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AN OVERREVIEW ON WATER- HYACINTHEICHHORNIA CRASSIPES

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ABSTRACT

Eichhornia crassipes is also commonly know as water hyacinth .It is a perennial, free floating aquatic plant that has clusters of leaves either spongy stalks arising from a base of bark feathery roots. These drugs are used as anti -inflammatory, anti-fungal, anti bacterial and anti cancer activity but these are effect the water ecosystem etcIt is also ornamental aquatic plant. It is used as very effectively in phytorediation, particularly for the rhizo filtration of effluents contaminated by heavy metals. The elements like co,cu,cr,Ni,Zn,pd Cd and AS etc. IT also have some region of traces of photo degradation effect and phyto degradation effect etc. These are mostly abundant and availability of this weed. These are can grow in temperature like tropical, subtropical, temperature climate of the world. Due this reason the drugs many disturb the lake ecosystem (or) pond ecosystem. It was the major disadvantage of this plant.

KEYWORDS: E. Crassipes, Water Hyancinth, Phytorediation.

INTRODUCTION

According to Indian pharmacopoeia and international pharmacopoeia theses are drugs according to different types like morphological, chemotaxnomical, serotaxonomical and pharmacological[1] etc... so this can be written as per pharamcognosy like e as characteristics.

- Synonym

- Biological source
- Geographical source
- History
- Macroscopy
- Microscopy
- Important parts of the plant
- Chemical constituents
- standards
- Pharmacological uses
- General uses

SYNONYM: Eichhornia spesisosa, water hyacinth,water orchid, aquatic plant, hydrophyte, hydrophytic plant.

Biological source: It is a species are perennial aquatic plants with prostrate and densely branched stems of Eichhornia crassipes and other species of-another 4 types like Eichhornia azurea. Eichhornia diversifolia, Eichhornia hetersperma Eichhornia natans belongs to family pontederiaceae.[2]

Scientific classification

Kingdom	**plantae**
Phylum	magnoliophyta
Class	liliopsida
Order	lilales
Family	pontederiaceaeae
Genus	Eichhorina
Species	crassipes
Sub species	crasssipes

GEOGRAPHICAL SOURECE

It is native to amazon river basin of south America grows and rapidly spread thought out the fresh water. It grows in Africa, Australia, and North America of California, Florida, Texas and Virginia and other countries include India, beni, Botswana and burkina.

In India it grows mainly Andhra Pradesh, kerala, Madhya pradesh, Punjab, Tamil nadu uttarpradesh, west Bengal, himachal pradesh, manipur and other sates include karnatka maharastra, and odisha.

History

These are originally described in 1824. In 1883, H. Solms laubach established the combination Eichhornia crassipes. In India during the British colonial rule as an ornamental aquatic plant from south America. In India it nicknamed as "Terror f Bengal" Because it grows at alarming rate and spreads on the surface of the water body. Because this cut out of light and it also cause an increase in the oxygen demand which hampers the aquatic life. In 1956, the water hyacinth was banned for sale(or) shipment in the united states. This law repealed in 2020. It grows about 3ft height, the leaves are grows about 10 to 20 cm across the water surface of the stem.[4]

REPRODUCCTION

These are grows fastest plants, these are reproduced through stolons, which are can be grown from daughter plants. The one plant can produce thousands of seeds of each year and the seeds are viable form 28 years. The seeds remain double in size from 1 to 2 weeks. the plants are rapidly grows but thousands plants are grown every plant even height. These plants can grow 100 to 1000 folds in matter about 21 -to 25 days. The flowers are pollinated through long _tubes and these plants are reproduce both sexually and asexually (or) colonially. These plants are rapidly spread through out the lake (or) pond with in 15 to 30 days.

MARCOSCOPY

- colour:Darkpurple(flower)

Green colour(leaves)

blackish(or)dark brownish in colour)

- Odour:Reminiscentlikr cucumbers
- Taste:bitter (or)acrid, charterstic
- Shape: rossetters (leaves)
- Size It grows about 6 to 8 inches tall[5] (in leaves & flowers)

Figure-1: Plant of Eichhornia crassipes.

MICROSCOPY

Collection of the plants

These plants are collected from the pond of the kollaru lake near upplapadu. These plants are also grows in andhrapradesh nearguntur district archyanagarjuna university.[6] These are about 15 km from city of guntur about 35-40 km away from the Vijayawada.

