WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.074
Volume 7, Issue 06, 181-186. Review Article ISSN 2277–7105

TAXONOMICAL STUDIES OF *NERIUM OLEANDER* (LINN.) WILD (A LATEX YIELDING PLANT)

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Article Received on
01 Feb. 2018,
Revised on 22 Feb. 2018,
Accepted on 12 March 2018
DOI: 10.20959/wjpr20186-11414

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ABSTRACT

Nerium oleander L. is an important Chinese folk medicine. It is a vegetatively propagated ornamental plant, valued for its evergreen foliage and showy terminal flower clusters that are available in different colors. Oleander is cultivated recently as a flowering pot plant and therefore abundant propagation of plant material for commercial use is of great importance. This species also produces secondary metabolites, some of which are pharmacological interests. The important pharmacological activities are anti-inflammatory, antibacterial, anticancer, antinociceptive, and CNS depressant activity. This paper explains the evidence-based information regarding the phytochemistry and pharmacological activity of this plant.

KEYWORDS: *Nerium oleander*, Phytochemistry, Pharmacological activity, antinociceptive and secondary metabolites.

INTRODUCTION

Nerium oleander Linn. (Kaner) belongs to the family Apocynaceae. It is a large glabrous evergreen shrub that produces milky juice. It is native to Iran, the Mediterranean region, as well as India. The leaves are in pairs of three, shortly stalked, coriaceous, 10 -15 cm long, linear lanceolate with dark green colour. The flowers are salver-shaped pink or white without any fragrance. In the traditional medicine system, parts of thisplant are used for the treatment of various human ailments.1 The leaf is used as a cardiotonic, diuretic, anti-bacterial in cutaneous eruptions, and is also effective against snake-bites; the root is used for curing different types of cancers, ulcers and leprosy. The root-bark is used specifically against ring

worm and the aqueous extracts of the leaves, branches, roots and flowers are toxic to certain insects.[11] Several phytochemical have been identified in various parts of the plant and they include mainly cardiotonic glycosides, terpenoids and steroid1. In ancient India it is regarded as *Nighantu ratnakar* which relieves headache and overcomes the ill effect of Vata and Kapha Most of the polysaccharides purified fromoleander showed anti-tumor and immune-stimulating effects.[2] Ethanolic and petroleum ether extract shows antimicrobial activity.[8] Ethanolic extract also shows locomotar and anticonvulsant activity[9], Diuretic[7], immunomodulatory[4], antinociceptive[10], antilukemic activity.

Study Area

As we know that the area under district i.e. Churu district belongs to the State of Rajasthan, the State of Rajasthan is located in north-western India. The district of Churu lies in the north-east of Rajasthan State at an altitude of 286.207 metres above the mean sea level. From geographical spread point of view has extension from 27°24' to 29° north latitudes and 73°40' to 75°41' east longitudes. It is bounded by Hanumangarh in north, Bikaner in west, Nagaur in south and Sikar, Jhunjhunu districts and boundaries of Haryana State in the east. It covers six tehsils namely: Taranagar, Rajgarh, Churu, Sardarshahr, Ratangarh and Sujangarh.

