



PRELIMINARY ASSESMENT OF PHYTOCHEMICAL CONSTITUENTS OF MEDICINAL PLANTS OF BRAHMAYONI HILL OF GAYA TOWN

Vrishti kumari¹, Vinay Shankar²,

1. Research Scholar, Department of Botany, Magadh University, Bodh-Gaya. (Bihar).
2. Asst. Professor. Gaya college Gaya.

Abstract:-

A vast range of secondary metabolites, including pigments, alkaloids, tannins, terpenoids, steroids, and others are abundant in plants. These natural products' diverse molecular make-up enables them to perform a variety of biological and therapeutic roles. Therapeutic plant contains secondary bioactive metabolites that have a clear physiological impact on the human body. Three plants, *Lantana camara* Linn, *Ocimum gratissimum* Linn and *Parthenium hysterophorus* Linn, were taken from Brahmayoni Hill in Gaya, Bihar, for the current experiment, and phytochemical screening was carried out. Using established techniques, the ethanolic extract of the leaves of *L. camara* L., *O. gratissimum* L., and *P. hysterophorus* L. was prepared and qualitatively examined for the presence of secondary plant metabolites. The current analysis demonstrated that these investigated plants crude ethanolic extracts contain medicinally important bioactive substances which support their use in conventional medicine to treat a variety of disorders.

Keyword :- *L. camara* L., *P. hysterophorus* L., Phytochemicals, tannins, flavonoids etc.

INTRODUCTION

Since the beginning of time, people have used medical plants in traditional and complementary medicine to cure a variety of illnesses [1]. More than 80% of the world's population still relies on herbal remedies as their main source of healthcare, according to the WHO. [2]. The effectiveness of the active ingredients found in herbal medicines to act as natural healers as well as their availability, accessibility, affordability, and lauded less or non-toxic effects may be responsible for the growing preference for the use of herbal medicines over conventional medicines [3]. Additionally, during the previous ten years, medicinal herbs and their bioactive compounds, due to its value in the treatment and prevention of chronic and life-threatening diseases like cancer, stroke, and arthritis, have caught the interest of numerous researchers [4].

The focus of the current work is on the qualitative analysis of secondary metabolites from three different plants: *L. camara* L., *O. gratissimum*, and *P. hysterophorus* L. collected in Gaya Town's Brahmayoni Hill. A member of the Verbenaceae family, *L. camara* L. It can be found in several Indian states. Previous studies have shown that the various *L. camara* components, including the leaf, stem, and roots, contain flavonoids, alkaloids, saponin, tannin, steroids, and a number of significant phytochemicals, including verbascoside and phytol [5]. Leaf extracts have nematocidal, insecticidal, and antibacterial properties. Additionally, they contain verbascoside, which has antibacterial, immunosuppressive, and anticancer properties [6]. Basil or basil-clove are other names for aromatic herbaceous plant *Ocimum gratissimum* L. It is a member of the Lamiaceae family. According to scientific studies, *O. gratissimum* has a variety of bioactive substances, including polyphenols, flavonoids, and essential oils with a number of beneficial properties [7]. This variety of basil has anaesthetic, anti-stress, anti-inflammation, anti-diarrheal, hepatoprotective, and fungicidal activities, according to earlier investigations [8]. According to reports on *O. gratissimum*, the plant's extract may be utilized as a medical treatment for patients who have AIDS or the human immunodeficiency syndrome (HIV) [9]. *O. gratissimum* contains phenolic components such as rosmarinic acid, sinapic acid and gallic acid and flavonoids [10]. Asteraceae is a family of flowering plants that includes the aggressive annual herbaceous weed *parthenium hysterophorus* L. Congress weed, carrot weed, white top, and bitter weed are some of its other names [11]. *P. hysterophorus* flourishes in the active substances that give rise to its application in conventional medicine. *P. hysterophorus* phytochemical components, however, have not been well studied. The isolation, purification, and determination of the structures of the active components of this plant all require research. Sesquiterpene lactone toxins, including glycoside parthenin, have been found in *P. hysterophorus*. Hysterin, ambrosin, and flavonoids including fumaric acid, quercetin, p-coumaric, and different alcohols are among the other allelochemicals or phytotoxic compounds found in this plant. [12]. In light of the aforementioned information, in the prevailing study, qualitative phytochemical analysis were performed on three plants: *Lantana camara*, *Osima gratissimum*, and *Parthenium hysterophorus* from Brahmayoni Hill in Gaya City.