Anatomical studies on Eichhornia

The plants that include studies are rhizomes, roots, leaves and styles and stigmas, petioles are harvested[7] after 3-4 days. And these are cut into 50_200 pieces and stored in (FAA) formalin_acetic _acid chemical preservation for 2-5 years .The stomata index was calculated through.

Stomatal index=S/S+E*100

Where as s=number of stomata

E=number of epidermal cells

The stomata cells of this plant present on upper epidermis of the leaves except submerged plants. The roots cells are arranged single layered compactly packed rectangular cells with out cuticle. The hypodermics cell are arranged 1-2 layers thick walled, The outer cortex is mainly composed of parenchymatous cells of the hypodermics. The air spaces are present between 2 parenchymatous cells of the cortex. The outer cortex is 6-10 layered thick parenchymatous cells & these doesn't contain sclerenchymatous cells. The stele was surrounded by endodermisi, The cells are covered by pericycleic cells. The stele was

alternating xylem and phollemcells, Each vascular bundles consist of meta xylem vessel, and absence of casparian cells.

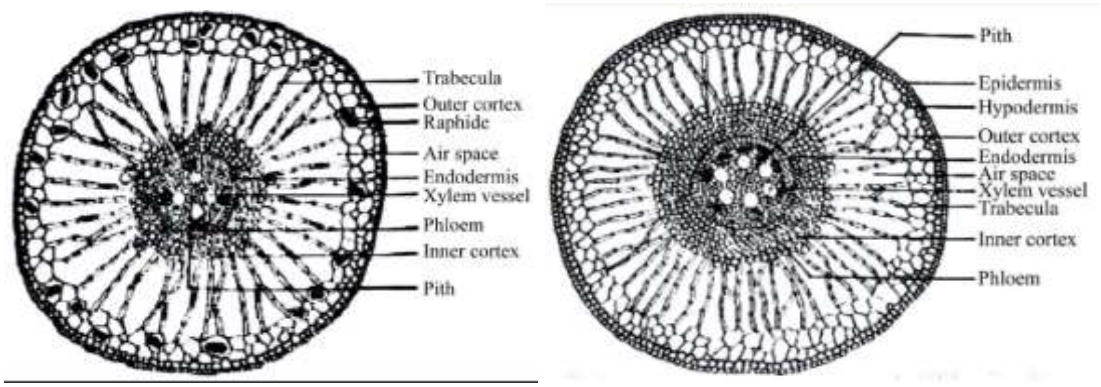

Figure-2: Anatomy of Eichhornia crassipes.

The leaves cells are having thin cuticle of their epidermal cells, of single layered rectangular cells. There are no separation of the mesophyll layer in the leave lammanla. Those are palisade and spongy mesophyll. The palisade layer was present upper & lower belowepidermis. They are 1-2 layered (or)5-7 layered densely staining materiel of supportive cells. The spongy layer consist of more air spaces with chloroplast. The vascular bundles are 2 different types sclereids cells was observed in air spaces. Each there are xylem collator phollem cells. Sclereids are present in palisade cells and air spaces. The leaves cells are mainly consist of parenchymatous cells & air spaces.[8]

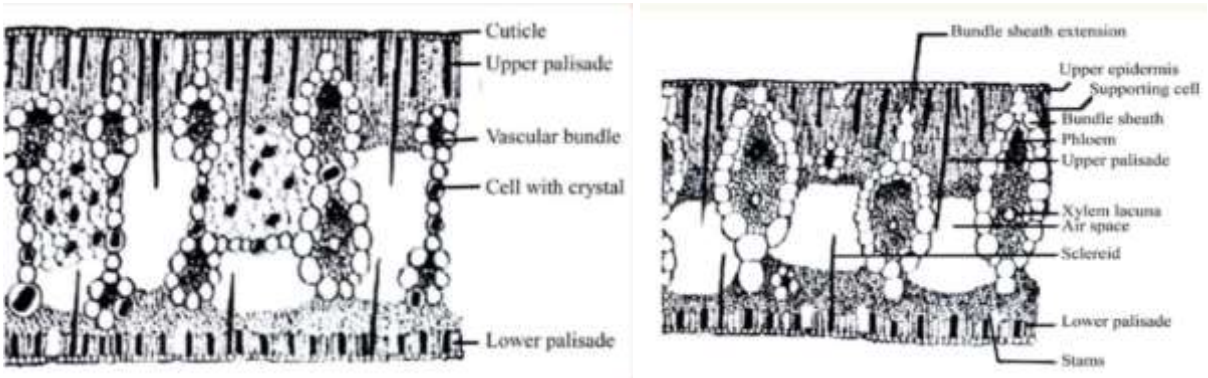

Figure-3: Macroscopic structure of Eichhornia crassipes.

