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Pharmacological Review of Celosia Argentea

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Abstract: *Medicinal plants are used in all traditional system of medicine from thousands of year to treat and to prevent disease. The active metabolites possess the efficiency to treat the disorders. Based on therapeutic effect we select the plant Celosia argentea. Plant Celosia argentea belong to family-Amaranthaceae is used in various medicinal products. Various part extract are used for formulation of medicine. We mentioned the various therapeutic effects shown by drug Celosia argentea. It contain active chemical constituent are mainly phenols, flavonoids, steroids, tannins, carbohydrates, lipids, amino acids, peptides, phenolic acids, cardiac glycosides, , phytosterols, , amino acids, carbohydrates*

Keywords: Celosia argentea, Herbal medicine, chemical constituents, Antiurolithiatic activity

I. INTRODUCTION

The whole world is turned towards the herbal medicine. About 80% of populations are using the herbal products. The Ayurveda is Indian Medicinal System practiced from thousands of years. In Ayurveda various parts of plant are used for the treatment of diseases. The adverse effects of the herbal drugs are also less. Now a days the wide range of disease can treated by traditional system like cancer therapy, diabetic therapy, etc [1]. Herbal drug provide protective action to decrease tissue injury.

Celosia argentea plant belong to family Amaranthaceae, is used in treatment of diseases. It is commonly known as 'kurdu'. About 70 species of Celosia genus are discovered and the Celosia argentea is regularly used as leafy vegetable [2]. The extract o whole plant or the particular part extract are used. The Celosia argentea is mainly used for treatment of kidney stone (effectively for calcium stone) [3]. The Celosia is also effective in cough, dysentery, diarrhea, gonorrhea, leprosy, toothache, wounds, and syphilis.

Taxonomy: [4] [5] [6]

Kingdom	Plantae
Division	Magnoliophyta
Super division	Spermatophyte
Clade	Angiosperms
Order	Caryophyllates
Subfamily	Amaranthoidae and Gomphrenoideae
Genus	Celosia
Species	Argentea
Synonyms	Kurdu, kombda, comb.

Table - 01 Taxonomical classification of Celosia.

Geographic distribution:

C. argentea plant is worldwide cultivated and used for food as well as a drug. This plant generally found in India, China, Nigeria, Togo, Benin, East Africa, Mexico and Central Africa. C. argentea grows in form of weed in rainy season in tropical regions of America, West Indies, Yeman, Indonesia, and Sri Lanka [7] [8] [9].

Morphology: [7] [10] [11] [12] [13]

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Type	Herb	(height 0.4 to 2 m
Flower	shape	spike(about-2.5-20 X 1.5-2.2 cm & 8 to 12 mm long)
	Colour	pink- white
	Shape	Cylindrical
Fruits	Type	Fibrous
	Shape	Capsule
	Seed contain	12
Leaf	Type	Simple(4 to 14 cm long)
	Arrangement	Alternate & spiral
	Margin	present at entire side
	Shape	Elliptic
Root	Colour	Milky

Table 02.

Image No.1 -Photographs of Celosia argentea

Microscopic character: [14]

T.S. of leaf:

The T.S. of leaf consists of upper and lower rectangular shaped epidermis in single layered. The trichomes are also observed. The single layer of palisade parenchyma is present below the upper epidermis. In T.S. vascular bundles (about4-5) and f collenchymatous tissues (about 3-6 rows) are observed.

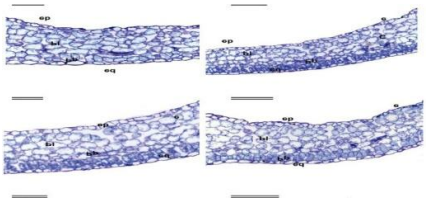

Image No 02- T.S. of leaves

T.S. of root:

It is circular in outline. The T.S. consists of peripheral cork. The 25 xylem bundles are observed with the protoxylem groups. The starch grains are also observed in T.S. of Celosia. There are about 3-4 rows of cork cells & 10-12 rows of parenchymatous cell.

T.S. of stem:

It is circular in outline. In T.S. the epidermis is in sigle layer. There is cortex and collenchymatous tissue (i.e. cellulosic parenchymatous cell) is present. Vascular bundles, pericyclic fibers, non-lignified phloem and lignified xylem and pith are observed.

