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## A Overview *Tridax procumbans* Lin.



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**Kopperundevi Ramachandran\*, Radha Ramalingam,**

*Department of Pharmacognosy, College of Pharmacy,*

*Madras Medical Mollege, Chennai-03.*

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### ABSTRACT

*Tridax procumbens* one of the most popular plants in tropical region, belongs to the family Asteraceae, also known as vettukai thalai in Tamil, Mexican daisy in English. The present review focuses on the taxonomy, morphology, powder microscopy, transverse sectional characters, phytoconstituents and the pharmacological activities reported so far. The morphology of the leaves are lanceolate to ovate shape, short texture, acute apex, lamina pinnatisect sometime 3 lobed, short texture, acute apex, irregularly toothed margin, leaf are arranged opposite, the surface of the leaves rough and scabrous, microscopy of the leaves showed simple and multicellular covering trichomes, Anisocytic stomata. Procumbens have more valuable phytoconstituent luteolin, glucoluteolin, flavonoids (quercetin, Iso quercetin), crude proteins, fiber, carbohydrate, sitosterol, tannin. It possesses many pharmacological activities. Some important ones among them are wound healing, hepatoprotective, antileishmanial, antioxidant, vasorelaxation, antidiabetic and antihyperlipidemic, osteoporosis, anti-inflammatory and traditionally used for bronchial catarrh, dysentery, diarrhea, antiseptic, insecticidal and parasitocidal and restoring of hair. It is used to check hemorrhage from cuts, bruises and wound.

## INTRODUCTION

Many indigenous plants hold in them, high medicinal value and are becoming more popular than allopathic treatment, as they have no side effects. The merits of plants over the synthetic medicine are that, their high nutritional value. This herb has a sentimental attachment with people. This would be the first aid done to many bleeding farmers in the field work. Any open cut is treated with its juice and dressed with its leaves for the wound to heal. Apart from this, every child in the village would have a sweet memorable act of playing with the flower head. Hence it got its name, vettukai thalai in Tamil. *Tridax procumbans* Linn., a familiar herb which belongs to the family Asteraceae, distributed in tropical area, possesses various pharmacological activities like wound healing, bronchial asthma, catarrh, antiseptic, diarrhoea, dysentery, parasiticidal, insecticidal, to check haemorrhage from cuts and wounds and may cure allergic response in some people and restoring of hair.

## PLANT DESCRIPTION(1)

Procumbent herb with woody base some time rooting at the nodes up to 60 cm high, found as a weed

**Leaves**-ovate, lanceolate, lamina pinnatisect, sometimes 3 lobed

**Flowers**-long, penduncled heads, ray florets strap shaped, white, disc florets shaped, achenes black narrowly obconical, 2.0-2.5 mm long with feathery pappus.

## PLANT TAXONOMY(2)

**The plant's taxonomical details are**

**KINGDOM:** Plantae-plants

**SUBKINGDOM:** Tracheobionta-seed plant

**DIVISION:** Magnoliophyta-flowering plant

**CLASS:** Magnoliopsida-dicotyledons

**SUBCLASS:** Asteridae

**ORDER:** Astersles

**FAMILY:** Asteraceae

**GENUS:** *Tridax*

**SPIECES:** *Tridax procumbans lin.*

**SYNONNYMS(3)**

English-Mexicandaisy

Ayurvedic-jayanti

Siddha/Tamil -vettukkssys-thalai

Bihar-A kala kohadi



## **VERNACULAR NAMES (1)**

**Tamil-Vettukkaaya-thalai**

**Bihar-Akala kohadi**

**English-Mexican daisy**

## **PHARMACOGNOSTICAL REVIEW**

### **MACROSCOPY**

#### **Leaves**

The leaves are green in color, characteristic odor, 3-7cm long, 1-5 cm wide, lanceolate to ovate shape, lamina pinnatisect, sometimes 3 lobed, short texture, acute apex, irregularly toothed margin, leaf are arranged opposite, the surface of the leaves rough and scabrous and short petiole.

#### **Stem**

Green in color, characteristic odor, acrid taste, 23 -46 cm



#### **Flower**

Flower are small, long-penduncled heads, rays florets strap shaped, white color and disc florets yellow colored, achenes black, narrowly obconical 2.0-2.5mm long with feathery pappus.

### **MICROSCOPY(4)**

#### **Leaves**

Microscopically leaves of the midrib and laminar region showed a distinct epidermis, upper epidermis was single layered, with a small rounded shape, the lower epidermis had single layered elongated cells arranged closely.

**Trichomes** simple and multicellular covering trichomes

**Stomata** Anisocytic stomata

## POWDER MICROSCOPY

The dried leaves power under the microscope with suitable staining reagent shows lignified cells, trichomes, stomata, palisade cells, xylem vessels.

