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Review Article

A Review On Medicinally Used Plant *Tridax Procumbens*

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ABSTRACT

Tridax procumbens Linn belongs to the Asteraceae family. It has been used in ancient times to treat skin diseases, wounds and stops blood clotting. It is a folk medicine more than 138 chemical compounds have been isolated and identified from Tridax procumbens. This review shows the importance of more studies to understand the potential T.Procumbens secondry metabolites for medical or preventive treatment. The possess many chemical compounds like flavonoids, saponins, terpenoids and benzoic acid derivatives. Methanol and ethanol extract of the dried leaves of these plants were collected. They possess many pharmacological activities such as antimicrobial activity, antiseptic activity, antifungal activity, wound healing property, anti inflammatory property, antioxidant property etc. The traditional uses, phytochemical constituents and pharmacological activites will helpful in the researches on Tridax procumbens in the new search for leads drug discovery.

INTRODUCTION

Tridax procumbens is a species of flowering plant belongs to family Asteraceae and it is the most potent species among 30 species. It is best called as widespread weed and pest plant. It is native to the tropical Americas but it has been incarporated to tropical, subtropical and mild temperate regions worldwide. It lists as a noxious weed in the United States and has a pest status. Some of the medically important species of the genus Tridax are: T. angustifolia, T. serboana, T. bicolor, T. accedens, T. dubia, T. erecta and T. rosea. procumbens, commonly known called as coat buttons or tridax daisy, is a species of flowering plant in the daisy family. It is best known called as a widespread weed and pest plant. It is native to the tropical America but it has been incorporated to tropical, subtropical, and mild temperate regions worldwide. In 1753, Tridax procumbens species were introduced by Linnaeus as the publication of T. procumbens. T. procumbens is a weed that belonging to the family Asteraceae that goes overlooked. It is one of the more potent species

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among the 30 species of the genus Tridax. It is derived in Mexico, Central America, and South America, although it may also be found in Tropical America, Africa . In Ayurveda T. procumbens using as a herbal drug for wound healing. T. procumbens is found as a controlling plant in Maharashtra, Madhya Pradesh, Gujrat, Odissa, or other Indian states. It grows in the open spaces, roadsides, meadows, croplands, lawns. T. procumbens is also known called as 'Mexican daisy' (in Mexico), 'Coat button' and 'Tridax daisy' (in English), 'Jayanti Veda' (in Sanskrit), 'Gharma' (in Hindi), 'Dagadipala' (in Marathi), 'Vettukkaaya-thalai' (Tamil/Siddha) and 'Akala kohadi' (in folk) . It is a well-known ayurvedic medicine for liver diseases or hepato-protective nature besides gastritis and heart burn. T. procumbens is an extreamely vital natural plant with sanitary characters that may be found all over the world. Since ancient times it has been used to cure a variety of disorders. Some Indian people use this plant as a source of food or medicines. The phytochemistry and pharmacology of Tridax. procumbens have been understand extensively. This species possesses various pharmacological properties antimicrobial, anticancer, antioxidant wound healing, antifungal, anti-inflammatory. It was concluded that the results were comparable to that of reference standard Glibenclamide and the Tridax procumbens flower extract showed antidiabetic activities.

INDIAN NAMES:

Hindi	Ghamra.
Sanskrit	Jayanti Veda.
Marathi	Dagadi Pala and Ghav Pala,
Telugu	Gaddi Chemanthi.
Tamil	Thatapoodu.
Malayalam	Chiravanak.

Morphology

T. procumbens is a green color plant having perennial, 15–40 cm high, roots originated at nodes stems procumbent arising from woody base, hairy, leaves ovate to lanceolate petiole 4–30 mm long. It has two types of flowers ray florets and disk florets with basal placentation 3–6, tubular at the base with lite yellow or cream-white ligules, 2.5–5 mm long, 2–5 mm wide, the disk of yellow colour . Fruit is a hard achene composed with stiff hairs and has a plume, feathery like white pappus at the one end. The calyx has appeared for by scales or reduced to pappus. Seed has pendulous chitin, embryo is absent.

Fig 1: Tridax procumbens leaves

Fig 2: Tridax procumbens

EXTRACTION PROCESS

There are several ways to extract tridax procumbens including;

- Soxhlet extraction process
- Maceration
- Blending and maceration
- Stem fiber extraction

SOXHLET EXTRACTION PROCESS

- Dried leaf powder is packed into a filter paper and placed in a soxhlet apparatus.