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Chemical constituents:

The phytochemical screening of the leaves, flowers, roots, steams, are contains carbohydrates, phenols, flavonoides, saponins, suger, protein, fat. The total ash content of roots, steams, and leaves is about 12.6%, 16.2% and 16%, and the insoluble ash content is about the 5.6%, 6.3%, and 5.6% respectively [10].

1) Carbohydrates: They are made up of ketone and polyhydroxylated aldehydes and obtained by the process of photosynthesis. The energy which is obtained stored in the seed in form of β-sitosterol [15].

2) Phenols: In plant the phenols in form of phenolic acid are prepared by the carbohydrates. They also found in form of the Benzoic acid derivatives. The coumarine derivatives also present in the Celosia leaf. Phenol glycosides are also present. They have large therapeutic activity. It also contains Gallic acid, Rosmarinic acid, Quercetin [16].

3) Flavonoids: They plays important role in plant physiology. They act as a pigment & light screens. The isolation of flavones done from aerial part of plant. The major flavonoids obtained by Celosia argentea is 5-Methoxy-6, 7-methylenedioxy-2'-hydroxyisoflavone.They are important for the reproduction system and the collaboration with insects. They give antioxidant activity. In plant they are important for defense mechanism and signaling compounds, symbiosis and pathogenesis [17].

4) Diterpines: The major diterpine is obtained from celosia argentea is the Gibberellic acid. It is bitter in taste. It has pharmacologiacal as well as toxicological activity. It is plant hormone which is responsible for the seed dormancy. Gibberellic acid is act as hormone and same effect is observed to promote seedling by oligo galacturonic acids [18].

5) Steroids: The steroids may be in form of conjugate, polar, non-polar as well as in form of chargesd molecule. The steroids obtain from Celosia argentea as follows-

1) Celosin A, B, C, D- which are obtained from seeds of the celosia.

2) Cristatain [19].

6) Other constituent: It also contain Eugenol, dopamine, methylate, celogentin A, B, C, D, H, J, K. moroidin, cristatain ,dopamine, lyciumin A [20][21][22].

7) Minerals: The minerals are playing important role in managing growth, health and development of plant. The major minerals are found in each plant is Cu, Fe, Mn, Zn they are function with the immuno system [20]. The content of mineral in Celosia argentea is as follow-

Cu-30mg/g

Fe-197mg/g

Mn-56mg/g

Zn-160mg/g

Other minerals are as - Al, Fe, Ni, Mn, Cu, K, Ti etc. [20].

It also contains other compounds like Lutein and β-carotene [21].

Pharmacological Activity:

1.wound treatment: Wound healing property is shown by the alcohol extract of the Celosia argentea. It increases the granulation of tissue by increasing content of collagen and hexsoamine to treat the wound [23]. The plant Celosia argentea is known as the wound healing medicinal plant along with the Carica papaya, Cinnamomum zeylanicum, Azadirachta indica, Aloevera, Curcuma longa, and others [24].

2. Anti-diabetic activity: Alcoholic extract of root of Celosia argentea Linn used to treat diabetes. It decreases the glucose level in blood & mainly used for streptozotocin-induced diabetic. It reduces increased level of triglycerides, urea, and cholesterol and also decreases the protein and liver glycogen level in body. In the streptozotocin-induced diabetic animal it inhibits the body weight reduction [25] [26] [27] [28].

3. Antidiarrhoeal activity: Alcoholic extract of Celosia argentea leaves have efficiency to treat the diarrhoea induced by charcoal meal test and PGE2 model of rats [29]. It has efficiency to treat the castor oil & charcoal meal induced diarrhoea. The study is done by model of castor oil induced diarrhea and charcoal meal induced diarrhea [30].

4. Antifungal activity: Celosia used to treat fungal infection caused by Trichophyton mentagrophytes, Candida tropicalis. It is studies by using the n-hexane extract of Celosia seed by scientist Diéméléou et al. Hence it is used in cosmetic &various preparations [31].

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5. Antibacterial activity: The alcoholic extract of root of Celosia argentea Linn shows the antibacterial activity against the microorganism that are E. coli, Salmonella typhi, Agrobacterium tumefaciens, Mycobacterium tuberculosis and S. aureus [32][33]. The lysis action against pathogens is shown by root extract which is compared with the antibiotic cream (Silver Sulphadiazine) [34]. The leaf extract shows the antibacterial activity on pathogens like Shigella sp., Staphylococcus sp., Vibrio sp., Streptococcus sp., Salmonella sp. etc [35] [36] [37] [38].