Imporant parts of the plant: The important parts of the plant are root, stem, leaves.

Chemical Constituents

- There are consist of primary & secondary metabolites.

- The primary metabolite include heteropolysaccharides, like l-galactose. L-arabinose.D-xylose hemicellulose, cellulose, glycolipides and triglycerides.
- The secondary metabolites include polyphenols(9.73%), flavonoid(10.49%), phenolic compounds, tannin's and soponins, fatty acids(10.1%). alkaloids(7.4%). sterols(6.17%) and other compounds (19.13%).
- They are many phospholipids include phosphatidylethnolamine, phosphatidylcholine, phosphatidlyglycerol.
- The amino acids include many amino acids those are include leucine, asparagine, & giutamine.
- The are peptides 2 main types, those are leucine-phenanline, phenanline_phenanline-giutamine.
- The roots are mainly consist of metals & non-metals like carbon, oxygen, sodium, aluminum, zirconium, chloride, potassium, calcium, silicon, tritium, and ferrous ions.[7-9]

PHARAMCOLOGICAL USES

Neuropharmacolidical Actions: The plant will treat analgesic, anti_epileptic, sedative, CNS depressant, limited traces of Anti_anxiety, Anti_psychotic, Anti_depressant & improving memory properties, neruoleptic activity.[10-19]

Composition(or) Treatment: ethanolice. crassipes+Ethanolic nelumbo nucifera leaves.

Anti_inflammatory activity: The activity mainly present in stems & leaves of the Eichhornia. These are used for treating for anti-inflammatory actions. and also helps in healing of wounds. Thein_vivo culture will used to treat paw oedema.[20-29]

Composition: lemon juice + juice of stems(or) leaves of Eichhornia.

Hepatoprotcetivity: The Eichhornia is used as a traditional system of medicine were as it was used as herbal remedy for many human disease. The roots & flowers are used in the treatment of hepatic disorders and abdominal swelling.

Composition: methanol extract of drug was used as hepatic protective.

Antitumor/Cytotoxic Actions: The hollow plant of Eichhornia crassipes was used as anti cancer activity mainly alkaloids & terpenoids helps in the treatment of anticancer treatment.

Composition: 50% of methanolic extract +raw drug.
It is also revealed potency against MCF-7, heal cells, EACC, HepG2cells.

Anti-Oxidant Activites: The chemical constituents include phenolic acids, sterols, terpenoids and other compounds are having high anti-oxidant.[30-41]

Composition: they are 2 types of composition
1. ethanol extract from the leaves+robust Fe^{+2} cheating activity.
2. ethanol extract of the flowers.

These also having anti-microbialactivity. That may be roots, rhizomes, leaves, stems and may be whole plant will used in the many disease anti-fungal, anti_bacterial, anti_pathogenic activity.

Composition: phenol extraction+drug, colour from +drug, methonicacid+drugs etc…

Alleolopathic Efect: These are inhibition of sterilized culture for chlamydomonas bacteria
At low concentration the drugs that will not inhibit action of the bacteria.[42-51]

Insecticidal Avtivity: The plant also having the action of the insecticidal action.

Immunostimulant Effect: The plant was used as the treatment of immune stimulant for the protection of viral, bacterial, and fungal disease. The plant waste product was used as animal feed formulation.[52-61]

STANDARD: Ash value not more than 21.20(stems), 50.11(roots), 13.10(leaves).[10]

DISADVANTAGES: It has mainly have only one disadvantage it blocks and smothers beds of native submersed vegetation.[11] It has disturb the pond (or) lake ecosystem.

Uses

- It has anti -cancer, antioxidant, anti-inflammatory, anti-microbial, neurprotective & hepatoprotective activities.[62-77]
- Bio-fertilisers.
- Animal feed manner.
- Biofuel.
- Fish food. Etc.

CONCLUSION

The plant has more and more pharmacological action and the plant was each to reproduce. The plant will grow within 2-3 days. The small plant will used in mainly disease like anti-oxidant, anti-inflammatory, anti-microbial, anti-cancer etc. As pharmacological agents. but these also used in bio-fuel, fertilization, bio-fertilizers etc. These also only one disadvantages like blocking of the doses etc.

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