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PHYTOCHEMICAL SCREENING OF *Plumbago zeylanica*

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Abstract

Plumbago zeylanica is a medicinal plant. It is medicinally used for curing dieseases like anti-anterogenic, cardiotonic, hepatoprotective and neuroprotective. In this paper phytochemical screening of *Plumbago zeylanica* in four solvent I.e aqeous, petroleum ether, methanol and athyl acetate. Methanol showed mainly positive results as compared to other three ones. flavonois, alkoloids and terpeniesshowed mainly.

Key words; medicinal plants and phytochemical

Introduction

Botanical Name: *Plumbago zeylanica***Family:** Plumbaginaceae **Description:**

Plumbago zeylanica L., sometimes known as P. viscosa Blanco, is a member of the Plumbaginaceae family and is a multifunctional medicinal herb. The plant, which is native to South Asia, is found in most of the tropics and subtropics; it grows in scrublands, savannas, and deciduous woodland from sea level to 2000 m above sea level. The Latin term "plumbago" and the common name "leadwort" come from the sap of P. zeylanica, which gives the skin a lead-like hue. The species is also known as bleiwurz/zahnkraut (in German), sanza (in Swahili), mosikomabe (in Tswana), and ensain in various regions of the world (in Arabia). The plant is widely distributed throughout India, from Central India to West Bengal, Maharashtra, and many southern Indian states. The plant is known by a number of local names across the nation, including veellakeduveli (in Punjabi), chitra (in Bengali), chita (in Tamil), kodiveli/chitramoolam, chitraka/chitramol (in Hindi), chitra (in Sanskrit), agni/vahini (in Gujarati), chitramula (in Kannada), and chitrakula (in Telugu). However, Chitraka continues to be the trade name. The classification of P. zeylanica as an herb or a shrub in the literature is inconsistent. It has been classified as a shrub by some authors and as a perennial dicot plant by others. The P. zeylanica plant grows to a height of 0.5-2 m (1.6–6.6 ft). The leaves are simple, alternating, elliptic or oblong, 0.5–12 cm long, with a tapering base,

and frequently have a hairy edge. They can also be ovate or ovate-lanceolate. Young leaves have a thin petiole (0–5 mm long), no stipules, and tiny auricles. The inflorescence has many flowers and is of the terminal raceme type, measuring 6 to 30 cm in length. Terminal and axillary elongated spikes bear white flowers. They are pentamerous, pedicellate, bisexual, regular, and sweet-scented. The stamens are free and included. The ovary is superior and single-celled, and the style is filiform with five elongated stigma lobes. The tubular calyx, which is 7 to 11 mm long and has five ribs, and glandular trichomes (hairs) that secrete a gooey mucilage are further characteristics of the flowers. The plant blooms all year, and insects are the main pollinators. The mucilaginous glands facilitate animal fruit distribution and insect capture. The plant's fruit is a single-seeded, rectangular (7.5–8 mm long) capsule with five ridges. Each seed has an oblong shape, is 5–6 mm long, and ranges in colour from reddish-brown to dark brown. The roots are at least 30 cm long, smooth, branched or unbranched, with or without secondary roots, and 6 cm in diameter. When they are young, they are light yellow, and as they dry, they turn reddish-brown. The roots taste caustic and bitter, and they have a potent,distinctive smell.

Material and Methods

Phytochemical investigation

Petroleum ether and methanolic extracts were subjected to phytochemical analysis for the presence of various secondary phytoconstituents using standard chemical test.

Solvent extraction:- Solvent extraction was done using Soxhlet apparatus with solvents in the increasing order of polarity from Hexane, choloroform, acetone and methanol. Extracts were concentrated under vacuum using Buchi rota-vapour.Concentrated extracts were stored in air tight screw cap vials till further use.

Phytochemical analysis: 10 mg of *A. Indica* extracts were dissolved in 1 ml of different solutions (Hexane, chloroform, Acetone, Methanol), for phytochemical tests. Phytochemical tests were conducted using the standard protocols.

Test for alkaloids:

Dragendroffs test- 100 µl of different extract solutions were taken, 2 ml of dilute Hydrochloric acid (HCl) and 1 ml of reagent was added in each test tube. Orange brown precipitate indicates the presence of alkaloid.

Mayer'test-100 µl of different extract solutions were taken in each test tube to which 2 ml of Hydrochloric acid was added and 1ml of Mayer's reagent was added in drop wise manner. Yellow buff color indicates the presence of alkaloids in the sample.

Wagner's test- 10 mg of different extract solution were taken, 2 ml of dilute hydrochloric acid and 1 ml of Wagner's reagent was added drop wise, reddish brown precipitate depicts the presence of alkaloids.

Test for flavonoids:

Sodium hydroxide test-100 µl of different extract solutions were taken, 10% sodium hydroxide was added in drop wise manner. Yellow colour of the samples indicates the presence of flavonoids.

1% lead acetate test-100 µl of different extract solution were taken in each test tube 1% lead acetate was added in drop manner. Formation of yellow precipitate indicates the presence of flavonoids.

Test for saponins:

1 ml of extract was diluted with 20 ml of water and the solution was shaken in graduated cylinder for 15 mins. Foam which is stable and remains so for more than5 minutes indicates the presence of saponins.

Test for Tannins:

Ferric chloride test-100 µl of different extract solution, 1 ml of 5% ferric chloride solution was added. The greenish black precipitate shows the presence of tannins.

Test for Steroids and Triterpenoids:

Libermann –Burchard test-100 µl of different extract solution were taken, 1ml of chloroform and 1 ml of acetic anhydride were added. It was boiled, cooled and then 2-4 drops of concentrated sulphuric acid were added to it. A brown ring formsat the junction of two layer, shows the presence of steroids and Triterpenoids respectively.

Salkowski test-100 µl of different extract solution was dissolved in 2ml of chloroform and few drops of sulphuric acid was added to it. The chloroform layer if shows reddish color and acidic layer green fluorescence/ yellow color, then the presence of steroid and triterpinoid is established.

Result and discussion

Table1. Phytochemical screening of *Plumbago zeylanica*

Constituents	**Test**	**Extracts**			
		Aqueous	**Methanol**	**Ethyl acetate**	**Petroleumether**
Alkaloids	Mayer's test	-	+	-	+
	Dragendroff's test	-	-	-	-
	Wagner's test	-	-	+	+
Carbohydrates	Molisch's test	-	-	-	+
	Benedict's test	-	-	+	-
	Fehlings test	-	+	-	-
Protein	Xanthoprotic test	+	+	-	-
	Biuret test	+	_	-	-
Lipids	Solubility test	-	-	-	-
	Glycerol test	-	-	-	-
	Sudan III test	-	-	+	+
Saponins	Foam test	-	-	-	-
Flavonoids		+	+	+	+
Resins		-	-	-	-
Tannins	Gelatin test	+	-	-	-
	Lead acetate test	+	+	-	-
	Ferric chloride test	-	-	-	-
Sterols	Salkowski's test	+	+	-	+
Cardiac glycosides	Keller-killiani test	+	+	+	-

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