

PHYSICAL EVALUATION AND QUALITATIVE CHEMICAL EXAMINATION OF
FLOWERS EXTRACT OF *NERIUM INDICUM*.

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ABSTRACT

Nerium indicum is evergreen plant belonging to the Apocynaceae Family. The plant species collected in state of Madhya Pradesh, India. The flowers of *Nerium indicum* were collected locally, shade dried and extracted with petroleum ether and methanol by using Soxhlet apparatus. The preliminary phytochemical screening was carried out for the presence of alkaloids, flavonoids, carbohydrate glycosides, tannins, terpenoids, phenol and absence of steroids and saponins for methanolic extracts of *Nerium indicum* (flowers). The physical evaluation was carried out for the determination of methanol-soluble extractive value, water-soluble extractive value, Hexane-soluble extractive value; ash value includes total ash, acid insoluble ash and water-soluble ash, and moisture content for flowers of *Nerium indicum*.

Keywords: *Nerium indicum*, petroleum ether, methanol, phytochemical screening, physical evaluation.

INTRODUCTION

Nerium indicum Mill. Commonly known as “Kaner”, belongs to the family Apocynaceae^[1]. It is a well known ornamental plant. It is basically leafy all year and the inflorescence blooms from June to October. The flowers have either male and female organs or hermaphrodite, soft sweet-scented, single or double cymes with attractive color that varies from white, pink or red^[2]. The leaves are simple, linear-lanceolate, whorled or in pairs, usually opposite^[3]. The fruit is cylindrical that grows in pairs with deep longitudinal and narrow parallel lines or ridges, about 15 to 20 centimeters long. The seeds usually are flat and winged or have a tuft of fine, shining white and grayish silky hairs^[4].

The plant originates from the Mediterranean region and is indigenous to Indo-Pakistan subcontinent. *Nerium indicum* best grows in river banks, river gravels, woodland garden, sunny edge and

hedge^[5]. *Nerium indicum* prefers medium (loamy or soft) and heavy (clay or natural mineral aggregate) soil and can grow in heavy clay soil. It prefers neutral and basic (alkaline) soils that cannot grow in shaded areas. The plant needs moist or dry soil and can tolerate drought and maritime exposure^[6]. *Nerium indicum* contains Glycoside, oleandrin; tannin; volatile oil, 0.25%. Leaves contain two principles: neriin and oleandrin, glucosides with properties similar to digitalin the main toxin of oleander is oleandrin. The seeds contain phytosterin and l-strophnathin^[7]. The bark contains toxic glycosides: rosaginin and nerlin, volatile oil, fixed oil^[8].

All parts of the plant are reputed therapeutic agents and have been used in folklore in a variety of diseases^[9]. The leaves and flowers are cardiotoxic, diaphoretic, diuretic (promotes excretion), emetic expectorant, sternutatory as well as treatment of malaria, and abortifacient.

Decoction of leaves has been applied externally in the treatment of scabies and to reduce swellings^[10]. The root is a powerful resolvent (power to disperse inflammatory). The oil prepared from the root bark is used in the treatment of leprosy and skin diseases of scaly nature.^[11] The whole plant is believed to have anti-cancer properties. The punded leaves and bark are used as an insecticide, rat poison and parasiticide^[12].

MATERIALS AND METHODS

Plant material: - The fresh leaves of *Nerium indicum* Mill were collected from Sagar, Madhya Pradesh, India. The sample was identified Prof. Madhuri Modak, plant taxonomist, Department of Botany, M.V.M. College, Bhopal, Madhya Pradesh, and the voucher specimen was deposited at Department of Botany, M.V.M. College, Bhopal.

Preparation of extract: - Flowers were shade dried and powdered mechanically. The powdered plant material (100 g) was repeatedly extracted in a 500 mL round bottomed flask with 300 mL solvents of increasing polarity starting with petroleum ether and methanol. The reflux time for each solvent was 40 cycles. The extracts were cooled at room temperature, filtered, and evaporated to dryness under reduced pressure in a rotary evaporator.

Physical evaluations:-The crude plant material was subjected to the physical evaluation. The various parameters was evaluated such as solvent extractive value, its includes water soluble, methanol soluble, hexane soluble and ether soluble extractive value, saponification value, moisture content, acid value and ash value, its consisting total ash, water soluble and

acid insoluble ash^[13,14]. Results are shown in Table 1.

Phytochemical screening: - The freshly prepared crude methanolic extract of *Nerium indicum* was qualitatively tested for the presence of major phytochemical constituents using the Standard methods^[14-19].

STATISTICAL ANALYSIS

The values are represented as mean \pm S.D. and results was analyzed using of One way ANOVA, Followed by Dunnett's test where $P < 0.01$ was considered statistically significant.

