International Journal of PharmTech Research
CODEN (USA): IJPRIF, ISSN: 0974-4304
Vol.8, No.10, pp 47-50, 2015

Qualitative Phytoconstituent Profile of *Lobelia trigona Roxb* Extracts.

Rex Jeya Rajkumar S.[1], Sreeraj Kuruppilakathmanikandan[2], Muthukumar Nadar M.S.A.[1*]

[1,2] Department of Biotechnology, Karunya University, Coimbatore-64114 Tamil Nadu, India

Abstract: This is the first study to investigate the phytochemical constituents present in *Lobelia trigona Roxb*. The whole plant (*Lobelia trigona Roxb*) was used to extract phytochemicals using various solvents (ethanol, methanol, chloroform, petroleum ether, acetone and water) and the total yield of extracts were calculated and expressed as percentage dry weight. In our analysis ethanolic extract of *Lobelia trigona Roxb* was found to have almost all the major bioactive compounds that could have potential therapeutic properties when compared to the other solvents used. This study provides new information on the phytochemical profile of major bio active secondary metabolites (polyphenols, alkaloids, tannins, flavonoids, terpenoids and saponins) of *Lobelia trigona Roxb*whole plant extracts.
Keywords: *Lobelia trigona Roxb,* Phytochemicals, Polyphenols, Flavonoids, Alkaloids.

Introduction

Higher plants have provided the basic necessities of life such as food, shelter and clothing to human beings from the very beginning of human civilization. In addition to that they have also been the most important source medicine for the treatment of various aliments since times immemorial. Although there has been considerable development in the areas of synthetic drug chemistry and antibiotics, plants still occupy an important place in modern and traditional system of medicine. Realizing the toxic effects of the synthetic drugs and antibiotics, herbal medicine and health foods, derived from plants has become an alternative choice even in well developed countries. Traditional medicinal plants with a wide variety of medicinal value are utilized either directly as folk remedies or indirectly as pharmaceutical preparation in modern medicine. Some of the main phytochemicals that a medicinal plant contains includes: polyphenols, alkaloids, flavonoids, steroids, tannins, terpenoids[3].

Lobelia is a large genus which belongs to the family Campanulaceae, distributed in all tropical and warm temperate regions and it has been used in folk medicine to treat various diseases throughout the world[1, 4].*Lobelia trigona Roxb*. which forms the subject of this study, is small creeping annual herb, with triangular stems carrying violet flowers and often very abundant in wet rice fields, roadside ditches and grows in marshy places near the margins of small sheets of water, wet damp places and commonly distributed in moist deciduous forests and plantations[5].However, to date, there is no literature reporting the qualitative phytochemical components about *Lobelia trigona Roxb*. Therefore, this study investigated the bioactive phytochemical components of *Lobelia trigona Roxb* in an effort to facilitate their use as phytomedicine in the pharmaceutical industry.

Experimental

Plant Collection

Whole fresh *Lobelia trigona Roxb*plants devoid of visible infections and insect infestation were collected from Pattambi, Palakkad district, Kerala, India and authenticated in Botanical Survey of India (BSI), TNAU campus, Coimbatore, India (BSI/SRC/5/23/2014-15/Tech/1143). Plants were washed thoroughly with tap water and rinsed with 70% ethanol. The leaves were blotted using filter paper to remove excess water droplets and allowed to air-dry under shade at room temperature. The dried leaves were first pounded using pestle and mortar then ground into coarse powder using a mixie (blender).

Preparation of Extracts

The crude extracts of *Lobelia trigona Roxb* were obtained by the combination of soxhelation and distillation methods. The ground plant powder was packed into sachets using whatman filter paper such that each sachet contains 25gm of the powder. Then the ground powders were extracted using different solvent such as ethanol, methanol, chloroform, petroleum ether and distilled water. After extraction the respective solvents were removed by the process of distillation. The residue that remains is the crude extract which was stored at 4°C until further use.

Yield of Crude Extracts

The yield of the crude extracts were calculated and stored in air tight glass bottles for further use. The percentage of yield was obtained using the formula $[(W_2 - W_1) / W_0] \times 100$, where W_2 is the weight of the crude extract and the container, W_1 is the weight of the container alone and W_0 is the weight of the initial ground dry coarse powder of the sample.

Qualitative Phytochemical Analysis

The qualitative preliminary phytochemical analysis of the solvent extract was analyzed for phenols, flavonoids, alkaloids, steroids, saponins, tannins, glycosides, terpenoids, reducing sugars, pholabatannins, carbohydrates, anthraquinones, coumarins, lactones, resins, cardenolides, vitamin C, proteins and amino acids, using the standard protocols. [2, 6, 7]

Statistical Analysis

All assays were performed in triplicate. Results were recorded as mean ± SD. Data was entered and analyzed in Microsoft Excel.

