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PRELIMINARY PHYTOCHEMICAL SCREENING STUDIES OF TECOMA STANS

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Abstract:

The Plant metabolites are the promising choice over modern synthetic drugs for its minimum side effects and remedy for several diseases. The medicinal values of the phytochemicals have remarkable biological activities such as antimicrobial, antineoplastic, anticancer, anti-inflammatory, antiviral etc. Tecoma stans is a flowering perennial shrub belonging to the family Bignoniaceae was subjected to phytochemical screening with leaf and stem samples subjected to methanolic, ethanolic and chloroform extracts. The present investigation revealed that the methanolic extract was the best among the three solvents and the leaf samples registered the maximum amount of phytochemical and proved to be highly therapeutic.

Key Words: Phytochemicals, Therapeutics, Methanol, Ethanol & Chloroform

Introduction:

Natural phytochemicals from plant sources either as pure compound or as standardized extracts provide unlimited availability of new drug leading to challenges in the medical field (1). According to the World Health Organization (WHO) nearly 20,000 medicinal plants exist in 91 countries including 12 mega biodiversity countries used as antibacterial (2), antifertility (3), preparation of dyes (4) etc. *Woodfordia fruticosa* is known for its medicinal value and used extensively in Atavas and Arishtas for self generation of alcohol (5) and they are commonly used for treatment of rheumatism, leucorrhea, liver disorder, asthma and inflammatory action (6). Traditionally, the crude extracts of various parts of the plant have taken a momentum since 1990s (7), food and feed (8) and curative agents (9, 10).

The genus *Citrus* is widely present and the parts of the plant are traditionally used in various ailments such as insect repellent, antibacterial (11, 12, 13). The bark flower and fruit decoction of *Mimusops elengi* revealed to be teeth cleaner and the tender twigs are used as toothbrush (14, 15). In the present investigation, *Tecoma stans* belonging to the family Bignoniaceae, which is native America has been subjected to various phytochemical analysis using ethanol, methanol and chloroform solvents. The plant is commonly known as yellow trumpet, bush, yellow bells, yellow elder, ginger thomas and grown as an ornamental plant Worldwide (16). *Tecoma stans* is a semi evergreen ornamental tropical shrub which is used traditionally for reducing blood glucose (17).

Materials and Methods:

Tecoma stans is a perennial flowering shrub which is a native of America and grows well in warm climates. The flowers are attracted by bees, butterflies and hummingbirds. The botanical classification is

Kingdom: Plantae
Unranked: Angiosperms
Unranked: Eudicots
Unranked: Asterids
Order : Lamiales

Family : Biognoniaceae
Genus : *Tecoma*
Species : *stanus*

Disease free fresh *Tecoma stans* were collected cleaned thoroughly and segregated into stem and leaf. The various parts were air dried for 3 to 4 weeks, powdered and stored in air tight container for future investigation. A known quantity of powdered leaf and stem were subjected to extraction with three different solvents methanol, ethanol and chloroform. Later the extracts were filtered with Whatrman filter paper No. 1 and subjected to various phytochemical analyses (4) as per standard methods (18).

Results and Discussion:

In the present investigation, around fifteen phytochemical analysis were carried out to identify their presence qualitatively. The results obtained during the study were tabulated in the Table 1, 2 and 3. The methanolic leaf extract showed positive results except glycosides, cardiac glyceroids and anthraquinones and stem registered positive results for carbohydrates, tannins, saponins, quinines, flavanoids, alka;loids, phenols, terpenoids, coumarins, proteins and steroids (Table1). From the above result, the ethanolic and chloroform extract of leaf and stem were subjected to various phytochemical tests and the results are tabulated in the table 2 and 3. The ethanolic leaf extract showed two positive results for alkaloids, quinines and the stem registered six positive results for saponins, flavanoids, alkaloids, quinones, coumarins and steroids.

Plants especially used in Ayurveda provide biologically active molecules and lead structures for the development of modified derivatives with reduced toxicity (19). Preliminary phytochemical screening of *Strychnos potatorum* revealed the presence of alkaloids, terpenoids, flavanoids, steroids, phenols, cellulose, starch, tannin, fixed oil and quinines (20). The chloroform extracts of leaf and stem were subjected to various phytochemical tests and are tabulated in Table 3. The chloroform leaf extract showed positive results for quinines, phenols, alkaloids and stem registered positive results for carbohydrates, quinines, phylobatanins during the period of study, Plants produce limitless ability of secondary metabolites and around 12,000 have been isolated which possess various medicinal properties (21,22).

Conclusion:

In the present investigation, the methanolic leaf extract had registered the maximum number of phytochemicals than ethanolic and chloroform extracts. Therefore, the present study has revealed that the investigated plant Tecoma stans has medicinal value and on further investigation on individual compounds will have a good value in the pharmaceutical industries

Table 1: Phytochemical analysis of methanolic extract of Tecoma stans

S. No	Phytochemicals	Methanolic extract	
		Leaf	Stem
1.	Carbohydrates	+	+
2	Tanins	+	+
3	Saponins	+	+
4	Flavonoids	+	-
5	Alkoloids	+	+
6	Quinones	+	+
7	Glycosides	-	-

8	Cardiac Glycerides	-	-
9	Terpenoids	+	+
10	Phenols	+	+
11	Coumarins	+	-
12	Proteins and amino acids	+	+
13	Steroids	+	-
14	Phylobatanins	+	-
15	Anthraquinones	-	-

Table 2: Phytochemical analysis of ethanolic extract of *Tecoma stans*

S. No	**Phytochemicals**	**Ethanolic extract**	
		Leaf	**Stem**
1.	Carbohydrates	-	-
2	Tanins	-	+
3	Saponins	-	+
4	Flavonoids	-	+
5	Alkoloids	+	+
6	Quinones	+	-
7	Glycosides	-	-
8	Cardiac Glycerides	-	-
9	Terpenoids	-	-
10	Phenols	-	+
11	Coumarins	-	-
12	Proteins and amino acids	-	+
13	Steroids	-	-
14	Phylobatanins	-	-
15	Anthraquinones	-	-

Table 3: Phytochemical analysis of chloroform extract of *Tecoma stans*

S. No	**Phytochemicals**	**Chloroform extract**	
		Leaf	**Stem**
1.	Carbohydrates	-	+
2	Tanins	-	-
3	Saponins	-	-
4	Flavonoids	-	-
5	Alkoloids	-	-
6	Quinones	+	-
7	Glycosides	-	-
8	Cardiac Glycerides	-	-
9	Terpenoids	-	-
10	Phenols	-	-
11	Coumarins	-	-
12	Proteins and amino acids	-	-
13	Steroids	-	-
14	Phylobatanins	-	-
15	Anthraquinones	-	-

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