MATERIALS AND METHODS :**Collection of plant material:**

The fresh parts of the three medicinal plants *L. camara* (leaves), *O. gratissimum* (leaves) and *P. hysterophorus* (leaves) were collected from various plants on his Brahmayoni Hill in Gaya. The plant material was taxonomically identified and authenticated by the Department of Botany, Gaya college, Gaya, Bihar.

Extraction Method:

Washharvested plant material under running water and rinse with distilled water to remove dirt and particles. The plant material was dried in the shade for one week and finally dried in a forced air oven for 24 hours at a temperature not exceeding 30° C. Dried plant material was ground into a fine powder using an electric grinder and stored in an air tight glass container protected from sunlight.

Solvent Extraction:-

Fine powder weighing 1 gm was extracted in 10 ml of 70% ethanol for a period of 24 hours. Ethanol extracts were evaporated in a water bath. After evaporation DMSO (Dimethylsulfoxide) is added to make up to 10 ml.

Qualitative Phytochemical Studies:

Ethanol extracts were analyzed for proximity of alkaloids, saponins, flavonoids, carbohydrates, proteins and amino acids, glycosides, steroids and tannins. Primary phytochemical analysis was performed according to that of Arti Sharma and Vandana Sharma(2013)[13].

RESULTS:

The phytochemical properties of the three medicinal plants tested are summarized in table 1. Results indicated the presence of medicinal compounds in the three plants investigated.

Table 1:

Phytoconstituent	Ethanollic Extract		
	<i>Lantana camara</i>	<i>Ocimum gratissimum</i>	<i>Parthenium hysterophorus</i>
Protein	+	+	+
Carbohydrates	+	-	+
Phenols / Tannins	+	+	-
Flavanoids	+	+	+
Saponins	+	-	-
Glycosides	+	+	+
Steroids	+	+	+
Terpenoids	-	+	-
Alkaloids	+	+	+
Coumarins	-	+	-

(+) present

(-) absent

Table shows that proteins, flavonoids, glycosides, steroids and alkaloids are present in all plants. Tannins were absent only in leaves of *P.hysterophorus*. Saponins were not present in the leaves of *O. gratissimum* and *P. hysterophorus*. Coumarin was present only in leaves of *O.gratissimum*. Terpenoids were present only in *O. gratissimum*.

Discussion :

Weeds are the richest sources of medicines and are useful in a variety of biological activities. The present study showed the presence of alkaloids, steroids, glycosides, flavonoids and proteins in all plant extracts used for phytochemical screening. Interestingly, the examined weeds *L. camara* and *P. hysterophorus* showed negative reactions to coumarin.

Phenolic compounds are one of the most ubiquitous and large groups of plant metabolites [14]. It has biological properties such as Anti-carcinogenic, anti-aging, protection from cardiovascular problems and improvement of endothelial function [15]. Various studies have explained the antioxidant properties of medicinal plants rich in phenolic compounds [16,17]. The sources of natural antioxidants from plants are in the form of phenolic compounds such as tocopherols, phenolic acid and flavonoids [18]. Tannins attach to proteins rich in proline and prevent the creation of new proteins. Plants are known to produce flavonoids, which are hydroxylated phenolic compounds, in response to microbial infection. Flavonoids have been demonstrated in vitro to be antimicrobial agents against a variety of microorganisms. Their capacity to assemble complexes with soluble extracellular proteins and bacterial cell walls is likely what accounts for their action [19].

The anti-inflammatory compounds known as saponins have also been discovered in plant extracts. Red blood cells can be precipitated and coagulated by saponins [20]. The ability to shape-form in aqueous solutions, hemolytic activity, cholesterol-binding abilities, and bitter taste are all characteristics of saponins [21].It has been suggested that steroids have antimicrobial effects [22]. For millennium, alkaloids have been used for medical purposes like cytotoxicity [23]. Several workers reported antispasmodic, analgesic and antibacterial properties of alkaloids [24]. According to many reports, glycosides are known to lower blood pressure [25]. The results obtained in this research therefore propose that the identified phytochemical compounds can be bioactive components and so these plants are an increasingly valuable reservoir of bioactive compounds with medicinal properties of paramount importance.

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