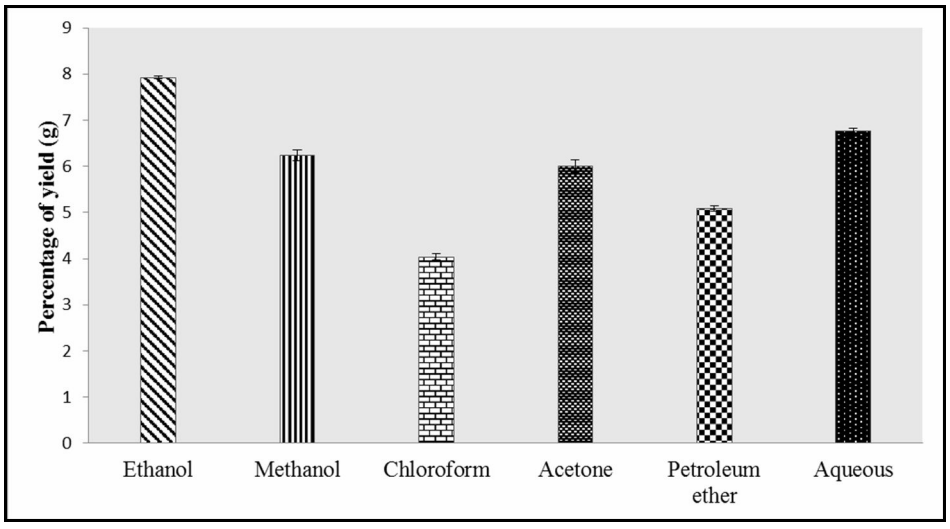

Figure 1. Percentage of yield in different solvents of *Lobelia trigona Roxb* crude extracts. The data expressed as mean ± S.D (n=3).

Table 1. Qualitative phytochemical screening of *Lobelia trigona Roxb* using different solvent systems.

Test	Ethanol	Methanol	Chloroform	Acetone	Petroleum Ether	Water
Reducing sugars	+	+	-	+	-	-
Carbohydrates	+	+	+	-	+	+
Glycosides	+	-	+	+	-	-
Flavonoids	+	+	-	-	-	+
Alkaloids	+	+	-	-	-	+
Tannins	+	+	-	-	-	+
Phenols	+	+	-	-	+	+
Terpenoids	+	+	-	+	-	+
Steroids	+	+	-	+	-	-
Saponins	+	+	-	-	+	+
Phlobatannins	+	-	-	+	-	-
Anthraquinones	-	+	-	+	-	-
Proteins	+	+	+	-	+	+
Amino acids	+	+	+	-	+	+
Resins	+	+	-	+	-	-
Coumarins	-	+	-	-	+	-
Lactones	+	-	+	_	-	-
Cardenolides	+	+	-	+	+	-
Vitamin C	+	+	-	-	-	+

Note: (+): indicates the presence of phytochemicals, (-): indicates the absence of phytochemicals

Results

The present study made a qualitative investigation on the bioactive components of *Lobelia trigona Roxb* with different solvents. Table. 1 clearly explains the presence of phytochemical components from the crude extracts of various organic solvents like ethanol, methanol, chloroform, petroleum ether and acetone and water as an inorganic solvent. Qualitative phytochemical tests showed significant indication of the presence of major secondary metabolites in *Lobelia trigona Roxb*. Ethanolic and methanolic extracts of*Lobelia trigona Roxb* showed the presence of almost all the phytochemicals analyzed.

Figure. 1 shows the percentage of yield in which high amount in ethanolic extract (7.92 g) than other extracts to be noticed. The result of the percentage yield suggested that absolute ethanol was a better solvent for the extraction of *Lobelia trigona Roxb*. Based on the presence of major bioactive components and the high yield, the ethanolic extract is likely to be considered suitably for the further study.

Discussion

This study provides new information on the presence of major phytochemicals like phenols, alkaloids, tannins, flavonoids, terpenoids and saponins in *Lobelia trigona Roxb*. This report suggest that *Lobelia trigona Roxb* represents a readily accessible source of natural products, including potential dietary supplements and inputs for the pharmaceutical sector. Considering these findings, *Lobelia trigona Roxb* may be selected for further study that may lead to the discovery of previously unidentified natural bioactive compounds in order to identify, quantify, isolate, elucidate and characterize the structure and the of the bioactive compounds for therapeutic purposes.

Acknowledgment

One of the authors, Mr. Rex Jeya Rajkumar. S is thankful to Karunya University, Coimbatore, India for providing financial support as Silver Jubilee Fellowship (KU/AO/SJF/SL/2/2012) to execute my research work.

References

1. Alondra Villegas, Javier Espinoza, Alejandro Urzúa,"Piperidine alkaloids from *Lobelia polyphylla* Hook. & Arn. (Campanulaceae), Boletín Latinoamericano y del Caribe de Plantas Medicinales y Aromáticas. 2014, 13 (2): 205 - 212.
2. Evans W.C., Trease and Evans Pharmacognosy, 15th edition. W.B Sauders Company Ltd, London, 2002, 137-139, 230-240.
3. Hill A.F., Economic Botany. A textbook of useful plants and plant products. 2nd edn. McGarw-Hill Book Company Inc, New York, 1952.
4. Julie R. Kesting, Inge-Lise Tolderlund, Anders F. Pedersen, Matthias Witt, Jerzy W. Jaroszewski, and Dan Staerk., Piperidine and Tetrahydropyridine Alkaloids from *Lobelia siphilitica* and *Hippobroma longiflora*, J. Nat. Prod. 2009, 72, 312–315.
5. Sasidharan N., and Sivarajan V.V., Flowering plants of Thrissur forest Western Ghats, Kerala, India. Scientific Publishers, 1996.
6. Sofowara A., Medicinal plants and Traditional medicine in Africa. Spectrum Books Ltd, Ibadan, Nigeria, 1993, 191-289.
7. Trease G.E., and Evans W.C., Pharmacognosy. Bailliere Tindall. London, 1989, 11, 45-50.

*****