+ +
10.	*Rhus Succedaanea*	+ + +	+	+ + +	+ +

Qualitative Analysis of Phytochemicals

+ + + = High, + + = Average, += Low and -- = Nil

Table 3: Plant extract, alkaloids, anthraquinone, phenolic and glycosides

S. No	Plant Extract	Alkaloids	Anthraquinone	Phenolic	Glycosides
1.	*Laportea Crenulata*	+	+ +	+ +	+
2.	*Gycyrrhiza Glabra*	+ +	+ +	+ +	+ + +
3.	*Adhatoda Vasica*	+	+	+	+

4.	*Cynodon Dactylon*	+	+ +	-	+ +
5.	*Cyperus Rotundus*	+	+ +	+ +	+ + +
6.	*Croton Laciferus*	+ + +	+ +	+	+
7.	*Solanum Trilobatum*	+	+	+	+
8.	*Ancyclus Pyrethrum*	+	+	+	+
9.	*Commiphora Myrra*	+ +	-	+ +	+
10.	*Rhus Succedaanea*	+	-	+ + +	+

Qualitative Analysis of Phytochemicals
+ + + = High, + + = Average, += Low and -- = Nil

Conclusion

Nature has been a source of medicinal agents since times immemorial. They are reservoirs of chemical agents with therapeutic properties. The use of plant-based drugs and chemicals to cure various ailments and personal adornment is as old as human, civilization. Plant a and plant-based medicaments are the bases of many of the modern pharmaceuticals. We use it today for our various diseases. The study aimed to discover phytochemical constituents through methanolic extract of traditionally used medicinal plants grown in Kolli Hills, Namakkal. The species tested were *Laportea Crenulata, Glycyrrhiza Glabra, Adhatoda Vasica, Cynodon Dactylon, Cyperus Rotundus, Croton Laciferus, Solanum Trilobatum, Aancyclus Pyrethrum, Commiphora Myrra and Rhus Succedaanea*. Qualitative phytochemical, analysis was performed for the deduction of phytochemicals, the presence of medicinally active constituents like tannin saponins flavonoids steroids, phenolic compounds, alkaloids, glycosides and Anthraquinones which could be responsible for the antimicrobial and antioxidant properties. All these results justify using plants for folk medicines to treat various infectious diseases and the plant extracts are safe and could be exploited as antibiotics.

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