

**PHARMACOGNOSTIC AND PHARMACOLOGICAL ACTIVITY OF
EULOPHIA NUDA LIND- A REVIEW****VAISHALI NAGULWAR , MADHURI NANDGAVE****Government College of Pharmacy, Kathora Naka, Amravati 444604 Maharashtra, India.***ABSTRACT**

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 preventing headaches to counteracting poisons and bites. It is all the more difficult to confirm the identity of the plant. It shows their macroscopic, microscopic characters. The more amounts of Phytoconstituents is present like steroids, alkaloids, flavonoids, saponins etc. The gastro protective effect of ETHAB may be attributed to antioxidant activity, increased gastric wall mucus, pH level of gastric contents, SOD activity, and decrease in MDA level, ulcer area, flattening of gastric mucosa, and reduction of edema and leucocyte infiltration of the sub mucosal layer. Lower concentrations of plant extract produced either no or least response against advanced glycation end products (AGEs). The DNA from hydroxyl radical-induced damage. Again, AqME was proved to be best in providing protection to DNA against damage caused by free radicals

KEYWORDS: Endangered orchid, Pharmacognosy, Cytotoxic Activity, Gastroprotective activity, Antioxidant and DNA damage protecting activities, Anti- Glycation effect etc.

**MADHURI NANDGAVE**

Government College of Pharmacy, Kathora Naka, Amravati 444604 Maharashtra, India.

***Corresponding Author**

INTRODUCTION

Eulophia nuda is highly diverse occur in wide range of habitates, and belong to family orchideaceae. This plants produces two shoots, reproducibile and vegetative from their underground tubers.¹ *Eulophia Nuda* Lind commonly known as Amarkand, Malakand belongs to family Orchidaceae. *Eulophia* includes 210 species of orchids.² It was first described by *John Lindley* in 1821. Over exploited by local tribes, herbal health care, destruction of habitats by reclamation, loss of pollinators ,fragmentation. 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.

2. PLANT DISTRIBUTION

Eulophia nuda lind is distributed in Eastern Himalaya Tropical Himalayas from Nepal eastward to Assam Deccan from Konkan southwards, M.P, Nepal, Srilanka, China, Cambotia, Laos, Vietnam, Myanmar, Thailand, Malayasiya, Java, Borneo, etc its grows in open grassland and swamps, and hot to warm growing orchid with sub terranean.³

3. PLANT DESCRIPTION

The plant is terrestrial with almost round pseudo bulbs enveloped by a few, sheath carrying 3 to 4 lanceolate, plicate, acuminate, long petiolated leaf that wraps and enfold a long grooved stalk which has several leaves like bracts. The plants blooms in spring with tall thick fleshy few to several [2 to 20] flowered inflorescences. *Eulophia nuda* is a deciduous, perennial ground orchid.⁴ This is large sized terrestrial orchid grows in open grassland, swampy and low laying areas at an elevation of about 600-1000 m. Inflorescence is thick and fleshy with several lightly colored flowers. The flowering takes place in the month of june and july.⁵

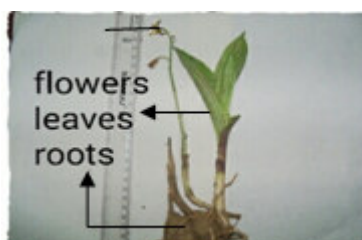


Figure 1
Plant of *Eulophia nuda*



Figure 2
Tuber of *Eulophia nuda*

4. MACROSCOPIC CHARACTERS

Macroscopic Characters *Eulophia nuda* is a terrestrial herb with tuberous stem. 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.⁶

5. MICROSCOPIC CHARACTERS

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 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.