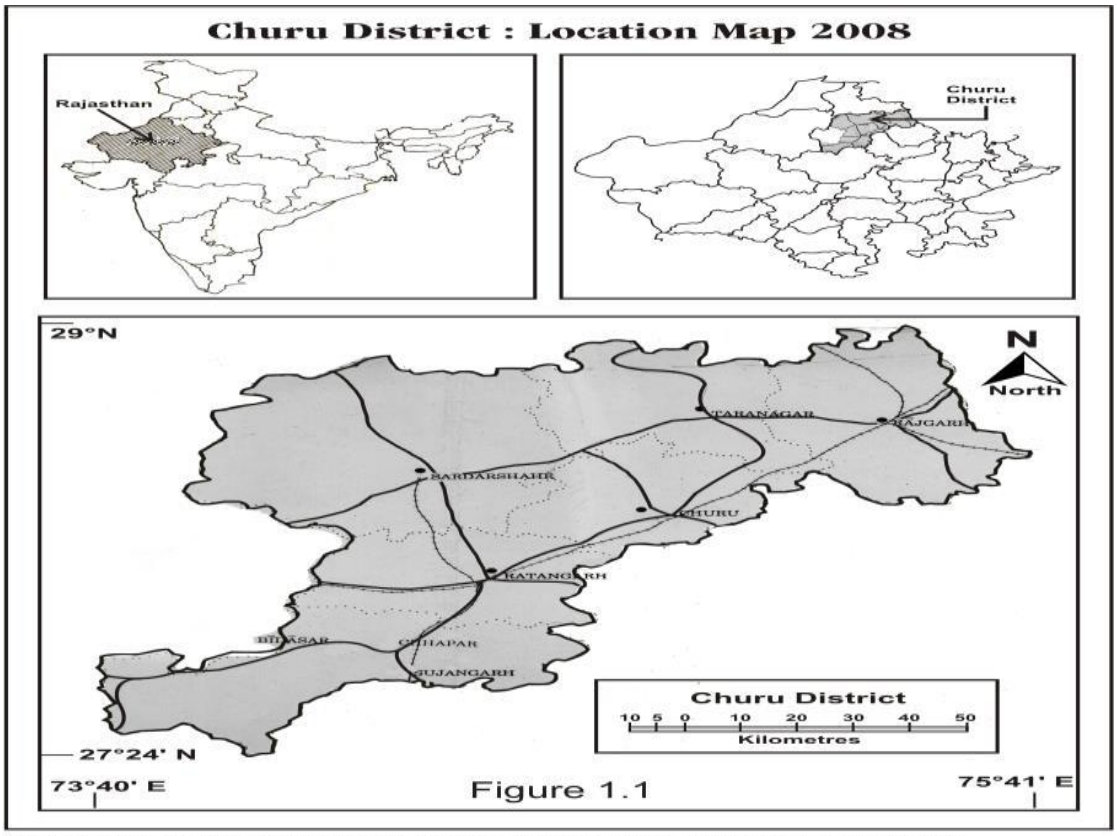

Figure 1.1

Source : Based on Survey of India Map with The Permission of the Surveyor General of India

The area under research work was studied by following botanists and time to time viz; first of all the Sekhawati region was touched from vegetational study point of view by Mulay and Ratnam (1950), Bikaner and pilani neighbourhood areas by joshi (1956 and 1958), vegetation of chirawa by Nair (1956), again Nair and Joshi for Pilani and neighbourhood areas (1957), vegetation of harsh nath in aravalli's hills was studied by Nair and Nathawat (1957), vegetation of Jhunjhunu, Manderella and neighbourhood by Nair (1961), vegetation of ajit sagar dam by Nair and Kanodia (1959); Nair, Kandodia and Thomas (1961) studied the vegetation of Khetri town and neghbourhood areas and vegetation of Lohargal and it's neighbourhood areas of Sikar district by Nair and Malhotra (1961). After the work of Nair and Malhotra (1961), i.e. four decades ago. the area was again left for any sort of further research work in the field of applied Botany. A significant, very authentic taxonomic work was contributed in the field of botany by Bhandari with the publcation of a book Flora of the Indian desert (1990).

MATERIAL AND METHODS

Plant specimens were collected from the all parts of Churu district. All the apparatus required to carry out botanical explorations *viz.*, study area map, plant cutter, field note, pencil, pen, thread, water can, blotting sheet, polythene bag, vasculum, camera, field arrangement and identification keys published literature for identification. The herbarium studies were supplemented by extensive observations in the field.

Detailed survey has made in gathering information regarding uses has been documented. Usually, the survey in each locality started with the interview of elderly and experienced members, locally known as Hakims. Besides, this the common people of the surveyed localities who themselves have used these plant for different aspect were interviewed to proove veracity of the curative features of plants. Medicinal uses and data about the treatment of various alignments based on the information gathered by using questionnaires are given subsequently. The plant specimens were identified by consulting different Floras and literatures, viz, and by comparing with the herbarium specimens available at the Herbarium, Department of Botany, S.P.C Govt. College, Ajmer and M.D.S. University, Ajmer.

