



A REVIEW AND PRELIMINARY PHYTOCHEMICAL SCREENING OF TRIDAX PROCUMBENS L. AS IMPORTANT MEDICINAL PLANTS

Botany

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ABSTRACT

India has got a rich biodiversity of medicinal herbs and spices, which includes about more than 2000 species. Plants are one of five big groups (kingdoms) of living things. It is best known as a widespread weed. *Tridax procumbens* L. is a weed found throughout India. It is native to tropical America but it has been introduced to tropical, subtropical and temperate regions of world. *Tridax procumbens* L. Family-Asteraceae (Compositae) is a small perennial herb having short, hairy, blade like leaves. *Tridax procumbens* L. has many medicinal properties, such as immunomodulatory, antidiabetic, antihepatotoxic, antiviral, antioxidant, antibiotic efficacies, wound healing, insecticidal, parasiticidal insecticidal, anti-inflammatory activity, prevention of bleeding, bronchial catarrh, diarrhea, dysentery, etc. Phytochemical studies recorded the plant part contain broad spectrum of secondary metabolites. This study was carried out to reveal the scope and utility of selected plant in pharmaceutical industry. Further exploration for the isolation of phytochemical constituents of selected plant part has to be done in order to reveal its potential application in the field of drugs and medicine which is the urge of common man.

KEYWORDS

A Review of Medicinal Plant, Phytochemical Screening.

INTRODUCTION:

Tridax procumbens L. is a species of flowering plant in the daisy family (Compositae), a common weed in West Africa, sub region and other tropical zones of world and known as English in coat button, Sanskrit in jayanti Veda, Hindi in Ghamra and Marathi in Dagadi pala. It is best known as widespread weed and pest plant can be found in fields, meadows, croplands, disturbed areas, lawns, and roadsides. It is a semi prostrate, annual, creeper herb. Stem is ascending 30-50 cm height, branched, sparsely hairy, rooting at nodes. Leaves are simple, opposite, exstipulate, lanceolate to ovate. 3-7 cm long irregularly toothed margin, base wedge shaped, shortly petioled, hairy on both surfaces. Flowers are tubular, yellow with hairs, inflorescence capitulum. *Tridax* has two types of flower: ray florets and disc florets with basal placentation. Flowering-fruiting throughout the year. Fruit is a hard achene covered with stiff hairs and having a feathery, plume like white pappus at one end. *Tridax procumbens* is known for several potential therapeutic activities like antiviral, anti oxidant, antibiotic efficacies, wound healing activity, insecticidal and anti-inflammatory activity. Leaf juice can be used to cure fresh wounds, to stop bleeding, as a hair tonic. *Tridax procumbens* has been in use in India for wound healing, as anticoagulant, antifungal and insect repellent. Its leaf extracts were known to treat infectious skin diseases in folk medicines. It is a well known medicine for liver disorders or hepatoprotective nature besides gastritis and heart burn. This plant is used as bioabsorbent for removal of harmful Cr (VI) from the industrial wastewater. It is an important component of "Bhringraj" an Ayurvedic preparation. Plants are the major resource of drugs in modern as well as in traditional system of medicine. Several secondary metabolites were isolated from the plants which are used as antimicrobial agents. Alkaloids, tannins, flavonoids and phenolic compounds are most important bioactive components present in plants (Hill, 1952). Phytochemicals (secondary plant metabolites) present in plants have been extensively investigated as source of medical agents (Prince and Prabakaran, 2011).



MATERIALS AND METHODS:

Plant material collection and Authentication:

The fresh leaves of *Tridax procumbens* L. were collected in the Vetal hill, District -Pune (MS), India. The plant of *Tridax procumbens* was authenticated by Botanical Survey of India Pune.

Methods:

The collected part were washed thoroughly 2-3 times with running tap water and once with sterile distilled water and air dried at room temperature. After complete drying, these parts were powdered well using a mixer. Then the powdered material was weighed and kept in air tight container.

Extraction of plant material:

About 5 gm of the each powdered plant material was weighed and subjected to successive solvent extraction in 100 ml of different solvents such as acetone, alcohol, ethanol, methanol and water separately. The mixture was kept on shaker for 24 hours to obtain homogenate. This homogenate were filtered by whatmann filter paper and the extracts are stored in bottles at 10⁰ C for phytochemical screening.

Preliminary phytochemical screening of the plant:

The extracts of different solvent used for preliminary phytochemical screening was carried out using standard procedures to test the presence of bioactive compounds with slight modifications (Joshi *et al.*, 2011).

Test for alkaloids:

1 ml plant extract was treated with a few drops of Mayer's reagent. White-yellowish precipitate produced immediately which indicated the presence of alkaloids (Siddiqui and Ali, 1997). Alkaloids are precipitated from neutral or slightly acidic solution by Mayer's reagent (Evans, 2002).

Test for steroid and terpenoids:

4 ml extracts was treated with 0.5 ml acetic anhydride and 0.5 ml chloroform, then concentrated H₂SO₄ added slowly. Steroid solution shows green blue colour and terpenoid solution shows red violet colour.

Test for flavonoids and flavones:

4 ml extracts was treated with 1.5 ml of 50% Methanol solution, solution was warmed and metal magnesium was added, then 5-6 drops of concentrated hydrochloric acid was added. Flavonoid solution show red colour and flavones solution show orange colour (Siddiqui and Ali, 1997).

Test for tannins:

1 ml distilled water added to 0.5 ml extract solution, then 1-2 drops of ferric chloride solution added. Gallic tannin solution show blue colour and catecholic tannin solution shows green black colour.

