

# THE PHARMA RESEARCH, A JOURNAL

The Pharma Research (T. Ph. Res.), (2010), 4-2; 181-185.  
Published on- 15 Mar 2011

Copyright © 2009 by Sudarshan Publication  
Sudarshan Institute of Technical Education Pvt. Ltd.

**Original Article**

**ISSN 0975-8216**

## PHARMACOGNOSTIC AND PHYTOCHEMICAL STUDY OF STEM OF *NERIUM OLEANDER LINN.*

M. Tanu<sup>1\*</sup>, Garima<sup>2</sup>, A. K. Gupta<sup>3</sup>

### Affiliated to:

1. HIMT college of Pharmacy, Gr. Noida, U.P 201301.
2. Shri Baba Mastnath Institute of Pharmaceutical Sciences & Research, Rohtak, Haryana.
3. Hindu College of Pharmacy, Sonapat, Haryana.



For Email Click Here

### ABSTRACT

**Keywords:** Pharmacognostic, Phytochemical, *Nerium Oleander Linn.*

### INTRODUCTION

Nature always stands as a golden mark to exemplify the outstanding phenomenon of symbiosis. The biotic and abiotic elements of nature are all interdependent. The plant kingdom supplies the three important necessities of life – Food, Clothing and shelter along with a host of other useful products. Nature has also provided a complete storehouse of remedies to cure almost all ailments of mankind. Present day knowledge about drug is the result of accumulated knowledge over the stands of years due to

man's inquisitive nature. So that today we have well documented profile of medicinal plants. Therapeutic potential of herbal drug ranges from parts of plants, through simple extracts to isolated active constituents. There has been resurgence of interest on plants and plant derived products as a source of medicine in the last few decades. Herbal products have occupied a major part in curing different human ailments. Certain of these drugs have been known and are being used by man for many

centuries, while for others investigations are still going on to know about them fully.

Nerium is one among such type of plant drugs that is quite well documented but still the investigations are being carried. Despite its well-recognized toxic potential this plant is being used as folklore medicine throughout the world.

#### **Material and Method:**

The plant material (Stem) of *Nerium oleander* was collected from healthy plants in Karnal (Haryana) and got authenticated from Dr. H. B. Singh (Scientist F and Head, Raw Materials Herbarium and Museum, NISCAIR, DELHI), Letter no. **Niscair/RHMD/Consult/-2008-2009/1080/111** dt. oct. 10, 2008. Specimen of same was submitted to Hindu college of pharmacy, Sonipat.

#### **Macroscopy:**

The following macroscopic characters for fresh leaves were noted: Color, Taste, Odor, Surface Characteristic (texture), and Fracture.

#### **Microscopy:**

The fresh stem was taken and a thin section was cut with the help of a sharp blade. The section was cleared with chloral hydrate solution and stained with phloroglucinol and HCl then mounted in glycerin.

#### **Powder microscopy:**

Fine powder #60 of the dried stem was used for the observation of powder microscopical characters. The powder was treated separately with glycerine, phloroglucinol, HCl, iodine, and potassium iodide solution and was observed under microscope.

#### **Physicochemical Parameters:**

Physicochemical parameters involves determination of ash values, extractable matter, moisture content, crude fibre content, volatile oil content and foaming index.

#### **Qualitative Phytochemical Analysis:**

The extracts obtained by successive extraction were subjected to qualitative tests for the identification of various secondary metabolites such as Carbohydrates, Proteins, Tannins and Phenolic compounds, Glycosides, Alkaloids, Steroids, Flavonoids.

#### **Results and Discussion:**

Morphological examination showed the stem of *N. oleander* has straw color, bitter in taste, surface is smooth and fracture is fibrous.

The microscopical features of transverse section are as follows:

**Epidermis** is single layered, parenchymatous, quadrangular covered by thin cuticle it exhibits uniseriate, single celled covering trichomes. 5 to 6 trichomes were observed with every 5 to 12 cells. The cells of the epidermis are rectangular in shape and are thin walled. They are closely fitted together without intercellular spaces.

Just below the epidermis 3-4 layers of **collenchymatous** cells constitute the outer zone. The cells are polygonal, compactly arranged with thick walled. Collenchyma layer provide mechanical strength to plant. Below the collenchymatous layer, 5-6 layers of thin walled, compactly arranged, parenchymatous, polygonal cells constitute the inner zone. In ground parenchyma cells brownish matter was also observed.

