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Rashmi Saxena Pal
Assistant Professor, Pharmacy
Deptt, PSIT, Bhauti, Kanpur,
India.

Yogendra Pal
Assistant Professor, Pharmacy
Deptt, PSIT, Bhauti, Kanpur,
India.

Dr. AK Rai
Director, Pharmacy Deptt,
PSIT, Bhauti, Kanpur, India.

Dr. Pranay Wal
Dean, R & D, Pharmacy Deptt,
PSIT, Bhauti, Kanpur, India.

Ankita Wal
Assistant Professor, Pharmacy
Deptt, PSIT, Bhauti, Kanpur,
India.

Ashish Srivastava
Assistant Professor, Pharmacy
Deptt, PSIT, Bhauti, Kanpur,
India.

Suresh Chandra
Assistant Professor, Pharmacy
Deptt, PSIT, Bhauti, Kanpur,
India.

Nikita Saraswat
Assistant Professor, Pharmacy
Deptt, PSIT, Bhauti, Kanpur,
India.

Correspondence
Rashmi Saxena Pal
Assistant Professor, Pharmacy
Deptt, PSIT, Bhauti, Kanpur,
India.

Physico-chemical and phytochemical evaluation of crude drug powder (leaves) of *Polyalthia longifolia*

Rashmi Saxena Pal, Yogendra Pal, Dr. AK Rai, Dr. Pranay Wal, Ankita Wal, Ashish Srivastava, Suresh Chandra and Nikita Saraswat

Abstract

Medicaments obtained from natural sources play a pivotal role as therapeutic aids in many aspects for human beings to alleviate health and the quality of life. *Polyalthia longifolia* (Ashoka) has been used in the traditional system of medicine to cure various disorders and has been a promising source of various phytoconstituents. The use of plant extracts and isolated compound/s has provided basis in the preparation of the various phyto-based medicines. *P. longifolia* is an evergreen tree, which is native to India and has been known to possess various activities such as analgesic, insecticidal, anti-inflammatory, anthelmintic and anti-bacterial properties. The preliminary studies of *P. longifolia* seeds have been performed to investigate its various aspects. The preliminary phytochemical evaluation when performed on the various extracts indicated that the leaves are rich source of alkaloids, tannins, phenols, flavonoids and carbohydrates. This study provides the information on the moisture content and the fundamental datas on the presence of different phytoconstituents present in the leaves of the plant.

Keywords: Phytochemical parameters, *Polyalthia longifolia* leaves, organoleptic, phytochemical screening

Introduction

Natural products are being used traditionally as a source of medicine since long. According to the World Health Organization, more than 80% of the world's population, mostly in poor and less developed countries depend on the traditional phytoconstituents based medicines for the fulfillment of their primary health care needs along with some other uses [1]. Medicinal plants are the gift of nature in order to lead a disease-free, healthy life. They play a significant role in preserving our health. India is one of the most richly diverse countries in the world, where the medicinal herbs sector is a part of a time-honored tradition that is being privileged even now [2]. *P. longifolia*, (Annonaceae) is native of India and Sri Lanka. It has various synonyms like Indian Fir tree, False Ashoka. As per vernacular names it is known as, Debdaru in Bengali and Hindi, Ashoka or Devadaru in Sanskrit, Asopalav in Gujarati, Debdaru in Bengali and devdar in Marathi. According to the Literature survey, it has been revealed that the different pharmacological activities are shown by the different parts of the plant. The fresh stem bark juice is used in the treatment of the various digestive disorders. The diterpenoids obtained from the seeds of *P. longifolia* demonstrated significant antifungal and antibacterial activities. Jayaveera *et al* evaluated the antibacterial potentiality, phytochemical screening and anthelmintic activity of flowers of *P. longifolia* 3. The investigations on the phytoconstituents of the ethanolic extract of leaves of *P. longifolia* var. pendula has revealed that the antimicrobial activity has been shown by the isolated diterpenes [4]. It has been reported that alkaloids isolated from the roots of *P. longifolia* var. pendula also shows antimicrobial activity [5]. In the present study an attempts have been made to investigate the phytoconstituents in the leaves of the plant by the method of preliminary phytochemical screening and also to assess the various quality control parameters for further pharmacognostical standardization of this plant material.

2. Material and Methods

Plant material: The Plant material was collected in the month of March from the Herbal garden of the Institute. The dried and pulverised leaves was used for the analysis of the various aspects.

2.1 Phytochemical Analysis

The phytochemical parameters namely moisture content and pH were determined. The leaves of the plant were air dried in the shade and then pulverized (1g) and then was kept in contact with various solvents (non polar to polar) at room temperature for twenty four hours. Solvents are recovered under reduced pressure to achieve quantitative extraction. Identification of the various phytoconstituents such as alkaloids, phenolic compounds and tannins, flavonoides, carbohydrates and sugar were performed using standard protocols 9, which help to isolate the active metabolites.

2.2 Organoleptic Evaluation

Organoleptic evaluation refers to the evaluation of the material to be justified by colour, odour, taste etc. The organoleptic characters of the samples were studied on the basis of the method described by Siddique *et al* [6].

3. Results and Discussion

Table 1: Organoleptic Properties of powdered leaves of *P. longifolia*

Parameters	Powdered leaves
Appearance	Powder
Colour	greenish
Odour	Characteristic
Taste	Characteristic
Texture	Fine

The organoleptic analysis shows the values of the observed findings in the Table 1. The values of the moisture content and the pH is given in the Table 2. The values for the successive solvent extractions are recorded in the Table 3 and it indicates that the percent extractive value increases from non polar to the polar solvents. The preliminary phytochemical analysis shown in the Table 4 reveals that the alkaloids are present in polar as well as non-polar solvents while tannins, phenols and flavonoids are found to be the major active components present mainly in non -polar solvents. Flavonoids are group of polyphenolic compounds which influence the radical scavenging, inhibition of hydrolytic and oxidative enzymes. The phenols, tannins, flavonoids and alkaloids are complex moieties present in *P. longifolia* leaves extracts shows which show higher potentialities towards antioxidant properties [7, 8].

Table 2: Analysis of phytochemical parameters

Parameter	Value
Moisture content	7%
pH	6.76

Table 3: Extractive values

S. No	Extracts	Percentage value
1	Acetone	7.16
2	Ethanol	16.5
3	Methanol	16
4	Water	14

Table 4: Preliminary Phytochemical screening of *Polyalthia longifolia* leaves extracts

Chemical constituents	Acetone ext.	Ethanol ext.	Methanol ext.	Aqueous ext.
Alkaloids	+	-	+	+
Steroids	+	+	+	+
Tannins	+	+	+	-
Phenols	+	+	+	-
Flavonoids	+	+	+	-

4. Conclusion

The present study confirms the different medicinal uses of *P. longifolia* leaves in traditional medicines as well as in various other beneficiary uses. The phytochemical data will be helpful in the standardization and quality control of the plant and its various derivatives used in the pharmaceutical industries.

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