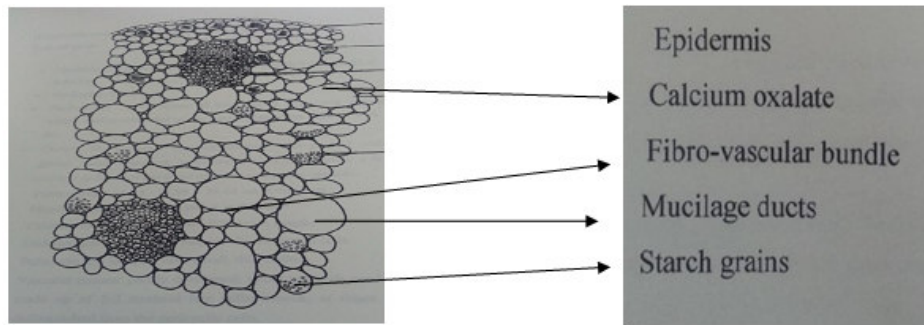


Figure 3
Diagrammatic Schetch of *Eulophia nuda* tuber

6. MEDICINAL IMPORTANCE OR USED OF *EULOPHIA NUDA*

1. The tubers of the plant are useful for the treatment of tumors.
2. Scrofulous affection of the glands of the neck and in disease of the blood.
3. Plant is also useful as an antihelmintic, and cases of bronchitis.

4. Its claimed to useful in tuberculosis.
5. It is used in treatment of snake bite.

7. PHYTOCONSTITUENT OF *EULOPHIA NUDA*

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 Table 1.

Table 1
PHYTOCONSTITUENT OF *EULOPHIA NUDA*

Name of the test	<i>Eulophia nuda</i>		
1. Test for alkaloids	C	A	W
a) Dragendorff	-	-	-
b) Mayer	-	-	-
c) Wagner	-	-	-
2. Test for steroids			
a) Salkowski Reaction	-	-	-
b) Libermann	-	-	-
3. Test for Tannins			
a) Ferric Chloride	-	+	+
b) Lead Acetate	-	+	+
c) Potassium Dichromate	-	+	+
d) Bromine Water	-	+	+
4. Test for Coumarine	-	-	-

9. PHARMACOLOGICAL ACTIVITY

1) CYTOTOXICITY ACTIVITY

Cytotoxic activity of 9, 10-dihydro-2, 5-dimethoxyphenanthrene-1,7-diol from *Eulophia nuda* against human cancer cell. Crude methanolic extract of *Eulophia nuda* tubers was fractionated by stepwise gradient of the solvents-chloroform-methanol to isolate the pure compound. Isolated pure compound was assessed for its cytotoxic potential against human breast cancer cell lines. The isolated active molecule was identified as phenanthrene derivative 9, 10-dihydro-2, 5-dimethoxyphenanthrene-1, 7-diol. This compound showed good antiproliferative activity against human breast cancer cell lines MCF-7 (91%) and MDA-MB-231 (85%) at 1000 microg/ml concentration. *Eulophia nuda* tubers showed good growth suppressive effect against human cancer cell lines MCF-7 and MDA-MB-231 making it a potential biomolecule against human cancer cells.⁷

2) GASTROPROTECTIVE ACTIVITY

Gastroprotective Activity of Ethyl-4-[(3,5-di-tert-butyl-2-hydroxybenzylidene) Amino]benzoate against Ethanol-

Induced Gastric Mucosal Ulcer in rats. The gastroprotective effect of ETHAB [(Ethyl-Di-Tert-butyl-hydroxybenzylidene) amino]benzoate is attributed to antioxidant activity, increased gastric wall mucus, pH level of gastric contents, SOD activity (Superoxide Dismutase), decrease in MDA level (Malondialdehyde), ulcer area, flattening of gastric mucosa, reduction of edema and leucocyte infiltration of the submucosal layer.⁸

