

PHARMACOGNOSTICAL STANDARDISATION OF EULOPHIA NUDA LINDL.

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ABSTRACT

Plants, animals and minerals are used in medicines by man since prehistoric times. The plants belonging to family Orchidaceae are known to have various medicinal values. They are considered to be a herbal aphrodisiac and to have therapeutic values, ranging from aiding digestion and preventing headaches to counteracting poisons and bites. As Orchidaceae members have short life span and flowers perish soon, it is all the more difficult to confirm the identity of the plant. This may be one of the reasons for plant drugs to get adulterated. *Eulophia nuda Lindl* is said to have aphrodisiac properties and is used as substitute to actual 'salampanja' – *Orchis latifolia* due to unavailability of later drug

in plains. Due to all these reasons the drug needs standardization parameters like macroscopic characters; microscopic details, physicochemical constants like ash values, extractive values, fluorescence analysis etc. which are unavailable or the said drug.

KEY WORDS: *Eulophia nuda Lindl*; *Orchis latifolia*; pharmacognosy; herbal aphrodisiac.

INTRODUCTION

The use of herbal medicine for the treatment of diseases and infections is a safe and traditional therapy. Hence, medicinal plants have been receiving great attention worldwide by the researchers because they are safe utility. The curative properties of medicinal plants are mainly due to their complex chemical substances of different composition which occur as secondary metabolites. Medicinal plants form a large group of economically important plants that provide the basic raw materials for indigenous pharmaceuticals. *Eulophia nuda Lindl* is a terrestrial herb with a tuberous stem. Traditionally, *E. nuda* has been used in treatment of tuberculosis, blood disorders etc.

MATERIAL AND METHODS

Fresh plant material was collected from Bhimashankar hills; Panhala; Koyna Catchment & Andaman Islands in required quantities. Efforts were made to collect plants when they started flowering and fruiting for correct botanical identification. The plant material was authenticated by BSI, Pune.

For microscopical studies, uniform and thin hand cut section were taken from the fresh tubers and processed for double staining technique and finally mounted in Canada balsam, by following the micro-technique method of Johanson (1940). Macro and microscopic characters were studied as per Wallis (1976) and Trease and Evans (1982). For phytochemical investigation, tubers were dried and ground in powder. This powder was analysed qualitatively and quantitatively for different chemical parameters as per Trease and Evans (1982). Detailed phytochemical studies were carried out by following Harborne (1973), fluorescence analysis on powdered drug was carried out as per Chase and Pratt (1949) and ash analysis constants and extractive analysis constants were studied as per wealth of India.

OBSERVATIONS

Macroscopic Characters

E. nuda is a terrestrial herb with tuberous stem. Leaves two at flowering. Flowers are yellowish white. Colour of tubers is creamish white. Tubers are oval in shape with bitter and mucilaginous taste and indistinct odour. Size of the tuber is 1.8 – 8 cm in length and 2.5 - 5.6 cm in width.

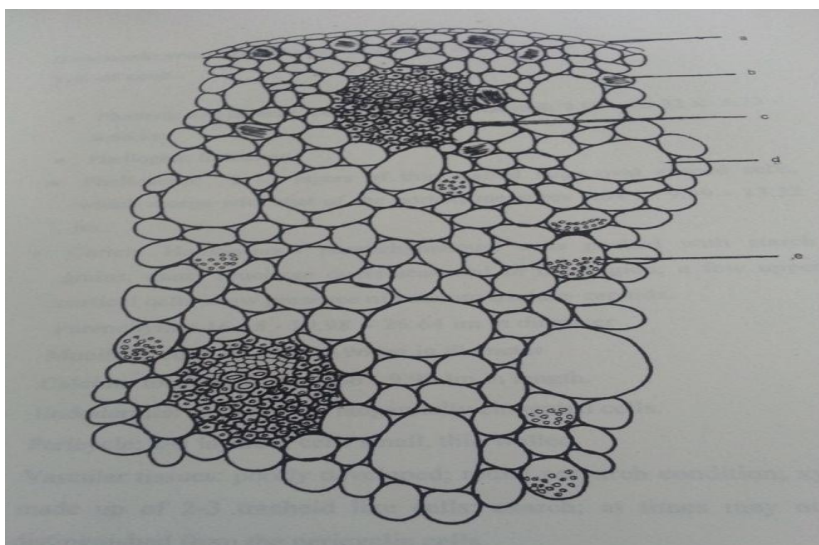


Microscopic Characters

T. S. of tubers shows

Epidermis: Single layered, made up of small tangentially elongated thin walled cells.