Test for reducing sugars:

1ml distilled water added to 0.5 ml extract solution, then 5-8 drops Fehling's solution -A and B was added at hot respectively. Reducing sugar shows brick red precipitate.

Test for carbohydrates (Molish's test):

1 ml extract was treated with 2 drops of α -naphthol solution, carefully incline the tube and pour drop wise concentrated H₂SO₄ using dropper along the side to tube. Presence of carbohydrate shows violet colour at the junction of two liquids.

Test for glycosides:

1ml glacial acetic acid added to 1 ml extract, and then few drops of FeCl₃ added. Appearance of brown colour ring at top indicates presence of glycosides.

Test for saponins (foam test):

1 ml of the extract was added to 2 ml of distilled water and shaken for few minutes in a test tube. 1 cm layer of foam for 10 minutes indicates the presence of saponins.

Test for phenols (Ferric chloride Test):

1 ml extract is dissolved in 1 ml distilled water or ethanol, and then add few drops of ferric chlorides solution. Phenolic solution show Red, Blue, green, Purple coloration.

Test for proteins (Xanthoprotic test):

1 ml extract was added 2-6 drops in concentrated HNO₃ this solution was neutralized with alkali. Protein solution shows yellow or orange colour.

Glycosides, Saponins and Phenols showed presence of Methanol extracts. The tests for Flavonoid, Tannins, Reducing Sugar, Glycosides, Saponins and Phenols showed negative results in Ethanol and Petroleum ether Plant extracts. Alcohol and Diethyl ether extracts of showed presence of Steroids, Terpenoid, Flavonoid, Tannins, and Proteins. The tests for Alkaloids, Reducing Sugar, Glycosides and Saponins showed negative results. Hexane extract showed negative results for Alkaloids, Steroid, Reducing Sugar, Glycosides, Saponins and Phenols. The tests for Reducing Sugar negative results in almost all extracts.

CONCLUSION :

The phytochemical screening of medicinal plant extracts leaves of *Tridax procumbens* L. showed the presence of various bioactive compounds such as Alkaloids, Steroids, Terpenoids, Flavonoids, Tannins and Carbohydrates. Reducing Sugar were not detected in above plants. Quantitatively the above plant extract also revealed a greater proportion of Proteins, Terpenoids, Steroids, moderate concentrations of alkaloids, Flavonoids, Tannins and Carbohydrates, while Glycosides, Saponins and Phenols, were in low concentrations.

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REFERENCES:

1. A. M. Patil and Sahera Nasreen (2015). Screening for secondary metabolites of some important medicinal plants. *Paripex Indian journal of research*, vol.4 (8): 123-124.
2. Evans, W. C. (2002). *Trease and Evan's Pharmacognosy*. 5th ed., Haarcourt Brace And Company, pp. 336.
3. Hill, AF. (1952) *Economic Botany. A textbook of useful plants and plant products*. 2nd edn. McGraw Hill Book Company Inc, New York.
4. Joshi, B., Govind P. S., Basnet, B. B., Bhatt, M. R., Sharma, D., Subedi, K., Pandey, J. and Malla, R. (2011). Phytochemical extraction and antimicrobial properties of different medicinal plants: *Ocimum sanctum* (Tulsi), *Eugenia caryophyllata* (Clove), *Achyranthes bidentata* (Datiwan) and *Azadirachta indica* (Neem). *Journal of Microbiology and Antimicrobials*, *Journal of Microbiology and Antimicrobials*; Vol.3(1), pp.1-7.
5. Jain Ankita and Amita Jain. (2012) *Tridax procumbens* (L): A weed with Immense Medicinal Importance: A Review. *International Journal of Pharma and Bio Sciences*, vol.3 (1): 544-552.
6. Manisha Sutar, Komal Malvankar and Sonia Singh, (2013). Pharmacognostical and phytochemical investigation of leaves of a weed *Tridax procumbens* L. *International Journal of Current Pharmaceutical Research*; Vol.5(1): 29-33.
7. Siddiqui, A. A., Ali, M (1997). *Practical Pharmaceutical Chemistry*. 1st ed., CBS Publishers and Distributors, New Delhi, pp. 126-131.

Table 1: Phytochemical screening of *Tridax procumbens* L.

Phytochemical groups	Methanol	Ethanol	Alcohol	Aqueous	Acetone	Chloroform	Petroleum ether	Diethyl ether	Hexane
Alkaloids	+	+	-	+	+	+	+	-	-
Steroids	+	+	+	+	+	+	+	+	-
Terpenoids	+	+	+	+	+	+	+	+	+
Flavonoids	+	-	+	+	+	-	-	+	+
Tannins	+	-	+	+	+	+	-	+	+
Reducing Sugars	-	-	-	-	-	-	-	-	-
Carbohydrates	+	+	-	+	+	-	+	+	+
Glycosides	+	-	-	-	-	-	-	-	-
Saponins	+	-	-	-	+	-	-	-	-
Phenols	+	-	+	+	+	-	-	-	-
Proteins	+	+	+	+	+	+	+	+	+

+ = Present; - = Absent

RESULTS AND DISCUSSION:

The present study carried out on the plant revealed the presence of medicinally active constituents. Table shows the result of phytochemical screening of various extracts of *Tridax procumbens*. Methanol, Ethanol, Aqueous, Acetone, Chloroform, Petroleum ether Plant extracts showed presence of Alkaloids, Steroids, Terpenoids and Proteins. The tests for Flavonoids, Tannins, Carbohydrates,