- Methanol is used as the solvent, and the powder is extracted for 8 hours .
- The extract is then collected and concentrated using a hot water bath .

CHEMICAL CONSTITUENTS

Essentiol oils

Essential oils are reported as one of the major phytoconstituents of this plant. Essential oils are aromatic in nature, volatile oils extracted from this plant by hydro-distillation, Soxhlet extraction or supercritical CO2 extraction techniques. Essential compounds are mainly a mixture of volatile oils, terpenoids, and long-chain fatty acids. Essential oils are associated with a wide spectrum of biological properties including antibacterial, antifungal, anticancer, antiparasitic, antioxidants, etc.

Flavanoids

Phytochemical studies showed that the T. procumbens is a rich source of flavonoids with a percentage of flavones and flavanones most used in the Asteraceae family. They are responsible for antioxidant, hepatoprotective, anticancer, antibacterial, wound healing activities. In addition, polyphenols play an important role to control the growth of toxin-producing bacteria in plants . Luteolin, gluco luteolin, quercetin and isoquercetin have been reported from flowers T. procumbens .

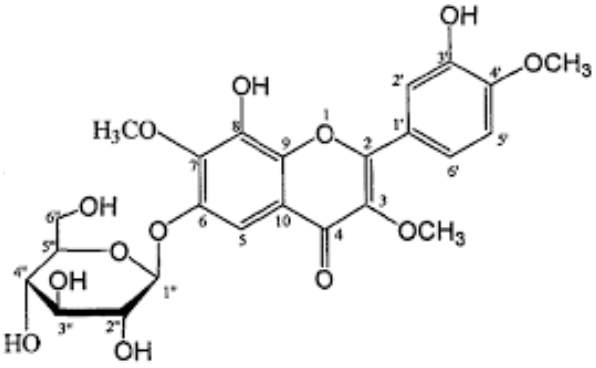
Tannins

Tannins are a group of polyphenolic compounds containing amino acids and alkaloids. They have antioxidant, antibacterial property. Isolation and identification of Tannin from methanol extraction of the aerial part of T. procumbens reported by.

Terpenoids

Terpenoids are the higist class of natural products, followed by saponins, phytosteroids, and carotenoids. They have blood cholesterolreducing, immunity booster, antiparasitic, anti-inflammatory, anticancer antifungal, antiviral, antimutagenic, antioxidant, anti-HBV activities. The following steroids were isolated or identified from aerial parts, leaves, and flowers of T. procumbens.

Basic structure of Tridax procumbens



Pharmacological activities

Wound healing property

wound healing property of topical ointment formulation of the leaf juice of Tridax procumbens using excision wound model in mice. Excision wounds were inflicted on baldheaded back of mice. Ointment formulation of Tridax procumbens was applied twice daily for four days on the dermal wound. Control group was reacted with VEGF ointment . Various parameters like re-epithelization, vascularity, phagocyte number, collagen content was founded. The healing property of Tridax procumbens was compared with the control group. The results of this investigation revealed that Tridax procumbens possesses dose-dependent pro-healing property, and its high dose exerts an inflammatory action

Immunomodulatory property

Immunomodulatory property of an ethanol-insoluble fraction of aqueous extract of Tridax procumbens was identified in this study. In this Study, Swiss albino rats were reacted with Pseudomonas aeruginosa. Rats were divided into 6 groups of four per group. The first group was reacted with the standard inoculum of Pseudomonas aeruginosa only and the second group was given 8 mL of the standard inoculum of the organism and treated with ethanolic extract of Tridax procumbens. The 3 category was treated

with the ethanolic extraction of Tridax procumbens only, whereas normal saline was admitted to the last group. From the results, it was noticed that the fibroblastic index, white blood cells count, and splenic antibody secreting cells increases significantly. The immunomodulatory property of ethanolic extracts of leaves of Tridax procumbens was also evaluated against Pseudomonas aeruginosa induced albino rats and was found that the extracts could inhibit the proliferation of Pseudomonas aeruginosa.

Analgasic and anti inflammatory property

Analgesic and anti-inflammatory property of the aqueous and ethanolic extraction of the plant Tridax procumbens by two analgesic and one inflammatory in-vivo pain models using male and male Sprague-Dawley rats . In the formalin-induced pain test, moderate pain, which starts about 20 min post formalin injection and lasts about 40 min to 60 min, may be caused due to tissue and frequent changes in the dorsal horn of the spinal cord. cure with extract produced significant inhibition of pain in the late phase.