6. Suppression of IgE antibody: The IgE antibody production will mainly suppressed by the extract of Celosia argentea and Cucurbit amoschata. It could not affect the response of IgG antibody. In vitro model it shows mitogenic effect [39].

7. Hepatoprotective activity: The experiment of hepatoprotective activity shown by the extract of Celosia argentea plant is performed by Haribabu et al. [40]. The hepatoprotective effect was studied on the carbon tetrachloride-induced model [41]. The chemical constituent celosin I and celosin II shows Hepatoprotective activity. The plant seed extract contain Celosian, an acidic polysaccharide, was studied by Hase et al, and they inhibit the increase in the serum enzyme (GOT, GPT, bilirubin) [42] [43] [44].

8. Antiurolithiatic activity: The alcoholic extract of seed of Celosia used to treat kidney stone. It give potent effect, so many preparations are made in chinease medicine by Celosia argentea. The evaluation of antiurolithiatic activity of seed extract of Celosia argentea is done by Joshi et al [45]. The dose for the antiurolithiatic activity is about 250 mg per Kg; p.o. (low dose) and 500 mg per Kg; p.o. (heigh dose) [46].

9. Anti-cancer activity: The triterpenoidsaponins were isolated from the seeds of C. argentea and named as celosin, celosin F, G, and cristatain. These active constituents are screened for their anti-cancer activity by in vitro methods [47] [48].

10. Treatment of eye disease: From many years the C. argentea herb is used to treat eye diseases mainly in China and Japan. It was used to treat opticatrophy, epipephysitis, and iridocyclitis. It works by increasing the anti-oxidant ability of lens. It decreases the oxidative damage of lens [49] [50]. In glaucoma and liver disease the Celosia preparations are prohibited [51] [52] [53].

11. Anti-inflammatory activity: In vivo study of alcoholic extract of C. argentea was studied by using animal model (carrageenan induced rat paw edema) [54]. The responsible compounds for activity are celosin E, F, G, and cristatain. The activities are studied by using the in vitro methods [55] [56].

12. Immuno stimulating activity: The celosin is a chemical component obtained from seed o plant C. argentea. It is an acidic polysaccharide. It increases the production of TNF-alpha (tumor necrosis factor-alpha), nitric oxide (NO), interleukin-1, and β- interferon [57].

Adverse drug reaction (ADR): The Kurdu (Celosia) extract or the preparation prohibited in the glaucoma, kidney& hepatic dysfunction [58].

Extraction process:

The flowers of ceocia are collected and cleaned. They are dried by using fluidized bed dryerat 50˚C. After drying the flower are grinded to powder by grinder. The powder of Celosia is taken about 1gm in a flask and 50% ethanol is added in the proportion of 1:20g/ml. The extraction I done by the microwave assisted extraction at 240W. As the temperature and pressure increases the cell wall ruptured and it leads to release the phytochemical. The obtained sample is stored for 24hr at room temperature and then centrifuged at 4000rpm for 10 min. The upper layer of the sample is collected and filtered by using Whatman filter paper2. The sample is stored in refrigerator [59].

Medicinal uses:

1. In Maharashtra the Celosia is used in treatment of white discharge. Powder of whole plant give to patient with milk at night for 7 days [60].
2. The Celosia is also used in treatment on cough and jaundice [61].
3. The flower of Celosia is used in treatment of snakebite [62].
4. In Nigeria the plant of Celosia is used to treat inflammation [63].
5. The plant is used for infected sores and skin eruptions.
6. In the deficiency of calcium (Ca), iron (Fe) and magnesium (Mg) the Celosia plant used as supplementary food [64].
7. The seeds are useful in the treatment of uterine and ovarian diseases [65][66].

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8. Celosia powder (root) is used to cure Constipation [67].
9. The flower extract of Celosia is used as natural indicator in acid base titration [68].

II. CONCLUSION

From thousands of year humans are used the herbs as a medicine, cosmetic & for food. The Plant Celosia argentea contain the many pharmacological activities. The Celosia contains various chemical constituents by which the therapeutic effects are seen.The herbal formulations have fewer side effects on body. The Celosia is worldwide plant found in various countries hence it is good candidate for herbal medicinal system. The Celosia possesses the activity like reduce blood glucose level, wound healing property, anticancer activity, kidney-stone treatment, etc. Hence it is more usable and easily available medicinal plant

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