



ISSN No: 0975-7384

J. Chem. Pharm. Res., 2010, 2(2): 107-111

Phytochemical Screening of *Curculigo Orchioides* Gaertn. Root tubers

Anuj kumar Agrahari*, Sanjaya Kumar Panda, Ashutosh Meher, Amiya Ranjan Padhan and Mohd Khaliqzama

The Pharmaceutical College, Tingipali, Barpali, Bargarh, Orissa, India

Abstract

The present study deals with the phytochemical screening on extracts of root tubers *Curculigo orchioides* Gaertn; belongs to family Hypoxidaceae, known in commerce as 'Kali musli'. This plant of high economic importance due to mainly aphrodisiac & rejunerative properties. The phytochemical screening revealed the presence of carbohydrate & glycosides, saponins in high concentration followed by alkaloids, protein & amino acid, phytosteroids and gums & mucilage in extracts where as the phenolic compounds are present in lower concentration. Powder analysis parameters like extractive value, total ash, acid insoluble ash, water soluble ash and loss on drying were also determined.

Key words : *Curculigo orchioides*, seasonal plant, phytochemical screening, powder analysis.

Introduction

Curculigo orchioides (family-Hypoxidaceae) commonly known as kalimusli, in Orissa as Talamuli, occurring wild in hotter regions of India & Ceylon is a small annual herb with blackish elongated tuberous root having several lateral roots with rosette or short petiolate, linear, lanceolate, membranous leaves close to the ground level. It was first introduced in 'Charak Samhita' of 'Agnivesha', the epic treatise of the medicine school of thought of the Hindu system of medicine and narrated as an ingredient of a cigar to alleviate cough. Talamuli has been used in the indigenous system of medicine for a long periods. According to Bhavaprakash the drug is sweet, bitter, acts as an aphrodisiac. In Raj Nighantu it has been described as sweet, cooling, mucilaginous, increases Kapha and reduces Pitta daha (burning sensation), acts as stimulant, gives

strength. Musali prepared as a paste with goat's milk or honey and applied locally over the face, brightens the complexion of the face. Moving in to the modern period it is extensively used by the Ayurvedic practitioners, particularly an ingredients of aphrodisiac preparations [1-5].

Here, different Qualitative phytochemical studies are carried out to know the presence of different secondary metabolites/phytoconstituents responsible for the therapeutic values of the drug. The efficacy of the drug is directly related to percentages of active constituents present in it and it varies from plant to plant. Therefore, present investigation was planned to find out the different phyto constituents with powder analysis in the powder of *C. orchioides* Gaertn. root tubers.

Material and methods

The powder root tubers of *Curculigo orchioides* collected from the rural belt of Barpali, Orissa in month of August-September and authenticated by Botanical Survey of India, Howrah, Kolkata (Reference .no. CNH/I-I(5)/2009/ Tech.II /35). After authentication, fresh plant material was collected in bulk, washed under running tap water to remove adhering material, dried under shade and pulverized in a mechanical grinder. The coarse powder was pass through sieve no. 40 and taken for further studies.

Preparation of drug extract

The powder root tubers were extracted successively with pet.ether, chloroform, ethyl acetate & methanol in soxhlet extraction apparatus (Hot extraction). 100gm of dried coarse powder of *C. orchioides* root tubers were successively extracted by using solvents of increasing polarity i.e. Pet. Ether (60⁰ – 80⁰), Chloroform, Ethyl acetate and Methanol. The extract was filtered while hot and the resultant filtrate was distilled in vacuum under reduced pressure in order to remove the solvent completely. It was dried and kept in a desicator till experimentation. Obtained extract was weighed and percent yield was calculated in terms of air-dried powdered crude material. The percentage yield of different extracts of powdered root tubers of *Curculigo orchioides* and their colour, consistency were reported in the table. 1

Preliminary Phytochemical Studies

The individual extracts *C. orchioides* were subjected to qualitative investigation for the presence of phytoconstituents / secondary metabolites responsible for the therapeutic values of the drug like presence of alkaloids, carbohydrate & glycosides, saponins, proteins & amino acids, phytosteroids, gums & mucilage, phenolic compounds and flavanoides [6,7] as shown in table. 2

Fluorescence analysis of successive extracts

Fluorescence characteristics of all successive extract of root tubers of *C.orchioides* was observed in daylight and UV light i.e. both short & long wave length [8] and tabulated in table. 3.

Powder Analysis

The *C. orchioides* root tuber powder was subjected to determination of extractive value (Ethanol Soluble extractive), total ash, acid insoluble ash, water soluble ash & loss on drying [9] and tabulated in the table. 4.

Table.1: Data shows the colour, consistency and yield percent of *C. orchoides* root tubers by hot process (Soxhlet) extraction

Sl. No.	Type of Extract	Colour	Odour	Consistency	Yield percent
1	Petroleum ether Extract (60 ⁰ – 80 ⁰ C)	Light brown	Characteristics	Greasy	1.36 %
2	Chloroform Extract	Light yellow	Characteristics	Sticky	1.08 %
3	Ethyl acetate Extract	Deep brown	Characteristics	Sticky	2.87 %
4	Methanol Extract	Deep brown	Characteristics	Greasy	6.8 %

Table.2: Phytochemical Screening for presence of different phytoconstituents in *C. orchoides* root tubers