## PHYTOCONSTITUENT REVIEW(1)

### Leaves-On dry basis

Crude proteins-26.3%

Fiber 17.0%

Ether extract-8%

Carbohydrate-39.0%

Total ash-5.9%

Sitosterol, tannin

### Flowers

luteolin, glucoluteolin, quercetin, Iso quercetin



## USES (1)

### Leaves

Employed in bronchial catarrh, dysentery, diarrhea, antiseptic, insecticidal and parasiticial and restoring of hair. It is used to check hemorrhage from cuts, brucises and wound.

### Floral heads

The flower head toxic to the webbing cloth moth and larva of black carpet beetle

## PHARMACOLOGICAL REVIEW

### Antidiabetic and Antihyperlipidemic effect (5)

The ethanolic extract (250 mg to 500 mg/kg) of whole plant of *Tridax procumbens* showed marked anti-diabetic effect in streptozotocin and nicotinamide induced diabetic male Wistar

rat and also inhibit the streptozotocin induced weight loss and significantly alter the lipid level.

#### **Anti-Inflammatory (6)**

The various solvent extract of *Tridax procumbens* aerial part showed significant inhibition of rat paw edema at a medium dose of 200mg /kg. The different solvent methanol, ethanol and ethyl acetate were used for extraction of the active compound. Among the different extract ethyl acetate was the most active.

#### **Action On Bone (7)**

The *Trida procumbens* flavonoid tested on primary mouse calvarial osteoblasts. Flavonoids from *Tridax procumbens* showed upregulation of bone hormones mainly osteocalcin. Osteocalcin plays a major role in body's metabolic regulation and bone building. Mainly suggested to the patient with bone loss associated disease such as osteoporosis.

#### **Anti-oxidant (8)**

The causes of many diseases mainly cancer induced by free radicals, daily need to remove the free radicals from body by anti-oxidant. The present review showed a phytoconstituent of *Tridax procumbens* possesses significant antioxidant properties. The methanolic extract of plant further purified isolated by n-butanol soluble part and ethyl acetate soluble parts were quantified the total phenolic and total flavonoids. The isolated different fraction was employed for *in vitro* antioxidant effect by 1,1 Diphenyl,2-Picryl Hydrazyl (DPPH) assay. The n-butanol soluble part and ethyl acetate soluble part possess a significant anti DPPH activity while comparable with the Standard ascorbic acid.

#### **Antileishmanial Activity (9)**

The *Tridax procumbens* leaves extract when combined with the *Allium sativum* extract produce effective action against *Leishmania Mexicana*. Acute toxicity tested by up and down method. A group of healthy mice administered with either *Tridax procumbens* extract or *Allium sativum* extract and the effect was compared with control group at 14<sup>th</sup> day, the liver injury and other toxicity parameter were determined. *In vivo* assay was performed with mice injected with *Leishmania Mexicana* promastigotes and treated with mixture or separate extract of *Tridax procumbens* and *Allium sativum*. After 12<sup>th</sup> week period of infection, blood sample was collected and determine the total immune globulins by a noncommercial indirect

ELISA. An increasing in the ratio of IgG2a/IgG1 indicated a tendency to raise the 1 type immune response in mice. The mixture of *Tridax procumbens* and *Allium sativum* extract is a promising natural treatment for cutaneous leishmaniasis.

#### **Vasorelaxation Activity (10)**

The *Tridax procumbens* leaves have long been used for the treatment of hypertension in Nigeria and decrease blood pressure due to the vasorelaxation activity. The previous studies for the mechanism of vasorelaxation activity of *Tridax procumbens* showed that in the aortic artery isolated from healthy young adult normotensive rats, precontracted with phenylephrine and potassium chloride and treated with various concentration of tridax extract. The changes in arterial tension were recorded using Ugo basile The interaction between TPE (*Tridax procumbens* extract) with cAMP and cGMP inhibitors was evaluated. The mechanism of vasodilatation by TPE depend on concentration and a part of its relaxation effect is mediated directly by blocking cGNP and cAMP.

#### **Anti-Arthritic Activity (11)**

Arthritis is an inflammatory disorder involving damage to one or more joints. The incidence of it is increasing due to the low consumption of fluids, as a result of the hectic lifestyle. Past studies have been done to report the arthritic effect of the ethanolic extract of *T. procumbens* at dose of 250mg/kg and 500mg/kg. Indomethacin (10mg/kg) was used as the standard. The whole plant extract of *T. procumbens* showed significant anti-arthritic activity in the Freud's Complete Adjuvant model. The results were comparable with that of Indomethacin.

#### **CONCLUSION**

*Tridax procumbans*, a potential herb is of high pharmacological significance. It proves to be one of high interested plant to work under. The ethano-botanical uses of the plant are bronchial catarrh, dysentery, diarrhea, antiseptic, insecticidal and parasiticidal and restoring of hair. It is used to check hemorrhage from cuts, brucises and wound. The past works on the plant have proven the promising activity as anti-diabetic, anti-hyperlipidemic, anti-oxidant, anti-inflammatory agent, anti-arthritic, osteoporosis, anti-leshmania, hepatoprotective.

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