Ground tissue: A broad region of parenchymatous cells. In ground tissue, some cells are filled with Calcium Oxalate crystals & starch grains, mucilage ducts and conjoint, collateral and closed vascular bundles are also seen scattered. Each vascular bundle is covered with thick fibrous sheath. The sheath is thick on one side. Stone cells are also observed. Xylem vessels show spiral pitting.



T.S. of *Eulophia nuda* shows,
 a Epidermis
 b Calcium oxalate
 c Fibro-vascular bundle
 d Mucilage ducts
 e Starch grains

Preliminary Phytochemical Screening

Alcoholic, aqueous and chloroform extracts of the drug were subjected to various chemicals.

All the extracts showed presence of tannins, proteins, mucilage, sugars and amino acids.

Name of the test	<i>E. nuda</i>		
	C	A	W
Test for alkaloids			
a) Dragendorff	-	-	-
b) Mayer	-	-	-
c) Wagner	-	-	-
Test for steroids			
a) Salkowski reaction	-	-	-

b) Liberkann&Burchard	-	-	-
c) Liberkann	-	-	-
Test for tannins			
a) Ferric chloride	-	+	+
b)Lead acetate	-	+	+
c) Potassium dichromate	-	+	+
d) Bromine water	-	+	+
Test for coumerine	-	-	-
Test for flavonoids	-	-	-
Test for saponins	-	-	-
Test for glycosides			
a) Cardiac glycosides - Keller Kilani test	-	+	+
b)Anthraquinone glycosides- Borntranger test	-	-	-

Test for proteins			
a) Biuret	-	+	+
b) Xanthoproteic	-	+	+
c) Millon's	-	+	+
Test for amino acids	-	+	+
Test for mucilage	-	+	+
Test for sugars			
a) Benedict's	-	+	+
b)Felhing's	-	+	+

Table 2: Physicochemical Analysis

Ash Values	Total ash	Not more than 6.5%
	Acid insoluble ash	Not more than 0.9%
	Water soluble ash	Not more than 2.5%
Swelling index		8 ml
Extractive values	Aqueous extractive value	Not less than 68%
	Alcohol extractive value	Not less than 10%
	Chloroform extractive value	Not less than 2%

Fluorescence analysis also confirmed the underground nature of the tubers by showing predominantly yellow or yellowish green colour on treatment with various chemicals as suggested by Chase and Pratt.

POWDER STUDY

The powder is light brown in colour, coarse in texture, mucilaginous in taste and having characteristic odour. When examined under microscope showed following characteristics. Epidermis: cells with thick cell wall, suberized appeared polygonal, measure 23.31 – 29.97 – 33.3 x 6.66 – 9.99 – 13.32 μm .

Soft tissue: Cells large showing many raphids, thin walled round to polygonal in shape measure 66.61 – 93.24 – 109.89 x 33.3 – 46.62 – 56.61 μm .

Fibres: many in number long, thick, measure 89.91 – 179.82 – 366.3 μm length

Stone cells: Few in number circular measuring 9.99 – 13.32 – 16.65 μm .

Xylem Vessles: Many in number spiral type measure 6.66 – 9.99 – 13.32 μm . in width

Ca Oxalate: Abundant small to large in size needle like. 26.64 – 29.97 – 33.3 μm . in length.

Starch: Few in number measure 6.66 – 9.99 μm starch grains are circular, concentric.

RESULT AND DISCUSSIONS

In the present investigation, the detailed pharmacognostic account of *E. nuda* (tubers) is given which includes macroscopic and microscopic characters, which will be helpful for the correct identification of the drug.

Preliminary phytochemical screening results are tabulated in table no. 1. Phytochemical screening portrays that tubers are rich source of tannins, mucilage, proteins, sugars and amino acids.

Tannins have been reported to prevent the development of micro-organism by precipitating microbial proteins unavailable for them. Presence of tannins suggests the ability of this plant to play a major role for the treatment of mentioned diseases. Percent extractive and ash analysis were carried out and results were tabulated in table no. 2.

Fluorescence analysis of powdered drug was also observed. These help in proving the biological source of the said drug.

This analysis suggests that *E. nuda* probably contains active agents and this provides the basis of their folklore use as a cure for human ailments. The values of percent extractive and ash analysis, results of fluorescence analysis and phytochemical data will be helpful for the standardisation and quality control of this precious indigenous drug.

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