Sl. No	Phytochemical Test	Petroleum ether (60 ⁰ -80 ⁰ C) Extract	Chloroform Extract	Ethyl acetate Extract	Methanol Extract
I	Test For Alkaloids				
a	Mayer's Test	+	+	+	+
b	Wagner's Test	+	+	+	+
c	Hager's Test	++	++	++	++
d	Dragendorff's Test	+	+	+	+
II	Test for Carbohydrates and Glycosides –				
a.	Molish's Test	+	+	++	+++
b.	Fehling's Test	-	-	++	+++
c.	Barfoed's Test	-	-	++	+++
d.	Benedict's Test	-	-	+	++
e.	Bortrager's Test	+	+	+	++
f.	Legal's Test	+	+	++	+++
III	Test for Saponin -				
	Foam Test	+	+	+++	+++
IV	Test for Proteins and Amino acids -				
a.	Millon's Test	-	-	+	+
b.	Biuret's Test	-	-	++	+
c.	Ninhydrin Test	-	-	+	+
V	Test for Phytosteroids -				
	Liebermann – Burchard's Test	-	-	+++	+++

VI Test for Gum and Mucilages -					
	Alcohols 95% Test	+	+	+++	+++
VII Tests for Phenolic Compounds and Flavonoides -					
a.	Ferric chloride Test	-	-	+	+
b.	Lead acetate Test	-	-	-	+
c.	Alkaline Test	-	-	+	+

+++ Prominently Present, ++ Moderately Present, + Slightly Present, - Absent

Table. 3: Fluorescence Characteristics of Successive Extracts in *C. orchoides* root tubers.

Sl. No.	Types of Extract	Day Light	UV Light Short	UV Light long
1	Petroleum Ether Extract (60 ⁰ – 80 ⁰ C)	Light Brown	Light Green	Dark Green
2	Chloroform Extract	Light yellow	Yellowish Green	Green
3	Ethyl acetate Extract	Deep Brown	Green	Deep Green
4	Methanol Extract	Brown	Green	Deep Brown

Table. 4: Powder Analysis of Root tuber of *C. orchoides*

Sl. No.	Parameters	Percentage (w/w)
1.	Extractive Value (Ethanol Soluble extractive)	8.0 %
2	Total ash	8.6 %
3	Acid insoluble ash	1.2 %
4	Water soluble ash	6.7 %
5	Loss on drying	8.9 %

Result and Discussion

Phytochemical screening, mineral analysis and powder analysis was carried out on the root tubers of "*Curculigo orchoides Gaertn*" having short or elongated fleshy roots. Recommended as choice of drug for its aphrodisiac, galactogogue and other miscellaneous uses in traditional system of medicine.

In Phytochemical investigation the percentage yield of methanol extract was found to be more (6.8%) when compared to petroleum ether extract (1.36%).

The qualitative investigation test performed in four extracts (Pet. ether, Chloroform, Ethyl acetate & methanol) revealed the presence of alkaloids, glycosides, steroids, saponin &

flavonoids etc. Methanol Extract of the drug shows the presence of carbohydrate & glycosides, saponins in high concentration followed by alkaloids, protein & amino acid, phytosteroids and gums & mucilage in extracts where as the phenolic compounds are present in lower concentration with more percentage yield. The presence of organic constituents are considered to be responsible for therapeutic action.

The concentrated petroleum ether, chloroform, ethyl acetate & methanol extract of the root were subjected for fluorescence characteristics studies. All extracts viewed under ordinary light and UV light having wave length of 254nm & 365nm.

Further, powder analysis were also carried out to investigate different parameters like extractive value, total ash, acid insoluble ash, water soluble ash and loss on drying. In powder analysis ash values are useful in determining the quality and purity of crude drug, especially in the powder form and the extractive values are useful for their evaluation, especially when the constituents of a drug can not be readily estimated by any other means. Further, these values indicate the nature of the constituents present in a crude drug [10].

All these studies will be of immense use in carrying out further research and revalidation of its use in Ayurvedic system of medicine.

Acknowledgement

The Authors are grateful to extend special thanks to Mr. R.L. Hota, Chairman, G.B of The Pharmaceutical College, Barpali for his constant encouragement & support throughout the work. The authors are extend sincere thanks to Mr. N.K. Hota, President & Mr. S.K.Sahu, Secretary of The Pharmaceutical College, Barpali for providing all kind of facilities for this work.

References

- [1] K. Raghunathan, R. Mitra, Pharmacognosy of Indigenous drugs, Vol. II, Central council for research in Ayurveda and Siddha, New Delhi, **2001**, 667-670
- [2] The Ayurvedic Pharmacopoeia of India, 1st Edition, Vol. IV, Department of Indian system of medicine and homoeopathy, New Delhi, **2004**, 122-124.
- [3] Wealth of India, First Supplement Series, Vol.II, CSIR, New Delhi, **2004**, 90-93..
- [4] K.M. Nadkarni, The Indian Materia Medica, 2nd Edition, Vol.I, Bombay Popular Prakashan, Mumbai, **2002**, 410-413.
- [5] K. R. Kirtikar, B.D.Basu, Indian Medicinal Plants, 2nd Edition Vol. IV, **2002**, 2468-2470.
- [6] N. Raaman, Phytochemical Techniques, 2nd Edition, New Indian Publishing Agency, New Delhi, **2006**, 19-30.
- [7] J.B. Harborne, Phytochemical methods, A guide to modern technique of plant analysis, Chapman and Hall, London, **2005**, 182-189.
- [8] M.M. Ansari, J. Ahmad, A. Ahmad, S.H. Ansari, *J. Medicinal and Aromatic Plant Science*, **2006**, (28), 28-30.
- [9] The Ayurvedic Pharmacopoeia of India, 1st Edition, 1 (III), The controller of Publication, **2001**, 233-245.
- [10] C.K. kokate, Practical Pharmacognosy, 3rd Edition, Vallabh Prakashan, Delhi, **1991**, 107-129