Antileishmanial activity:

A leishmaniasis is a group of disorders caused by fungal protozoa. Antifungal activity of Tridax procumbens extracts and a pure compound against promastigotes of fungal Mexicana was investigated in this study. Extraction and didehydrofalcarinol were obtained from Tridax procumbens by chromatographic methods and were isolated by spectroscopic analysis. The extraction was tested for its inhibitory effect on the growth of promastigotes of fungal Mexicana. Extracts and one were also treated for its safety by treating with mammalian cells and cell viability was assessed using trypan blue and MTT.

Hepatoprotective activity

The leaves of Tridax procumbens to protect from carbon tetrachloride-induced liver injury in Wistar albino rats. The carbon tetrachloride was prepared in olive oil and administered subcutaneously at 1 ml/kg over the body weight. The extraction was administered to normal and carbon tetrachloride treated rats at 100, 200, and 300 mg/kg. cure dose-dependently significantly lowered ($P<0.05$) basic phosphatase (54.91-100.52%), aspartate transaminase (37.74-64.79%), and alanine transaminase (32.96-57.82%) properties as compared to test control. The plasma total bile and total protein levels of the reacted animals were lower although not considered significant. The results of this study indicated that reacted with the plant extraction protects the hepatic against carbon tetrachloride-induced liver toxicity; therefore the study suggests the benefits of T. procumbens in African tradition for the treatment of hepatotoxicity

Diagrammatic representation of pharmacological activites /properties

Acute and sub chronic toxicity

The acute toxicity was carried out using the process of Lorke's method. In the subchronic study, rats received intraperitoneal T. procumbens at doses of fifty , 100, 200, 400, and 800 mg/kg for 14 consecutive days. Serum biochemical properties, hematological analysis and histopathology of liver and kidneys were assessed after the last administration. The LD50 of the extract was 2100 mg/kg body weight, and all the survived animals gained body weight and organ / body weight ratio as compared to the uncontrolled In sub chronic studies , all the animals gained body weight and organ / body weight ratio. The results of histopathological studies presented that ethyl acetate extract had endothelial toxicity at high dose level destroying the blood vessels leading to blood as indicated by haemosiderin deposition throughout the entire kidney and liver parenchyma.

THERAPEUTIC USES

1. Tridax procumbens has been in use in India for wound healing and as an anticoagulant, antifungal, and insect repellent.
2. The juice extracted from the leaves is directly applied on wounds.
3. Its leaf extracts were used for infectious skin diseases in folk medicines.
4. It is used in Ayurvedic medicine for liver disorders, hepato protection, gastritis, and heartburn.
5. Tridax procumbens is also used as treatment for boils, blisters, and cuts by local healers in parts of India.
6. It is used to treat bronchial ,catarrh ,diarrhea and dysentery.
7. It is used to treat Liver diseases.
8. It shows Immunomodulatory action
9. Depressant action on respiration.
10. It shows repellent activity.

Clinical study

A clinical study antibacterial activity of crude extract of leaves against E.coli, S. pyogenesis, S. aureus, and Pseudomonas aeruginosa. These pathogenic bacteria were cultured from wound swab samples of 50 patients of different types of wounds. The significant activity of crude T. procumbens extract was observed against all selected bacteria and compared with positive control Streptomycin, Ampicillin, and Cephalosporin. Authors concluded this plant may lead to alternative antibiotics. T. procumbens should be avoided in anticoagulant therapy because it could enhance the anticoagulation potential in patients of anticoagulant agents. Tridax procumbens is commonly regarded as weed in most part of Africa continents and are known for

its pharmacological activity. The application of the plant is immense such as pharmacological activities, hepatoprotective effect, immunomodulating property, wound healing activity, antidiabetic, antimicrobial, anti-inflammatory and antioxidant, bronchial catarrh, diarrheal and dysentery. Analysis revealed the presence of the biomolecules such as anthraquinone, catechol, flavonoids, phenolic compounds, saponins, steroids, tannins and terpenoids. Tridax procumbens also desire development of novel therapeutic agents from the various types of compounds with diverse pharmacologic properties isolated from it. Therefore, more work (study) should be encouraged in direction of more pharmacological activities of Tridax procumbens and to elucidate

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