**Phloem bundles** are situated towards outside and Xylem is on inner side.

The central core is formed of **xylem**. It occupies at least two third portion of stem. Secondary xylem is present in between the phloem and central pith; it consists of xylem tracheids, xylem fibers and xylem parenchyma. The vessels are mostly arranged in linear rows and

posses pitted walls, usually with end or side opening. Tracheids posses annular reticulate and spiral thickening.

**Pith** consists of thin walled spherical or polygonal, parenchymatous cells.

**Table I: Physicochemical parameters**

S. No.	Parameters	Results (% w/w)
1.	Total ash	8.3
2.	Water soluble ash	3.7
3.	Acid insoluble ash	6.2
4.	Crude fiber content	0.795
5.	Moisture content	0.322
6.	Foaming index	Less than 100
7.	Volatile oil content	0.4%(v\w)

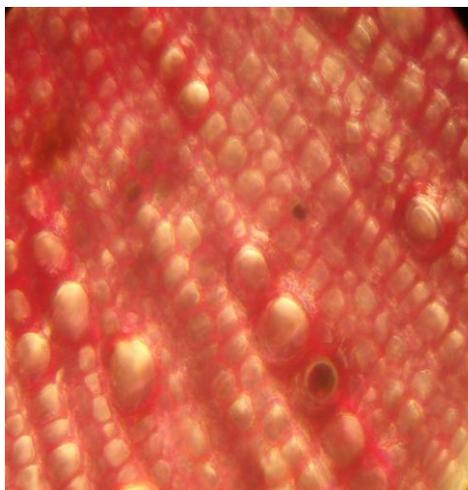
**Table II: Phytochemical Screening**

Sr.No.	Chemical constituents	Pet-ether Extract	Ethanolic extract	Aqueous Extract
1.	Proteins	-VE	-VE	-VE
2.	Alkaloids	-VE	-VE	-VE
3.	Carbohydrates	-VE	+VE	+VE
4.	Steroids	-VE	+VE	+VE
5.	Glycosides	-VE	+VE	+VE
6.	Anthraquinone glycosides	-VE	-VE	-VE
7.	Phenolic and tannins	+VE	+VE	+VE
8.	Flavanoids	+VE	+VE	+VE
9.	Starch	-VE	+VE	+VE
10.	Saponins	-VE	-VE	-VE

+ve- Present, -ve- Absent



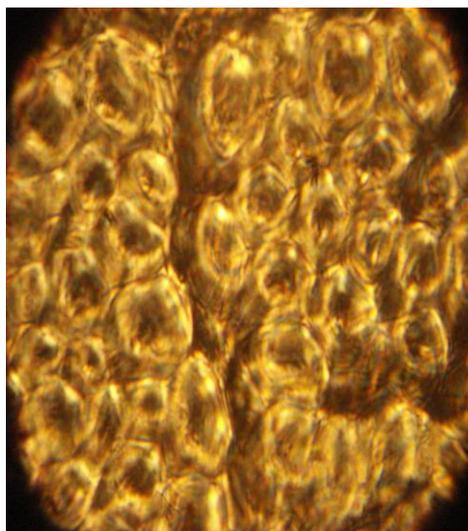
Whole Section at 10 X



Xylem at 100 X



Trichomes at 100 X



Phloem bundles at 100 X

#### References:

1. Khandelwal, K.R., **"Practical Pharmacognosy"**, Nirali Prakashan, Pune, 16<sup>th</sup> edition, 2006, 149-153.
2. Kokate, C. K., **"Practical pharmacognosy"**, 4<sup>th</sup> edition, 1996, Vallabh prakashan, New Delhi, 107.
3. Mukherjee, K. Pulok, **"Quality control of herbal drugs"**, 2<sup>nd</sup> Edition, 2003, Published by business horizons, New Delhi, 9, 15, 536, 559, 564.
4. Trease and Evans, **"Pharmacognosy"**, W.B.Saunders, International edition, 2005, 15, 456,481.
5. W.H.O. **"Quality control methods for medicinal plant material"**, Geneva, A.P.T.B.S. publisher and distributor, New Delhi, 2002, 22-37, 46.
6. Kokate, C. K.; Purohit, A. P.; Gokhale, S. B., **"Text book of Pharmacognosy"**, 21<sup>st</sup> edition, 2002, Nirali Prakashan, Pune, 1.

7. Kiritkar, K.R.; Basu, B.D., "**Indian medicinal plants**", International book distributors, Dehradun, 1999, 2, 1, 204-213.
8. Dr.Nadkarni, "**The Indian material medica**", Bombay popular prakashan, 2000, 1274.