The main objectives of the present study are to explore, identify, medicinal aspects and document the *Nerium oleander* of churu district, Rajasthan.

Taxonomical Study Of *Nerium oleander* (Linn.)

Botanical Classification

Kingdom	Plantae– Plants
Subkingdom	Tracheobionta – Vascular plants
Superdivision	Spermophyta – Seed plants
Division	Magnoliophyta – Flowering plants
Class	Magnoliopsida – Dicotyledons
Subclass	Asteridae
Order	Gentiales
Family	Apocynaceae L. – Dogbane family
Genus	Nerium L.– oleander
Species	*Nerium oleander* L.– oleander

Common names

French willow, laurier rose, oleander, pride of Ceylon, rose bay, rose laurel, south-sea rose, sweet-scented oleander, kaner, karvira Bitter laurel, Bunga jepun, alari, kanaviram.

- **Habit:** A small shrub with milky juice present.
- **Leaves:** Verticillate in 3 or 2 opposite, linear- lanceolate, narrow at both ends.
- **Inflorescence:** Terminal panicles of cymes.
- **Flowers:**
- Pink, red or white, single or double, fragrant, bracteate.
- Bracts small, calyx divided to the base, lobes 5, linear, acute.
- Corolla campanulate, petals 5, rounded, overlapping, corona of 5 scales present in the throat of the corolla, each scale divides into 2-7 free segments.
- Stamens 5, included filaments short, anthers connivent into a cone and adherent to the stigma, connective produced into a feathery appendage.
- Carpels 2, distinct, style long, stigma dumb-bell shaped.

- **Fruit:** A pair of follicles, seeds many, comose.
- **Flowering and Fruiting Time:** All the year round.

Economic importance

The plant is used as a rat poison and an insecticide.[5] The pounded leaves and bark are used as an insecticide. A green dye is obtained from the flowers. The plant is commonly used for

informal hedging in the Mediterranean. The leaves contain small amounts of latex that can be used to make rubber, though the amount is too small for commercial utilization. The plants have an extensive root system and are often used to stabilize soil in warmer areas.

Medicinal Importance

The leaves and the flowers are cardiotonic, diaphoretic, diuretic, anticancer, antibacterial[3], antifungal[13] and expectorant. A decoction of the leaves has been applied externally in the treatment of scabies and to reduce swellings. This is a very poisonous plant, containing a powerful cardiac toxin and should only be used with extreme caution. The root is powerfully resolvent, is used in the form of plasters and is applied to tumors because of its poisonous nature it is only used externally. It is beaten into a paste with water and applied to lesion and ulcers on the penis.[6] Bark is bitter and is used as cathartic, febrifuge and intermittent fever. Plants have an extensive root system and are often used to stabilize soil in warmer areas. Oil prepared from the root bark is used in the treatment of leprosy and skin diseases of a scaly nature. Seeds are Poisonous, abortifacient and alternative. They used as purgative in dropsy and rheumatism. The whole plant is said to have anticancer properties.[1]

Nerium oleander has also been used in the treatment of cancer[12] the flowers, leaves, leaf juice or latex, bark and roots have been used against corns, warts, cancerous ulcers, carcinoma, ulcerating or hard tumors.

CONCLUSION

Today, our understanding of the interactions between drugs and herbs & food is still in its infancy. People are using herbal medicines from centuries for safety, efficacy, cultural acceptability and lesser side effects. Plant and plant products have utilized with varying success to cure and prevent diseases throughout history. Major plunge by the pharmaceutical industry is focused towards design and development of new innovative/indigenous plant based drugs through investigation leads from traditional system of medicine. It is a best classical approach in the search of new molecules for management of various diseases. Though screening of literature is available on *Nerium oleander* depicted the fact that it is a popular therapy among the various racial groups, Ayurvedic and traditional practitioners for treatment of ailments. Researchers have been exploring the curative potential of this plant as it has more therapeutic properties which are still not known.

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