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Phytochemical Estimation (Qualitative Estimation) of *Nerium indicum*

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Abstract: India is land of traditional medication system and this is only a place where Ayurvedic system was born. From the ancient time human beings emphasized on phytomedicine for medicinal purpose. For healthy life mankind rely on plant resources for eradication of human diseases. Apocynaceae family member *Nerium indicum* most important medicinal plant of family commonly known as Kaner and oleander used for curing various diseases such as cancer, skin diseases, leprosy and cardiovascular diseases. Today time many pharmaceutical companies concentrated more on plant derived chemicals as having no side and ill effects and resistance towards synthetic drugs. *Nerium indicum* proved to be most important medicinal plant because of enormous therapeutic efficiency. The article mainly emphasized to analyse the phytochemical constituents in *Nerium* and their role in treatment of diseases and presence of secondary metabolites in *Nerium indicum*.

Keywords: Traditional, Medication, Therapeutic, metabolites, diseases.

I. INTRODUCTION

In our society from older time acceptance of traditional medication and it is root of our cultural heritage. Old medication system approved by our society with the changing life style and enriched by various cultural practices. India is land of many types of medication system such as Ayurveda, Unani etc.

From ancient time people of India emphasized more on herbal medication for treatment of various diseases.

According to the report (WHO 2001)¹ 70-80% of the population of the world rely on traditional medication system mainly emphasized on herbal medicines for treatment of mankind. Vedic period in India was the time period when Ayurveda originated in India, Ayurveda mainly associated with knowledge for long life.

Ayurvedic system mainly analysed therapeutic value of many plants having medicinal value their literature documented in Susruta Samhita and Charaka Samhita. This review article mainly emphasized on Phytochemical nature of *Nerium*.

In present time mankind gaining interest towards herbal medicines and trust more on medicinal plants because of their pharmacological action and easily approachable to common people and more effective for treatment. Phytochemicals and mainly plant derived chemicals which provide protective ability to plants and safeguard them from animals and insects, they are non nutritive substances and shows health protective nature. Phytochemicals such as flavonoids, alkaloids, tannins etc. having value because of their flavor, aroma and fragrances and used in various industries such as preservatives, cosmetics and pharmaceutical.

Secondary metabolites are main substances which act as a antioxidants, anticarcinogenic, antimutagenic and antimicrobial (Li-Weber, 2009)² (Nandakumar et al., 2008)³ (Hausteen, 2005).⁴

Efficiency and consumption of phytochemicals are increasing day by day because they are more effective than synthetic preparations. Phytochemicals are act as a secondary metabolites associated with many activities in cell and tissues such as they can inhibits membrane bound enzymes, destruction of cell membrane and affects DNA formation process.

II. EXTERNAL MORPHOLOGY OF *NERIUM INDICUM*

Nerium indicum is an evergreen shrub and also look like a small tree and member of Apocynaceae family commonly known as dogbane family. It is also commonly known as oleander because it shows superficial resemblance to plant named Olive olea. It grows upto height of 6 m tall, the leaves are present in whorls phyllotaxy having three leaves in one circle. Texture is thick, leathery, dark green in color.

Leaves are narrow lanceolate in shape, margin entire ,hairy about 5 to 20 cm long and about 1-3.5cm wide and with an entire margin (Chaudhary and Kamal, 2014)⁵. Leaves showing reticulate venation. The flowers are tubular in shape having five lobed in condition, *Nerium* found in pink, white and yellow in color .The fruit of *Nerium* is a pair of follicles that split from the one side to release its seeds. The seeds are oblong in shape also having plume of hairs at one end of the seed.



Fig 1: Image of *Nerium* plant

III. PHYTOCHEMICAL ESTIMATION OF *NERIUM INDICUM*

A. Collection and Processing of Plant Extract

The present study was carried out for Phytochemical estimation of *Nerium* leaves by using standard methods. The collection of the leaves of *Nerium* plant done during the flowering stage because that period is appropriate for collection. Collected leaves dried in oven then used for preparation of Methanol extract. Leafy extract is prepared by using methanol by using Soxhlet Apparatus. Then methanol extract stored in air tight bottles for Qualitative estimation.