3) ANTI-GLYCATION EFFECT

The glycation inhibitory activity in-vitro condition. Various combinations of glucose, protein and Whitton root extracts were made under in vitro conditions and their activity was monitored with Trichloro acetic acid treatment method at 350 nm. Glycated products/ AGEs were more with high glucose and high protein concentration and these were decreased by highest concentration of Whitton root extract i.e. 30 mg/mL or 300 μ L. Lower concentrations of plant extract produced either no or least response against advanced glycation end products (AGEs).⁹

4) ANTIOXIDANT AND DNA DAMAGE PROTECTING ACTIVITIES

Antioxidant activities of extracts were determined by total antioxidant activity; FRAP radical scavenging assays besides lipid peroxidation inhibition. Extracts were evaluated for protection of Fenton's reagent induced DNA damage. The plant as a rich source of phenols, flavonoids, vitamin C and carotenoids. The extracts protected the DNA from hydroxyl-radical-induced damage. Again, AqME was proved to be best in providing protection to DNA against damage caused by free radicals.¹⁰

CONCLUSION

In the present investigation, the detailed pharmacognostic account of *Eulophia nuda* (tubers) was given which includes macroscopic and microscopic characters, which will be helpful for the correct identification of the drug. Phytochemical screening identifies tannins, mucilage, proteins, sugars and amino acids. *Eulophia nuda* tubers showed good growth suppressive effect against human cancer cell lines MCF-7 and MDA-MB-231 making it a potential biomolecule against human cancer cells. Cytotoxic evaluation of the Schiff base ETHAB revealed that the compound exhibits the ability to proliferate the viability of WRL68, even at higher concentrations.. Again, AqME was proved to be best in providing protection to DNA against damage caused by free radicals.

REFERENCES

1. Aarti Nilesh Narkhede, Deepak Mahadeo Kasote, Aniket Arun Kuvalekar, Abhay Madhukar Harsulkar, Suresh Dyandeo Jagtap J Intercult Ethnopharmacol. 2016 Mar-Apr; 5(2): 198–204. Published online 2016 March 30. doi: 10.5455/jice.20160324054420
2. Jagtap SD, Deokule SS, Bhosle SV. Some unique ethnomedicinal uses of plants used by the Korku tribe of Amravati district of Maharashtra, India. J Ethnopharmacol. 2006;107:463–9. [PubMed]
3. Shroti RK, Upadhyay R. In Vitro Micro Propagation and Tuberization of *Eulophia Nuda* Lind an Endangered Terrestrial Orchid. European Journal of Pharmaceutical and Medical Research 2015; 2(4): 238-249.
4. J.F. Maxwell, S. Elliott, P. Palee, V. Anusarnsunthorn The vegetation of DOI Khunthan national park, Lamphun-lampang provenances, Thailand. Nat. Hist. Bull. Siam soc. 1995;43;185-205.
5. P. Nongdam. Ethano Medicinal Uses of Some Orchids of Nagaland, north-east India. Reaserch Journal of medicinal plants. 2014; 8(3); 126-139.
6. Chachad DP, Jagdale SP. Pharmacognostical Standardisation of *Eulophia Nuda* Lind. World Journal of Pharmaceutical Research 2015 ; (4).
7. www.sciencedirect.com/science/article/pii/S0378874109007867
8. Mohammed FH, Raied MS, Daleya AB, Nahla SW, Abdulwali A, Hassandarvish, Pouya, Maryam H, Norazit A. Gastroprotective Activity of Ethyl-4-[(3,5-di-tert-butyl-2-hydroxybenzylidene) Amino]benzoate against Ethanol-Induced Gastric Mucosal Ulcer in Rats. Plos.org 2014.
9. Yadav DP, Chhipa RC, Balvinder S. Anti-Glycation Effect of Whitton Root (*Eulophia Nuda*) *In-Vitro* Condition. International Journal of Pharmaceutical Science and Research 2015; 3(9): 3502-3506.
10. Kumar V, Lemos M, Sharma M, Shriram V. Antioxidant and DNA damage protecting activities of *Eulophia nuda* Lind. Journal homepage: