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Research Article

Physicochemical Evaluation and Fluorescence Analysis of Stem and Leaves of *Diplocyclos palmatus* (l.) Jeffry-Shivalingi

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Abstract

Diplocyclos palmatus Linn. commonly known as Shivalingi is a lesser heard and perennial climber having diversified medicinal values. So far no systematic studies were reported on physicochemical profile of stem and leaves of the selected plant. Hence, the present attempt was undertaken with an objective to investigate the physicochemical and fluorescence studies. This study provides impetus to conduct advanced research to uncover its vast medicinal potential.

Key-words: *Diplocyclos palmatus*, Physicochemical, Stem, Leaves

Introduction

Diplocyclos palmatus (Family: Cucurbitaceae) is a perennial climber with thin stems growing up to 6m long. Native to Australia, it is more commonly known as the Lollipop Climber or Striped Cucumber (E), Shivalingi (H). The plant is native to Australia, Malesia, Papua New Guinea and Tropical Africa. It is largely distributed in warmer rain forests.[1] It has been recorded in India as growing and spreading in the wild. Shivalingi is a perennial climber with hairless stem, becoming thickened and white dotted on the ridges when older. Leaves are broadly ovate, 3.5-14 x 4-14.5 cm, palmately lobed. Lobes are linear-lanceshaped to elliptic, hairless. Leaf stalk os 1.5-9.0 cm long. Flowers are small, white or yellowish, male in stalkless clusters of 2-8, along with 5 female flowers in the same axil. Sepal cup is 3-4 mm long in male, 1.5-2.5 mm long in female, sepals smaller than tube. Flower of male larger than female. Fruit is solitary, or in clusters of 2-5. It is ovoid-round, 1.5-2.5 cm. When ripe, it is red with longitudinal white stripes, and reminds one of lollipop, hence the common name. It is found in India, including the Himalayas, at altitudes of 200-1500 m. Flowering: August-October. It is used in India for its medicinal properties in the treatment of rheumatic pain, cough, flatulence and various skin diseases.[2-3] Keeping in view the medicinal attributes of species as mentioned in folklore investigation of physiochemical, phytochemical and pharmacological aspects are required to establish the quality control parameters, therefore, in the present work physiochemical evaluation and fluorescence analysis of stem and leaves of *Diplocyclos palmatus* (L.) Jeffry-Shivalingi were reported.

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Materials and Methods

Selection, collection and authentication of plant/plant material

The plant parts were collected in the months of July-September 2012 from the various local sites of Rewa, M.P. and identified & authenticated by Dr. S. N. Dwivedi, Prof. and Head, Department of Botany, Janata PG College, A.P.S. University, Rewa, M.P. and was deposited in our Laboratory, Voucher specimen No. PCog/DP/156.

Physicochemical Evaluation

The dried parts were subjected to standard procedure for the determination of various physicochemical parameters[4] viz., FOM, LOD, ash value, swelling index and extractive value.

Fluorescence Analysis of Powdered drug

Powdered drug was screened for fluorescence characteristics with and without chemical treatment. The observations pertaining to their color in day light and under ultra-violet (short and long) were noticed[5-6].

Results and Discussion

The physicochemical evaluation of stem, leaves was carried out. Air dried material was used for quantitative determination of physiochemical values In this study ash values (total ash, acid insoluble ash and water soluble ash), moisture content, swelling index and foreign organic matters were determined (Table 1). Hexane, alcohol and water soluble extractives were determined and were recorded. Alcohol and water extractive was determined as per WHO recommendations while hexane soluble extractive was determined due to the medicinal attributes of the extract. Water soluble extractive was found to be very high when compared to other extractable matter in the drug. The stem, leaves in various solvents were examined under ordinary light and UV light (short and long). The powder was also treated with various chemical reagents and the changes in colour were recorded and presented in Table 2-3. Hence, the present study were useful in establish the quality control parameters of selected species.

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References :

1) Germplasm Resourcess Information Network. *Diplocyclos palmatus* (L.) C. Jeffrey. Available on line at. Accessed 22 June 2011
2) New South Whales Flora on line. *Diplocyclos palmatus* (L.) Jeffrey.
3) Bosch C. H. (2004). Dilpocyclos palmatus (L.) C. Jeffrey. In: Grubben, G.J.H. and Denton, O. A. PRORA 2: Vegetables/Legumes. PROTA, Wageningen, Nertherlands.
4) *Quality Control Methods for Medicinal Plant Materials* (1998). World Health Organization, Geneva, 8-30.
5) Chase C.R. and Pratt R. (1949). Fluorescence of powdered vegetable drugs with particular reference to development of a system of identification, *J. Am. Pharmacol. Assoc.*, **38**: 324- 331.
6) Kokoski C.J., Kokoski R.J. and Slama F.J. (1958). Fluorescence of powdered vegetable drugs under ultraviolet radiation. *J. Am. Pharm. Assoc.*, **47**: 715-717.

Table 1: Physico-chemical analysis *Diplocyclos palmatus* (L.) Jeffry-Shivalingi

S/No.	Parameters	Values Obtained (% w/w)	
		DPS	DPL
1.	Total ash (TA)	8.23	12.76
2.	Water soluble ash (WSA)	4.56	6.90
3.	Acid insoluble ash (AIA)	2.10	3.29
4.	Moisture content (MC)	1.89	2.23
5.	Swelling index (SI)	4.41	3.19
6.	Foreign organic matters (FOM)	2.10	1.92
7.	Water soluble extractive value	22.67	13.20
8.	Alcohol soluble extractive value	14.69	10.52
9.	Pet. ether soluble extractive value	5.10	3.33

Table 2: Fluorescence analysis of stem of *Diplocyclos palmatus* (L.) Jeffry-Shivalingi

S/No.	Powder Crude Drug+ Reagents	Day Light	UV (Short) 254 nm	UV (Long) 366 nm
1.	Powder crude drug as such	Light brown	Light brown	Dark brown
2.	Drug + 5% $FeCl_3$	Green	Dark green	Dark green
3.	Drug +1M H_2SO_4	Green	Yellowish green	Dark green
4.	Drug + Dil. HNO_3	Green	Green	Light green
5.	Drug + 5%NaOH	Light green	Light brown	Dark brown
6.	Drug + 5%NaOH + Water	Light green	Light green	Light green
7.	Drug + 5% Iodine	Brown	Light brown	Dark Brown
8.	Drug + Conc. HNO_3	Light brown	Light brown	Grey
9.	Drug + Ethanol	Light green	Light green	Black
10.	Drug + Dil. HCl	Green	Dark Green	Dark green

Table 3: Fluorescence analysis of leaves of *Diplocyclos palmatus* (L.) Jeffry-Shivalingi

S/No.	Powder Crude Drug+ Reagents	Day Light	UV (Short) 254 nm	UV (Long) 366 nm
1.	Powder crude drug as such	Dark brown	Dark brown	Dark brown
2.	Drug + 5% $FeCl_3$	Yellow brown	Light brown	Light brown
3.	Drug +1M H_2SO_4	Violet	Violet	Dark violet
4.	Drug + Dil. HNO_3	Light green	Dark green	Dark green
5.	Drug + 5%NaOH	Brown	Brown	Black
6.	Drug + 5%NaOH + Water	Green	Light green	Dark green
7.	Drug + 5% Iodine	Light brown	Brown	Brown
8.	Drug + Conc. HNO_3	Light brown	Yellow	Yellow
9.	Drug + Ethanol	Brown	Yellow	Colorless
10.	Drug + Dil. HCl	Brown	Colorless	Colorless