REVIEW ARTICLE

Medicinal Uses of Chenopodium album Linn.: A Review.

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Abstract:- The review includes 20 references on Chenopodium album and comprises Ethnopharmacology, Microscopy, Morphology, phytoconstituents, pharmacological studies and safety profile of the plant. Alkaloids, phytosterols, Flavonoids, Essential oil, Mineral matter, Albuminoids, Nitrogen and Saponins constituent major classes of phytoconstituents of Chenopodium album Linn. The leaves of plant have a long traditional used in the treatment of digestive, peptic ulcer and hepatic disorder.

Key words:- Chenopodium album, phytochemicals, pharmacological activity and Flavonoids.

Introduction:- Chenopodium, one of the smallest genus in the family Chenopodiaceae. Chenopodium encompasses 120 Species. It found throughout North America, Norton East, India and Europe. The genus is represented by 6 species in the flora of North America. It is an important food crop and medicinal plant in tropical and subtropical countries, is widely used like food and folk medicine around of the world. There are a no. of different species are used in all over the world 1-2.

Morphology and Microscopy 3-8:-

Leaves:- The leaves which are about 10 cm. long and merely white on the undersides; Leaves are petiolate, ovate-rhombic, wedge shaped at the base, Margins irregularly serrate to entire. At the night the young leaves become erect.
Stems: The stems are erect, from a woody base, much branched with spreading, branches which are smooth or with rounded hair, veined and angular. Stems often red due to anthocyanin Pigment.

Flowers: The flowers are greenish yellow in colors. The flowers are arranged in a indeterminate, glomerules, cymose and usually densely crowded pattern.

Fruits: The fruits are smooth nearly kidney shaped, larger then the Calyx and enclosed by the calyx.

Seeds: Seeds superior, enclosed by Membranous pericarp which is easily detached orbicular convex on both sides. Majority of the seed black and shining.

Phytoconstituents:

The extract of Chenopodium album Linn. Of petroleum ether, benzene chloroform, ethanol and aqueous extract was evaluated and the show positive result for alkaloids, saponins, phytosterols and flavonoids. It mainly contain two flavonoids are kampferol and quercetin.

![Quercetin](image)
The leaves of chenopodium album are rich in essential oil mineral matter particularly in potash salts and a considerable amount of albuminoids and another components of Nitrogen.

The roots of Chenopodium album contain saponin.

Two new compound (1,2) and 16 Apocarotenoids (3-18) were isolated from the weed chenopodium album the structure of new apocarotenoids were determined to be (3R,6R,7E,11E) 3-hydroxy-13apo-alpha-caroten-13-one(1) and (6S,7E,9E,11E)-3-oxo-13apo-alpha-caroten-13-one(2) by spectroscopic NMR and MS analysis.

**Pharmacological activities**

The literature reveals the Chenopodium album Linn. Has been exhaustively explored for its pharmacological activities.

**Anthelmintic activity:-** Chenopodium album Linn. possess anthelmintic activity against trichostrongylid nematodes of sheep by causing morality of worms and inhibition of egg hatching. Chenopodium album was found to be (LC_{50}= 0.499mg/ml) in egg hatch test. In vivo maximum reduction in eggs per gram (EPG) of feces was recorded as 82.2% with Chenopodium album AME at 3.0g/kg on day 5 post treatment. Levamisole (7.5mg/kg) a standard anthelmintic agent showed 95.1-95.6% reduction in EPG^{10}. 

![Kaempferol](image-url)
Antipruritic and Antinociceptive activity:- The ethanolic extract from the fruits of Chenopodium album linn. (FCAL). Orally administered at doses of 100-400mg/kg, dose dependently inhibited scratching behavior induced by 5-HT (10ug per mouse, S.C)\textsuperscript{11}.

Sperm cell death activity:- The study was conducted for explore the plausible pathway of Chenopodium album seed extract (CAE) mediated sperm cell death. CAE induced sperm cell death is due to lipid peroxidation of the spermcell membrane, oxidation of intracellular reduced glutathione, indicating production of ROS; activation of Mn-SOD activity of catalase favoring endogenous accumulation of H(2)O(2); generation of O(2)(+,-) at by increased Mn-SOD activity and protein expression; accumulation of ROS in spermatozoa reflected in the fluorimetric experiments and increased production of O(2)(+,-) and H(2)O(2) induced apoptosis like death in sperm cell as observed by DNA ladder formation. The sperm cell death mediated by CAE is due to oxidative damage of cellular macromolecules by in situ\textsuperscript{12}.

Antioxidant and free radical scavenging activity:- Free radicals such as superoxide anions, hydrogen peroxide and hydroxyl nitric oxide radicals cause degenerative human disease such as cancer, heart disease and cerebrovascular components delay or inhibit lipid peroxidation by inhibiting the initiation or propagation of oxidizing chain reactions and are also involved in scavenging free radicals\textsuperscript{13}.

Assessment of Hypolipidemic potential of Chenopodium album Linn. :- Hyperlipidemia, including Hypercholesterolemia and Hypertriglyceridemia, is major risk factor for the development of Cardiovascular disease. The results suggest the consumption of Chenopodium album Linn. Can be linked to a reduction in the risk of Cardiovascular disease\textsuperscript{14}.

Sperm Immobilizing activity:- Chenopodium album possesses appreciable spermicidal potential which may be explored as an effector constitute of vaginal contraceptive\textsuperscript{15}.

Inhibition of mineralization of urinary stone:- The inhibition efficacy was studied increased intake of fruits juice and seed extract of Chenopodium album would be helpful in urinary stone prophylaxis\textsuperscript{16}.
Phytochemistry of *Chenopodium album*:-

**Saponins from *Chenopodium album***:-Seven cinnamic acid amides have been isolated from chenopodium album. The structure have been attributed by means of their spectral data one of them N-trans-4-o-methylferuloyl-4-o-methyl dopamine.

**Phytoconstituents from the leaves of *Chenopodium album***:-Fractionation of crude petroleum ether extract of the leaves of the chenopodium album lead to the isolation of B-sitosterol (1), lupeol (2) and 3 hydroxy nonadeecyl henicosanoate\(^\text{17}\).

**Chlorophyll fluorescence quenching, zeaxanthine formation and light scattering in tact leaves of triazine susceptible *Chenopodium album* plants***:-The triazine-resistant biotype of chenopodium album has an impaired activity of photosystemII. In vivo, this leads to a higher sensitivity to photoinhibition, especially when the plants have been grown at a high irradiance\(^\text{18}\).

**Stereochemical studies on ascaulitoxin***:-The J-based NMR configurationally analysis was applied to the determination of relative stereochemistry of the ascaulitoxin molecule a phytotoxic metabolite with herbicide activity against *Chenopodium album*. This is method is particularly suitable for acyclic structure containing hydroxyl groups, besides \(3J_H\), \(3J_C\) and \(2J_{CH}\) values can also be used to extract additional angular information\(^\text{19}\).

**Ascaridole and related peroxidase from the genus *Chenopodium***:- The result on Ascaridol and the major volatiles and semi volatiles of wild species belonging to the genus *Chenopodium* provide important information on biologically active monoterpenoid compounds and volatile metabolities biosynthesized in wild medicinal plants growing in the East Mediterranean\(^\text{20}\).

**Safety profile***:- This plant is edible and not having any toxicity.
References:-

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