



Research Article

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**Preliminary phytochemical, total phenolics and flavonoid content analysis of *Vitex negundo* and *Calatropis gigantea* leaf ethanolic extracts**

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**ABSTRACT**

Medicinal plants and its phytoconstituents were estimated the presence of various secondary metabolites including flavonoid, phenol, tannin, flavonoid, saponins, steroids, cardiac glycosides steroids and terpenoids in the leaf ethanolic extracts of *Vitex negundo* and *Calatropis gigantea*. And the quantitative estimation of total phenolic content was estimated to be 261 and 181 mg gram equivalents of catechol of *Vitex negundo* and *Calatropis gigantea* respectively. The total flavonoid content was expressed in Quercetin gram equivalents of 278 and 239 mg equivalents per gram of the extract of *Vitex negundo* and *Calatropis gigantea*. The study reveals the phytoconstituents presence in the leaf extracts which showed potential activity and it can be developed in active ingredient for the development of pharma molecule.

**Key words:** Phyto constituents, Catechol, Quercetin, Standard Gram equivalents.

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**INTRODUCTION**

Herbal plants have effective style and source of traditional and modern day healthcare. Origins which were used for primary healthcare has been plant source throughout the world which has to be properly reported in order to develop its potential properties of these plants. These plants are converted to formulations by herbal medicines which include herbs, herbal materials as referring to phytomedicine which estimated to be 80% of people in Asian and African countries relying for their primary healthcare and especially in India about 25-50% of pharmaceuticals dispensed to the world are of plant origin and only certain were used to be as effective medicines[1]. Plant material poses therapeutic properties which exert beneficial pharmacological effects to the animal and its sources, which has led ethno pharmacologists, botanists, microbiologists, chemist to explore the phytoconstituents which is presiding in the plants in the form of secondary metabolites which could treat for certain infectious diseases. Medicinal plants are related to plant derived preparations to the discovery of new antimicrobial, antifungal and anticancer drugs [2].

Ethno-literature of *Calatropis gigantea* which can be used to treat diseases like diabetes, heart disease, diseases involved on free radicals and other reactive oxygen species. It is erect shrub grows widely throughout tropical and subtropical regions along Asia, East Asia and African countries and which constituents of different medicinal properties [3-4]. The folk medicine and ayurvedic medicines have used it successfully out and no proper studies on its phytochemical constituents on its formulating efficacy which has to be studied on comparing with its specific standard. *Vitex negundo* belong to a family Verbenaceae is found along Bangladesh, India and other tropical and temperature regions of the world. The plant parts are effectively used in Unani and ayurvedic medicines which extracts of leaves and roots are effectively used as drug formulations [5]. The leaves and seeds were used for treating rheumatic inflammation of the joints and inflammatory joints [6-7]. In past studies on *Vitex negundo* the leaves and its extracts were used to treat multi-types of gastroenteritis and immensely effective in treating diarrhea and dysentery [8].

On studying its complete profiling of its phytoconstituents it lacks in scientific knowledge of its compounds which could provide the knowledge against diverse multi-drug resistant enteric pathogens in controlled conditions to experimental models [9].

## EXPERIMENTAL SECTION

### Collection plant material:

Leaves of *Vitex negundo* and *Datura metel* have separately been collected. Then shade dried for 3-5 weeks and powdered using electrical blender, the powdered material was collected and stored in air tight container.

### Chemicals:

Analytical grade chemicals were obtained from Hi-Media and Micro fine Chemicals in which stocks prepared as per manufacturer instructions.

### Preparation of the extract:

The plant extraction were carried by cold maceration process with 1:5 ratio of plant leaves for 72 hrs and repeated thrice to have proper extract yield. Then the extract material was collected air dried and stored for further use.

### Phytochemical analysis:

The preliminary phytochemical study was carried out to detect the presence of alkaloid, flavonoid, steroids, phytosterols, terpenoids, glycoside and volatile oils [10].

