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PHYTOCHEMICAL INVESTIGATION OF *VITEX NEGUNDO* L. (VERBENACEAE) IN ACETONE SOLVENT EXTRACT

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Abstract: Natural Products are produced by all plants, insects, fungi, algae and prokaryotes. All these organisms coexist in different ecosystems and interact with each other in various ways in which chemistry plays a major role. Many natural products are biologically active and have been used for thousands of years as traditional medicines. Phytochemicals are the naturally occurring chemical compounds which are present in all types of plants. On the basis of presence of different types of phytochemicals plants possess different types of properties such as anti-bacterial, anti-fungal, anti –viral, antioxidant, anti–inflammatory and anti-cancer properties. In traditional medicinal systems Ayurveda and Sidha due to the presence of different types of chemical compounds the medicinal plants are used to cure different types of animal diseases. In the present study the phytochemical analysis of a most important medicinal plant *Vitex negundo* L. belongs to the family Verbenaceae has been analyzed.

Key words: Medicinal plants, Traditional medicines, Human diseases, Phytchemicals.

INTRODUCTION:

Since time immemorial human beings are using medicinal plants for curing different types of ailments. The connection between human and plants is like the two sides of the same coin. Both of them are dependent on each other for their existence. Man and his eagerness to search natural sources for these requirements are not new. Humans possess enough knowledge from their past experiences to utilize herbal plants as medicines. The latest science advancements in new material, methods and machines have resulted into multifarious enhancement in exploring, recognizing and identifying new medicinal plants which finally results in the isolation of many essential molecules for humankind (**Bachheti et al. 2013**). Plants are the major contributors of natural products. The photochemical constituent of plants is differing species to species. All the plants produce primary and secondary metabolites. The secondary metabolites are derived from primary metabolites. The chemical structure of the secondary metabolites and their biosynthetic pathways is specific and very useful to cure the different types of animal diseases **(Al – Snafi 2015)**.

According to W.H.O. (World Health Organization) due to low expense 80% of the African and Asian population use herbal medicines. Up till now near about 7000 different types of phytomolecules and more than 1200 active compounds are isolated from different types of medicinal plants (**Ashwani Kumar et al. 2023**). Considering all these beneficial aspects and medicinal value of plants the present phytochemical investigation is undertaken. In India to cure the different types of communicable and non- communicable diseases there are many traditional medicinal systems are developed in which Ayurveda and Sidha are well known. (These traditional systems are based on the herbal medicines which is a extract combination of different types of photochemicals present in a particular plant species (**Pandey et al. 2013**).

Due to population explosion, industrialization, urbanization the human beings are facing number of critical problems one of them as we recently faced the COVID- 19 pandemic. To cure such type of infectious diseases there is need for survey of medicinal plants and there phytochemical values. The medicinal plants are the plants in which one or more of its part contains photochemical that can be used for therapeutic purposes. Now a day's due to valuable prize and 100% results on all types of human diseases the herbal medicines are getting used in the treatments of different types of infectious and non- infectious diseases and they are on high demands in both the developed and developing countries (**Sofowora 1982)**. The important fact is that use of plant phytochemical molecules in treatment of human diseases is that, they are very safe and doesn't causes any side effect. **(Haruna Baba & Adebola Onanuga 2011) .** In the Universe the photochemical which are present in various parts of plants species have the potential ability to cure not only the viral, bacterial or fungal diseases but also to cure types organ failure diseases without any side effect (**Brian and Turner 1975)**. During this present study the leaves of medicinal plant *Vitex negundo* L. (Verbenaceae) are used for phytochemical analysis.

