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# PHARMACOGNOSTIC AND PHYSICOCHEMICAL EVALUATION OF *HIPPEASTRUM PUNICEUM* (LAM.) VOSS LEAVES

Priya Kurian<sup>1,2</sup>\*, Beena Briget Kuriakose<sup>1</sup>, B Vijayakumar<sup>3</sup>

<sup>1</sup>Department of Pharmaceutical Sciences, Cheruvandoor Campus, Mahatma Gandhi University, Kottayam, Kerala-600020, India.

<sup>2</sup>Department of Pharmacognosy, Grace College of Pharmacy, Kodunthirapully, Palakkad, Kerala-678004, India. <sup>3</sup>Department of Pharmaceutical Chemistry, Grace College of Pharmacy, Kodunthirapully, Palakkad, Kerala-678004, India.

Article Info	ABSTRACT
Received 29/06/2017	Hippeastrum may be a well-known ornamental Amaryllidaceae genus from South America.
Revised 10/07/2017	The bulbs of the plant Hippeastrum puniceum (Lam.) Voss was historically used in curing
Accepted 24/07/2017	tumours and varied inflammatory disorders. Some social group communities used the bulbs
	in healing wounds and in treating piles. It's a perennial plant distributed worldwide.
Key words: -	Although this plant has been employed in the tribal and folkloric medicine for many
Hippeastrum puniceum,	decades, no make an attempts were thus far created to scientifically evaluate its therapeutic
Pharmacognostic study,	utility. The present study is a step towards the pharmacognostic and physicochemical
physicochemical	evaluation of leaves.
evaluation.	

#### INTRODUCTION

The world is endowed with a rich wealth of medicinal plants. Herbs have always been the principal form of medicine in India and presently they are becoming popular throughout the developed world. In India, medicinal plants have made a good contribution to the development of ancient Indian *Materia Medica*. Medicinal plants have curative properties due to the presence of various complex chemical substances of different composition, which are found as secondary metabolites in one or more parts of these plants [1].

Some of the traditional medicine involves the use of crude plant extracts which may contain an extensive diversity of molecules, often with indefinite biological effects. However, most of the available information

Corresponding Author

# Priya Kurian

Email:- priya.chackala@gmail.com

regarding the medicinal potential of these plants is not provided with credible scientific data. For this reason, several kinds of researches have been conducted to determine the toxicity of medicinal plants [2]. There is a growing tendency all over the world to shift from synthetic to natural based products including medicinal plants. It is also timely now to consider neglected and little-known medicinal plants [3].

The Amaryllidaceae family is one of the most important alkaloid-containing plant families. Amaryllidaceae alkaloids have structural similarities to the essential amino acid phenylalanine and related metabolites of tyrosine [4]. Amaryllidaceae alkaloids have been motivated by their diverse and important pharmacological properties including activities such as anticancer, antiviral, immuno stimulatory, antimalarial and acetyl cholinesterase inhibition [5].

The bulbs of the plant *Hippeastrum puniceum* (*Lam.*) *Voss* was traditionally used in curing tumours and various inflammatory disorders. Some tribal communities

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used the bulbs in healing wounds and in treating piles. It is a perennial ornamental plant; belonging to the Amaryllidaceae family distributed worldwide. Although this plant has been used in the tribal and folkloric medicine for many decades, no attempts were so far made to scientifically evaluate its therapeutic utility. Thus the present study is a step towards the pharmacognostic, physicochemical and preliminary phytochemical evaluation of leaves of *Hippeastrum puniceum (Lam.) Voss* leaves.

