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Preliminary Phytochemicals and physico chemicals analysis of selected Medicinal Plants

D.Muthumala*, K. Petchimuthu[#], R.Kasikumar*, M.Pitchiayadass* and R.S.Anilraja*

*Department of Chemistry, [#]Department of Botany, Sri Kumara Gurupara Swamigal Arts College, (*Affiliated to Manonmaniam Sundaranar Univeristy*,Tirunelveli), Srivaikundam - 628 619, Thoothukudi, Tamil Nadu

E- email: petchimuthu.k@gmail.com; Mobile No: 9865692216

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Abstract
Aim of the present study, preliminary phytochemical and physicochemical analysis of the selected medicinal plants of *Mimosa pudica* (L.) (Mimosaceae), *Vitex negundo* (L.) (Verbenaceae), *Adhatoda vasica* Nees. (Acanthaceae), *Piper nigrum* (L.) Piperaceae were investigated. The selected medicinal plants were air dried, powdered and extracted with organic solvents. The physico-chemical parameters, qualitative and quantitative phytochemical analysis of plant extracts were carried using standard methods. The result of all the selected plants of *Mimosa pudica, Vitex negundo, Adhatoda vasica, Piper nigrum* contain alkaloids, flavonoids, phenols, tannins and saponins respectively. The conclusion of the present study is maximum quantity of phenols present in the *P. nigrum* (L.) fruits.

Keywords: Preliminary phytochemicals; physico-chemical analysis; *Mimosa pudica*, *Vitex negundo*, *Adhatoda vasica*, *Piper nigrum*; active compounds

1. INTRODUCTION

According to the World Health Organization (WHO), about 65 – 80 % of the world's population in developing countries depends essentially on plants for their primary healthcare due to poverty and lack of access to modern medicine. Herbal products obtained are safer in the treatment of several diseases viz. diabetic, cancer, healing of wounds etc. About 2500 species of medicinal plants, which few more than 100 species were used for ethnic and traditional medicines. Medicinal plants besides therapeutic agents are also a big source of information for a wide variety of chemical constituents which could be developed as drugs with precise selectivity [1]. These are the reservoirs of potentially useful chemical compounds which could serve as newer leads and clues for modern drug design [2]. The most important of these bioactive constituents of plants are alkaloids, tannins, flavonoids and phenolic compounds [3]. Hence, the aim of the present study was preliminary phytochemical and physicochemical analysis of the selected medicinal plants of *Mimosa pudica* (L.) (Mimosaceae), *Vitex negundo* (L.) (Verbenaceae) , *Adhatoda vasica* Nees. (Acanthaceae), Piper nigrum (L.) Piperaceae and identifying their chemical constituents.

2. MATERIALS AND METHODS

The selected medicinal plants of *Mimosa pudica* (L.) (Mimosaceae), *Vitex negundo* (L.) (Verbenaceae) , *Adhatoda vasica* Nees. (Acanthaceae), *Piper nigrum* (L.) Piperaceae were collected and identified. The collected samples were cleaned and shade dried at room temperature. The dried and powdered materials of *M. pudica* (leaves), *V. negundo* (leaves), *A. vasica* (leaves) and *Piper nigrum* (fruits) were extracted with ethanol by cold percolation method for 48h. The determination of physico-chemical parameters such as extract values, ash value were done using African Pharmacopoeia[4] and Anon[5] methods. The preliminary phytochemical screening was performed according to Trease and Evans method[6]. The amount of alkaloids were determined by Harborne method[7]. The analysis of total phenols content was determined by Prussian Blue method. The flavonoids were determined by the method of Boham and Kocipai- Abyazan method [8].

Table - 1: The results of the physico-chemical contents of the selected medicinal plants

S. No	Plants	Total ash content (g)	Acid insoluble ash (g)	Water soluble ash content (g)
1.	*Mimosa pudica* leaves	4.240	0.704	0.680
2.	*Vitex negundo* leaves	4.320	0.732	0.709
3.	*Piper nigrum* fruits	4.512	0.901	0.806
4.	*Adhatoda vasica* leaves	4.432	0.815	0.790

Table - 2: Qualitative analysis of the phytochemicals of the medicinal plants

S.No	Phytochemicals	Extract(s)			
		M. pudica leaves	*V. negundo* leaves	*P. nigrum* fruits	*A. vasica* leaves
1	Alkaloids	+	+	+	+
2	Flavonoids	+	+	+	+
3	Phenolic compounds	+	+	+	+
4	Saponins	+	+	+	+
5	Tannins	+	+	+	+

Table- 3: Quantitative analysis of the phytochemicals of the medicinal plants.

Sl. No	Phytochemicals	*Mimosa pudica*	*Vitex negundo*	*Adhatoda vasica*	*Piper nigrum*
1	Alkaloids	0.720	0.925	1.031	0.639
2	Flavonoids	0.112	0.145	0.030	0.060
3	Phenolic compounds	0.430	0.224	0.560	0.985

3. RESULTS AND DISCUSSION

The results of the physico-chemical analysis of the selected medicinal plants viz. *M. pudica* (L.), *V. negundo* (L.), A. vasica Nees., and *P. nigrum* (L.) were given in the Table -1. The total ash content of *Piper nigrum* is higher than that of *Adhatoda vasica*, *Vitax negundo* and *Mimosa pudica*. The acid insoluble ash and water soluble ash is higher in *Piper nigrum* and lesser in *Mimosa pudica*. The preliminary phytochemical tests of ethanol extract carried out are tabulated in Table- 2. Ethanol extract showed the presence of alkaloid, flavonoid, phenol, tannin and saponin. The total alkaloid, phenolic and flavonoid content of the selected plants are shown in Table - 3. The amount of alkaloid is higher in Adhatoda vasica whereas the amount of flavonoids is higher in *Vitex negundo* and phenol is higher in *Piper nigrum*. Flavonoids are to be found in all the selected medicinal plants as a potent water-soluble antioxidant and free radical scavenger, which prevent oxidative cell damage and also have strong anticancer activity[9]. It also helps in managing diabetes induced oxidative stress. Further studies will be going on the isolation of active compounds and biological activities of these plants in our laboratory.

4. REFERENCES

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