### Total phenolic and total flavonoid analysis:

The quantitative analysis of phenolic and flavonoid content were estimated by using standard protocols [11-12].

## RESULTS

The qualitative and quantitative analysis was carried out and the standard were compared to catechol for phenolics and quercetin for flavonoid constituents and expressed in terms of their respective gram per equivalents. Table 1 shows the result for qualitative analysis of plant ethanolic extracts.

Table 1: Qualitative analysis of *Vitex negundo* and *Calatropis gigantea* ethanolic extract

Particulars	<i>Vitex negundo</i>	<i>Calatropis gigantea</i>
Carbohydrate	+	+
Tannins	+	+
Saponins	+	+
Flavonoids	+	+
Alkaloids	-	-
Quinones	+	-
Glycosides	-	+
C.Glycosides	+	-
Terpenoids	+	+
Triterpenoids	-	-
Phenols	+	+
Coumarins	+	+
Steroids	+	+
Phlobatannins	-	-
Anthraquinons	-	+

The total phenolic content estimated was tabulated in table 2 and 3.

Table 2: Total phenolic content of *Vitex negundo* ethanolic extract

Total Phenolic content of <i>Vitex negundo</i>			
Concentration (µg)	<i>Vitex negundo</i>	Catechol	Phenolic content
200	0.4635	1.844	50.27114967
600	1.0073	3.565	169.5315568
1000	1.4524	5.552	261.5994236

Table 3: Total phenolic content of *Calatropis gigantea* ethanolic extract

Total Phenolic content of <i>Calatropis gigantea</i>			
Concentration (µg)	<i>Calatropis gigantea</i>	Catechol	Phenolic content
200	0.4079	1.844	44.24078091
600	0.6671	3.565	112.2748948
1000	1.0018	5.552	180.4394813

The total flavonoid content were estimated in gram equivalents of Quercetin and tabulated in table 4 and 5.

Table 4: Total flavonoid content of *Vitex negundo* ethanolic extract

Total Flavonoid content of <i>Vitex negundo</i>			
Concentration (µg)	<i>Vitex negundo</i>	Quercetin	Flavonoid content
200	0.1011	1.8859	10.72167135
600	0.3613	2.0898	103.7324146
1000	0.6978	2.5042	278.6518649

Table 5: Total flavonoid content of *Calatropis gigantea* ethanolic extract.

Total Flavonoid content of <i>Calatropis gigantea</i>			
Concentration (µg)	<i>Calatropis gigantea</i>	Quercetin	Flavonoid content
200	0.1473	1.8859	15.62118882
600	0.3065	2.0898	87.99885156
1000	0.5993	2.5042	239.3179459

## DISCUSSION

The results of phytochemical analysis of two plant leaves are tabulated and expressed in terms of their gram equivalents. The presence of flavonoid a, phenol, terpenoids, antroquinones, carbohydrates and steroids were reported by satri, 1950 in *Vitex negundo* [13]. The stem extracts of *Vitex negundo* showed significant presence of Alkaloids, saponins, sterols, carbohydrate, tannin, fatty acids and fixed oils were reported [14]. Joshi amit *et al.*, 2010 reported the presence of carbohydrate, alkaloid, flavonoid, steroids, protein, and tannin with 72.28 mg gallic acid equivalent for standard for total phenolic constituents in *Calatropis gigantea*[15]. The presence of secondary metabolites of acetone, chloroform, petroleum ether extracts of *Calatropis gigantea* were reported [16].

## CONCLUSION

Though the recent advancement in medical care through clinical medications, it still hold indefinite process in developing multidrug resistant pathogens which can be taken care if the medicinal properties of *Vitex negundo* and *Calatropis gigantea* were studied full to its potential which could develop into newer type of pharma molecule and formulation through these materials helps and obtain ability to cure certain infectious diseases and further studies on its active compound would develop potential source of life saving drugs.

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