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Phytochemical screening of different parts of plant *Enicostemma axillare* (Family – Gentianaceae)

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ABSTRACT

The selected plant for the study Enicostemma axillare is a perennial herb known for its medicinal property from the earlier literature. Although many works have attributed to screen the medicinal property of this plant, but comparative screening of the active ingredients present in the whole plant and parts of the plant remain unexplored. The chemical constituents of the selected whole plant and parts of the plant (leaf, stem, roots and flower) have been screened using solvents like chloroform, hexane, acetone and water. The results are quite interesting to note that maximum amount of glycoside is present in leaf and root**,** whereas reducing sugar is considerably high in leaf, stem and flower. Regarding steroids, it is found quite high in leaf and flower. Apart from steroids, flower shows significantly high level of terpenoids. When we compare the above results it is quite interesting to note that flavonoids, alkaloids and saponins are comparatively less in whole plant. It is evident from the results that each part of the plant show high concentration of specific ingredient, such study will help us to identify the high yield of required chemical constituents during the drug preparation instead of screening the whole plant.

Key words: Enicostemma, terpenoid, glycosides, flavonoids.

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INTRODUCTION

Enicostemma axillare is also called as Indian whitehead, is a perennial herb growing up to 40cm tall with 4 angled stem. Enicostemma axillare locally called as chota chirayita in Hindi, vallari, vellaruku in Malayalam, vellarugu in Tamil. The leaves of E. axillare are fed to cattle to increase appetite. Apart from this it is used as stomachic and laxative, blood purifier in dropsy, rheumatism, abdominal ulcers, hernia, swellings, itches and insect poisoning [7]. Apart from this it has been reported to cure leucorrhoea [11]. This plant grows in many diverse habitats, from savannas, grasslands, and forests to beaches, and from wet to very dry. The taxonomy Enicostemma is very well advocated in the research works of Veldkamp [9].because of its innumerable medicinal property the selected plant and its part were screened for chemical constituents.

MATERIALS AND METHODS

The plant materials of Enicostemma axillare free from pathogens and pest are collected from the Thiruvallur, Tamilnadu. The selected plants can be safely removed without physical damage to the plant from the soil. The identification of the plant can be done with the help of a Taxonomist. [1]

The plant parts like root, stem, flowers and leaves were selected for the study. The separated plant materials without infection are shade dried for 48 to 72 hours till crispiness of the sample is reached (loosing its moisture content) [5]. The shade dried materials are pulverized to powder using a blender or mixer. The powdered plant materials are subjected to the extraction of bioconstituents using organic solvent like chloroform, hexane, acetone and water. [3] .Extracts was filtered through the Whatman filter paper No.1.The filtrate was allowed to dry at room temperature and the solvent extracts were obtained. Condensed extracts were weighed and stored in air-tight containers at 4° C till further investigation [4].

The processed extract is used for various tests [using standard procedure] such as terpenoids, flavonoids, alkaloids, tannins, saponins, glycosides and steroids. [2]

RESULTS

From the study it is evident that certain plant parts show maximum quantity of specific constituents when compare to the whole plant screening. The amount of cardiac glycoside present in whole plant is very less while its presence is maximum in leaf and root [Table 1], whereas the amount of glycoside and steroid were similar in both whole plant and parts of the plant. It is interesting to note that we see minimal quantity of alkaloids in whole plant when compared with parts of the plant. Terpenoids is seen in maximum in flower and whole plant whereas other plant parts doesn't show significant quantity .Tannin, saponin and flavonoids [Table No 1] are present in traces in whole plant as well as in the different parts of the plant without showing any significance.

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TABLE NO 1

	SOLVENT USED	ACTIVE INGREDIENTS									
		GLYCOSIDE	CARDIAC GLYCOSIDE	REDUCING SUGAR	STEROID	ALKALOIDS	FLAVONOID	TANNIN	SAPONIN	STARCH	TERPENOIDS
LEAF	Acetone	++	++	+++	++	++	+	+	-	-	-
	Chloroform	+++	++	++	+++	+	-	+	-	-	-
	Hexane	-	-	-	-	-	-	-	-	-	-
	Water	+	-	++	-	+	+	-	+	-	-
ROOT	Acetone	++	++	+	+	-	+	+	-	-	+
	Chloroform	+++	++	+	+	+	-	-	-	-	++
	Hexane	-	-	-	-	-	-	-	-	-	-
	Water	+	+	+	-	-	-	-	+	-	-
STEM	Acetone	++	-	++	-	-	-	+	-	-	+
	Chloroform	++	-	+++	+	-	-	-	-	-	-
	Hexane	-	-	-	-	-	-	-	-	-	-
	Water	+	-	+	-	++	+	-	+	-	+
FLOWER	Acetone	++	++	+++	+++	-	-	+	-	-	+++
	Chloroform	++	++	++	++	++	-	-	-	-	++
	Hexane	-	-	-	-	-	-	-	-	-	-
	Water	+	-	+	-	-	-	-	+	-	-
WHOLE PLANT	Acetone	+++	+	++++	++	+	+	+	-	-	+++

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DISCUSSION

The present study gives us the basic idea about the quantity of required chemical constituents present in different parts of the plant. Cardiac glycosides are a class of medications used to treat heart failure [9**].**It is the active ingredient in many different heart medicines, from the study it is evident that cardiac glycosides it is significantly seen in root, leaf and flower. Steroids used in health care is to reduce inflammation and other disease symptoms. Out of the entire plant, leaf and flower showed maximum impregnation of steroids which is in accordance with the works of [6]. With reference to alkaloids which act as cardiac or respiratory stimulants show maximum quantity in leaves when compared to other parts of the plant [8]. A broad range of the biological properties of terpenoids which includes ant cancerous antimicrobial, antifungal, antiviral, anti-hyperglycemic, anti-inflammatory, and anti-parasitic activities .whereas other chemical constituents are distributed insignificantly in the different parts of the plants. This type of work is quite encouraging to note that it gives a guide line about the parts of the plant to be used for the extraction of the drug instead of using the entire plant.

REFERENCES

[1] Pavithra PS, Janani VS, Charumathi KH, Indumathy R, Potala S, Verma RS. Int J Green Pharm 2010 4; 22-28.
[2] Jayvir A, Minoo P, Gauri B, Raipal K. Medicinal Plants of India 1997; 25-27.
[3] Sadique J, Chandra T, Thenmozhi V, Elango V. Biochem Med Metab Biol 1987;37:167-76.
[4] Harborne JB. Phytochemical methods. London: Chapman and Hall Ltd 1996; 52-105.
[5] Cutler NRC, Sramek, John JS, Prem KN. Perspectives in clinical pharmacology. New York: 1994; 318.
[6] Edwards CR, Benediktsson R, Lindsay RS and Seckl JR. Steroids 1996; 61(4):263-269.
[7] Zaheer Zahid et al. ENICOSTEMMA AXILLARE Jan-Feb 2011.
[8] David Birda A, Vincent Franceschib R & Peter Facchini1 J. SEPTEMBER 2003; 24: 10.1105 / TPC.015396
[9] John Pope, MD pediatrics Larry A. Latson, MD – Pediatric Cardiology .October 12, 2009.
[10] Veldkamp J F. A synopsis of the genus Enicostema Bl., nom. cons. (Gentianaceae). Blumea 1968; 41: 133-136.
[11] Sharada Deore L, Khadabadi SS, Lalitha Bhagure and Gorpade DS. Natural Product Radiance 2008; 7(5): 409-412.