MATERIAL AND METHODS:

***Vitex negundo* L.** (Verbenaceae) was collected during the end of rainy season from the campus of Botanical garden of Yeshwant Mahavidyalaya Nanded (Maharashtra) India. This plant species was identified with the help of Flora of Maharashtra (**Almeida 2009**) and Flora of Marathwada (**Naik 1998**). Then the plant leaves are collected for lab work. During the laboratory work the collected plant leaf material was washed 3-4 times with distilled water and the leaves are dried for one week under the shade. These dried leaves were grind and formed a coarse powder. The organic solvent acetone is used for the preparation of extract. About 15gm of powder leaves material was extracted in soxhlet apparatus with 150 ml of acetone at 55°c. The extract were filtered and evaporated. Thus the obtained extract was qualitatively tested for the presence of various phytochemical components (**Harbone1984).** The Phytochemical tests were carried out by using standard procedures as:

1) **Test for Flavenoids:** Few drops of neutral ferric chloride solution were added to 2ml of above solution then the formation of Blakish red colour obtained the result of test is shown in Table No:1.

2) **Test for Glycosides:** Extract treated with 2ml of H_2O, 2ml of NaOH solution then formation of yellow colour indicates the presence of glycosides, the result of test is shown in Table No: 1.

3) **Test for Resins:** In 3ml of extract diluted with H_2O. Formation of black bulk precipitate indicates the presence of resins, the result of test is shown in Table No: 1.

4) **Test for Terpenoids:** In 3ml of chloroform and 2ml of concentrated H_2SO_4 added to 4ml of extract, reedish brown PPT are observed which indicates the presence of terpenoids, the result of test shown in Table No:1.
5) **Test for Phenols:** In 3ml of extract 5-6 drops of ferric chloride solution was added, the formation of bluish black colour indicates the presence of phenols, the result of test is shown in Table No: 1.

6) **Test for Steroids:** In 4ml of extract 7-8 drops of chloroform and concentrated sulphuric acid is added then the formation of bluish red to cherry (red) colour instantly and a layer of green fluorescence acid layer indicates presence of steroids, the result of test is shown in Table No:1.

7) **Test for Tannins:** To the extract few drops of ferric chloride solution added. The formation of greenish black colour PPT indicates presence of tannins , the result of test is shown in Table No:1.

8) **Test for Alkaloids: W**agner's reagent prepared for this test and added to the extract brown precipitate indicates the presence of alkaloids. The result for test is shown in Table No:1.

Table No: 1 -

Result of phytochemical analysis of leaves of Medicinal Plant *Vitex negundo* L. (Verbenaceae) in Acetone Solvent Extract

S. No.	Phytochemical Tests	Test Results
1.	Flavonoids	+ ve
2.	Glycosides	+ ve
3.	Resins	- ve
4.	Terpenoids	+ ve
5.	Phenols	- ve
6.	Steroids	+ ve
7.	Tannins	+ ve
8.	Alkaloids	- ve

RESULT AND DISCUSSION:

In the present investigation from the table No. -1 it was observed that the results of phytochemical study of leaf of medicinal plant *Vitex negundo* L. (Verbenaceae) in the acetone solvent extract are soluble and it revealed that the presence of flavonoid, glycoside, terpenoid, steroid, tannin and absence of resin, phenol, alkaloid. The outcome of the study of reveals the medicinal properties of the plant *Vitex negundo* L. (Verbenaceae). The phytochemical screening in acetone solvent extract confirms the presence of primary and secondary metabolities like flavonoid, glycoside, terpenoid, steroid, tannin and absence of resin, phenol, alkaloid. The presence of these phytomolecule constituents in acetone solvent extract suggests that *Vitex negundo* L. has remedial capacity against several infectious and non-infectious diseases of human beings so in Indian medicine system traditionally this plant is used from ancient time.

The study reveals the scientific base of the therapeutic uses of traditional use of medicinal plant *Vitex negundo* L. The obtained results in acetone solvent extract provide support for the use of this plant in traditional medicines but the further study is require for the anti-bacterial, anti-fungal, anti –viral, antioxidant, anti–inflammatory and anti-cancer activities of acetone solvent extract of the medicinal plant *Vitex negundo* L. (Verbenaceae).

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