RESULTS & DISCUSSION

Physical evaluations of drugs are importance before any further testing can be carried out. This evaluation procedure provides the simplest and quickest means to establish the identity and purity and thereby ensure quality of a particular sample. The parameters used for this type of evaluation such as solvent extractive value, its includes water soluble, methanol soluble, hexane soluble and ether soluble extractive value, saponification value, moisture content, acid value and ash value, its consisting total ash, water soluble and acid insoluble ash. Results are shown in table 1. The preliminary phytochemical screening of the methanolic extract of *Nerium indicum* revealed that presence of alkaloids, glycosides, carbohydrates, tannins & phenolic compounds. Saponins, steroid and starch are absent in methanolic extract. (Table 2)

CONCLUSION

The use of plants and various natural products for curing ailments has been a practice for many centuries. Even today the plant products find extensive use in ethnomedicine, traditional system of

medicine as well as in the modern physician. Not only developing countries phyto-pharmaceuticals form the main base of national health care programs, but there is global resurgence of interest in medicinal plants. These plants have been recognized by the world health care and importance of scientific investigation of the indigenous herbal medicines has been emphasized.

Plants have been one of the important sources of medicine even since the dawn of human civilization. In spite of tremendous development in the field of allopathy during the 21st century, plants still remain one of the major sources of drugs in the modern as well as traditional system of medicine throughout the world. *Nerium indicum* is commonly known as 'Kaner' belonging to family Apocynaceae, It is an important medicinal plant. The present study concluded that the plant *Nerium indicum* contains a rich amount of phytoconstituents. Our preliminary phytochemical studies on the extracts of *Nerium indicum* (leaves & roots) showed presence of alkaloids, glycosides, flavonoids, tannins & phenolic compounds. There is a need to explore its maximum potential in the field of medicinal and pharmaceutical sciences for novel application.

REFERENCES

- Begum Sariba, Siddiqui Bina S, Sultana Binal, Zia Atiya & Suria Amin. Bio-active cerdenolids from the leaves of *Nerium oleander*. *Phytochemistry*. 1999; 50:435-438.
- Farwachi M.I.Al, Rhayamh MS and Badrani B A Al. Acute toxicity of *Nerium indicum* aqueous leaf extract in rabbits. *Iraqi Journal of Veterinary Sciences*. 2008; 22: 1-4.
- www.Ayurvedicmedicinalplants.com
- Rustogi RP, Melhrotra BN. *Compendium of Indian medicinal plants*. CDRI Luknow and PDI, New Delhi. 1960; I: 292-293.
- Khare C. P. *Encyclopedia of Indian medicinal plant*. 2007; I: 437-438.
- Chopra R. N., Nayar S. L. *Glossary Indian medicinal plants*. 1956; 175.
- Parrota J. A. *Healing plants of peninsular India*. 1995; 325-330.
- Hafeez Farrukh. *Studies in the chemical constituents of Nerium oleander (Kaner)*. H.E.J. Research institute of chemistry, university of Karachi. December, 1987.
- Simon I. A pharmacological study of follinerin a new glycosides from *oleander* leaves. *Z ges exptl Med*. 1942; 109: 279-314.
- Wasif I. A. Zorob O., Kateeri N. A. Al., & Awadhi A. M. Al. A fatal case of *oleandrin* poisoning". *Forensic science International*. 2008; 179: 31-36.
- Siddiqui S. *Natural product*. 1988; 57: 229.
- Beasley V. *Cardioglycoside toxicosis including Red squill and Scirriloside*. Department of veterinary biosciences, College of veterinary Medicine, university of Illinois at urbana-champaign, urbana, IL, USA. 9-Aug-1999.
- Indian Pharmacopeia Part-II Vol. II*, published by Indian pharmaceutical commission Ghaziabad. A-50, A52, 1996.
- Mukherjee Pulok. *Quality control of herbal drugs*. Published by business of horizons (III): 282-284.
- Kokate C. K., Purohit S. S., *Pharmacognosy*. Published by Nirali Prakashan New Delhi. 2004; 29: 107.
- Jayaraman J. *Laboratory manual in Biotechnology*. Published by Birla publication New Delhi. 1995; (I): 50-53.
- Kar Ashutosh. *Pharmacognosy and Pharmabiotechnology*. Published by new age publishers & distributors New Delhi. 2004; (II): 147.

18. Shivastava Lalit M. Essential of practical Biochemistry. Published by CBS publishers & distributors New Delhi. 2002; (I): 41-50.
19. The Ayurvedic pharmacopeia of India. Published by controller of publication Delhi. 1996; I (III): 234-236.

Table No. 1 physical evaluation of *Nerium indicum*.

S. No.	Parameters	Result (% w/w) Mean (n = 4) ± S.D.
1.	Total ash	5.8 ± 0.216
2.	Acid insoluble ash	0.75 ± 0.030
3.	Water soluble ash	2.73 ± 0.316
4.	Methanolic soluble extractive value	8.97 ± 0.170
5.	Water soluble extractive value	10.92 ± 0.221
6.	Hexane soluble extractive value	4.77 ± 0.275
7.	Ether soluble extractive value	3.9 ± 0.308
8.	Moisture content	4.07 ± 0.377
9.	Saponification value	31.63 ± 0.806

Table 2 Preliminary phytochemical test of methanolic flowers extract of *Nerium indicum*

S. No.	Test	Methanolic extract
1	Test for Alkaloids	+
2	Test for Glycosides	+
3	Test for Carbohydrates	+
4	Test for Saponins	-
6	Test for Flavonoids	+
7	Test for Tannins and Phenolic compounds	+
8	Test for Protein and Amino acid	-
9	Test for Steroid	-
10	Test for Gums	-
11	Test for Starch	-

+ = indicates the presence and — absence of compounds.