# PLANT PROFILE

#### **Taxonomical representation**

Kingdom	:	Plantae
Division	:	Angiosperms
Order	:	Asparagales
Family	:	Amaryllidaceae
Genus	:	Hippeastrum
Species	:	puniceum
Synonym	:	Amaryllis puniceae
Botanical Name	:	Hippeastrum puniceum

#### **Common Names**

Amaryllis, Barbados lilly, Easter lilly

#### Vernacular Name

Malayalam Name: Kattulli

## MATERIALS AND METHODS Plant Material

Hippeastrum puniceum (Lam.) Voss leaves were collected from Ettumanoor, Kottayam, Kerala. The plant material was identified and authenticated by Dr.Rojimon P.Thomas, Assistant Professor, Department of Botany, C.M.S. College, Kottayam. A Voucher specimen of the plant (CMS 278) is deposited in Department of Pharmacognosy, Department of Pharmaceutical Sciences, Mahatma Gandhi University, Cheruvandoor Campus, Ettumanoor, Kottayam, Kerala.

#### PHARMACOGNOSTIC STUDIES OF LEAVES Macroscopic examination

The fresh leaves of *Hippeastrum puniceum (Lam.) Voss* were subjected to macroscopic evaluation.

# Table 1. Physicochemical evaluation of leaves

# Microscopical evaluation

# Transverse section of the leaf

The transverse section of fresh leaves was taken to study anatomy. The powder of the dried leaves was studied for the identification of various cellular components. Powdered leaves were cleared with NaoH and mounted in glycerin medium after staining. Different cell components were studied and measured.

# PHYSICOCHEMICAL EVALUATION

The determination of the various physicochemical parameters such as loss on drying, total ash, water soluble ash, acid insoluble ash, extractive values, crude fibre content and total chlorophyll were calculated [6-10].

### RESULTS

#### PHARMACOGNOSTIC STUDIES OF LEAVES Macroscopic examination

Fresh leaves of *Hippeastrum puniceum (Lam.) Voss* were subjected to macroscopic evaluation.

Colour	:	Dark Green
Odour	••	Odourless
Taste	••	Bitter taste
Туре	••	Simple
Arrangement	••	Basal
Venation	•	Parallel
Lamina	••	Lanceolate
Apex	••	Acute
Margin	:	Entire

# Microscopical Evaluation

# Transverse section of the leaf

Transverse section of the leaf shows two major portions – *central midrib region* and *laminar regions* on both sides of the midrib. The presence of cuticle, multicellular covering trichomes, bicollateral vascular bundles, starch and calcium oxalate crystals were observed.

#### Powder microscopy of H.puniceum leaves

The leaf powder shows the following inclusions:

#### PHYSICOCHEMICAL EVALUATION OF LEAVES

Various physicochemical studies were carried out on leaves.

Table 1. Physicochemical evaluation of leaves			
Parameters studied	% w/w		
Total ash	11.76		
Water soluble ash	3.94		
Acid insoluble ash	0.98		
Water soluble extractive value	8.86		
Alcohol soluble extractive value	4.36		
Loss on drying	1.63		
Crude fibre content	14.59		
Total chlorophyll	0.42 mg/g		

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#### DISCUSSION

Pharmacognostic evaluations of the Hippeastrum puniceum (Lam.) Voss leaves were performed. The T.S of the leaf showed the presence of multicellular covering trichomes and anomocytic stomata. The vascular bundles are bicollateral in type and the leaves are dorsiventral (Fig 2-7). The powder microscopy showed the presence of starch prisms, starch grains, stomata and fragments of thickened xylem vessels. Physicochemical spirally evaluation of the drugs is an important parameter for setting standards for crude drugs. Various physicochemical studies were performed. Crude fibre content showed a very good value of 14.59 % w/w. which indicates the presence of high amount of fibre. The water soluble extractive value was high when compared to alcohol soluble extractive value (Table 1).

#### CONCLUSION

The present investigation of *Hippeastrum puniceum* (Lam.) Voss can be concluded that this pharmacognostic study yielded a group of parameters that might function a crucial supply of data to as bound the identity and determination of quality and purity of material for future studies. This straight forward however reliable standardization are going to be helpful to a lay person in exploitation the drug because the home remedy and conjointly with in the pharmaceutical trade for testing the staple.

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# CONFLICT OF INTEREST

None.

#### STATEMENT OF HUMAN AND ANIMAL RIGHTS

All procedures performed in human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

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