S. No	Phytochemical Estimation (Qualitative Analysis)	Result
1.	Test for Alkaloids: 5ml plant extract +1.5 N HCl and was filtered and then the filtrate tested with following reagents a) Dragendroffs reagent –2-3 drops of dragendroffs reagent were added to each of the extracts b) Mayers reagent –1-2 drops of Mayer’s reagent were added to each of the extracts (Singh et. al. 2001) ⁶	Orange Yellow ppt White cream ppt
2.	Test for Proteins a) Millions Test- Take few ml of alcoholic extract + 5 ml distilled water was added and filtered. b) Xanthoproteic test – to 2ml of the extract few drops of nitric acid (HNO ₃) c) Biuret test –In the extract + 2-3 drops of 0.02% copper sulphate solution.	Formation of red ppt Rellow colour formed Red/Violet colour
3.	Test for Carbohydrates a) Molish test –2ml of a alcoholic extract few drops of α- naphthol was added. Then about 1 ml of H ₂ SO ₄ was added along the sides of the test tube. b) Fehlings solution test –2ml extract + dilute HCl + NaOH . and then add Fehlings solution	Reddish violet ring at the junction of two layers A Red ppt. formed
4.	Test for Steroids a) Salkowski test:- Test solution + conc. sulphuric acid is added to the test solution in chloroform, b) Libermann – Burchard’s test:- test solution +chloroform +few drops of acetic anhydride+ Conc. H ₂ SO ₄ .	Red color in the chloroform layer Appearance of brown ring at the junction of the two layers and the upper layer turns green.
5.	Test for Anthraquinone glycosides Bontrager’s test:- test material mix with dilute sulphuric acid and filtered. The filtrate is gently shaken with organic solvents.	Add ammonia solution. Pink color appears.
6.	Test for Flavonoids:- a) Shinoda test –In a Test solution add few fragments of magnesium ribbon, add HCl acid dropwise. b) Zn- HCl reduction test:- In the test solution add a mixture of Zinc dust and add Conc HCl c) Ferric chloride test:- to the test solution with Ferric chloride	Pink to red crimson Red color appears Blue green to black color appears.
7.	Test for Phenols a) With gelatin solution –Mix test solution with 1% gelatin solution Having sodium chloride b) With ferric chloride solution –treat the solution with few drops of freshly prepared neutral ferric chloride solution separately, c) Lead acetate test –to the test solution add few drops of 10% lead acetate,	White ppt. Bluish black colour formation Formation of yellow ppt

Table 1: Test for Phytochemical Estimation

S. No	Phytochemicals	Result
1	Alkaloids	+++
2	Proteins	++
3	Carbohydrates	+
4	Steroids	+
5	Anthraquinone Glycosides	+
6	Flavonoids	+++
7	Phenols	++

Table 2: Showing amount of different phytochemicals

IV. CONCLUSION

Qualitative estimation of plant extract is the process which helps in determination of presence of phytochemicals in plants. Phytochemicals are mainly a plant derived beneficially important chemicals which is mainly responsible for medicinal and therapeutic value of plants. *Nerium indicum* is one of most important medicinal plant of apocynaceae family and medicinal value of plant depends on presence of phytochemicals. In this research paper analysed the presence of phytochemicals in it. Phytochemical estimation of *Nerium indicum* showed that this plants having presence of many phytochemicals such as Alkaloids, Proteins, Carbohydrates, Steroids, Anthraquinone Glycosides, Flavonoids and phenols. Phytochemical tests which are performed showed that alkaloids and flavonoids are present in more amount and responsible for its medicinal value. Presence of phytochemicals in *Nerium* assumed that this medicinal plant proved to be better alternative for synthetic drugs and in future this plant will create path for alternative medication in place of synthetic drugs.

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