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## Phytochemical and pharmacological review study on *Tecoma Stans* Linn

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### Abstract

*Tecoma stans* Linn is an erect shrub commonly found in India. It is also known as yellow bells, yellow elder, trumpet flower, belonging to the family Bignoniaceae. *Tecoma stans*, showed exhibited antidiabetic, antioxidant, hypoglycemic, antitumor, free radical, anti-inflammatory and antimicrobial, properties. This review aims at describing the botanical description, classification, phytochemical profiles of various parts of *Tecoma stans*.

**Keywords:** Phytochemical, medicinal, drugs, antimicrobial

### Introduction

Nature has been a source of medicinal agents for thousands of years and an impressive number of modern drugs have been isolated from natural sources, many based on their use in traditional medicine. Higher plants, as sources of medicinal compounds, have continued to play a dominant role in the maintenance of human health since ancient times [1]. Over 50% of all modern clinical drugs are of natural product origin and natural products play an important role in drug development programs in the pharmaceutical industry. In India people have been used plants and natural products for the treatment of various diseases from ancient time. Nearly 80% of the world's population depends on traditional medicine [2]. In the last two decades of the century the scientists are sincerely trying to evaluate many plant drugs used in traditional system of medicine. The pharmacognostical study is one of the major criteria for identification of plant drugs.

*Tecoma stans* is an erect shrub commonly found in India. Belonging to the family Bignoniaceae. The shrub has some common names in different native Indian languages. *Tecoma stans* Linn is also known as yellow bells, yellow elder, trumpet flower in English and Piliya in hindi. *Tecoma stans* is an important medicinal plant. Ginger Thomas leaves, bark and roots contains biologically active chemicals, and extracts from those tissues are in use as traditional folk medicines [3]. *Tecoma stans*, showed exhibited antitumor, antioxidant, antimicrobial, hypoglycemic, free radical anti-inflammatory and antidiabetic properties.

*Tecoma stans* is commonly planted as an ornamental in warmer climates throughout the world because of its showy yellow flowers and pinnate foliage [4].

### Classification

Kingdom	=	Plantae
Division	=	Tracheophyta
Subdivision	=	Spermatophytina
Class	=	Magnoliopsida
Order	=	Lamiales
Family	=	Bignoniaceae
Genus	=	Tecoma
Species	=	<i>T. stans</i>

### Vernacular name

Hindi	=	Piliya
Sanskrit	=	Sidhakya
English	=	Yellow bells, Yellow trumpet, Yellow elder
Malayalam	=	Subramanyakiretam
Tamil	=	Sonnapatti

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### Botanical description

A large shrub or small tree, much branched, growing upto 1.5-5m tall, but grows occasionally upto 10m in height. twigs tan or reddish tan, smooth, scarcely 4-sided; leaves opposite, pinnately compound, leaflets 1-9, usually 3-7, ovate-lanceolate, apex acuminate, base acute or obliquely acute, very shortly petiolate or all but subsessile, slightly hirsute on midrib and in vein axils beneath, margins irregularly serrate, leaves quite variable, rachis and petiole slender, glabrous. Inflorescence an axillary or terminal raceme, pedicels short, irregularly curved or twisted, bracts reduced to minute scales, flowers rather few, calyx narrowly cylindrical-campanulate, 5-7 cm long, with 5 sub-equal acuminate teeth, glabrous; stamens 4, attached at summit of tube, in 2 unequal pairs, included, filaments pilose at base, curved above, anthers versatile, linear, yellow, pilose, 6 mm long; sterile fifth stamen much reduced; pistil about equaling stamens, ovary narrowly cylindrical, about equaling calyx, style filiform, glabrous, stigma flat, elliptic; capsule linear, compressed, 10-20 cm long, 7-8 mm wide, brown when ripe, with raised line or suture lengthwise on each flat side, tardily dehiscent along suture, septum parallel with flat sides, firm, seeds flat, oblong, 7-8 x 4 mm, with a membranous transparent wing on each end, ends of wing erose, seeds entire including wing about 20 x 6 mm" [5].



Fig 1: [A] Whole Plant [B] Leaves [C] Flower and Fruit

### Phytochemical Constituents

Chemical constituents of this botanical species are well known; numerous monoterpene alkaloids have been identified [6-9]. The biosynthesis of these monoterpene alkaloids in callus tissues of *Tecoma stans* has been studied, together with the identification of the presence of lapachol and other primary and secondary plant metabolites such as: sugars (glucose, fructose, sucrose and xylose), triterpenoids (ursolic and oleanolic acids and  $\alpha$ -amyrine), p-sitosterol and phenolics (chlorogenic, caffeic, vanillic, o-cumaric and sinapic acids). All of these compounds have already been identified in the whole plant at different concentrations [10, 11]. A new phenylethanoid, 2-(3,4-dihydroxyphenyl) ethyl-2-O-[6-deoxy-alpha-L- mannopyranosyl]-4-(3,4 dihydroxyphenyl)-2-propenoate]-beta-D-glucopyranoside, and a novel monoterpene alkaloid, 5-hydroxy-skytanthine hydrochloride, along with eleven known compounds in the fruits and flowers was established in *Tecoma stans* [12].

### Pharmacological Activities

*Tecoma* genus possess various bioactive compounds that are reported to exhibit various pharmacological activities such as antioxidant, antimicrobial and antifungal activities [13-15]. The whole alcoholic and aqueous extract of *T. stans* exhibited the antibacterial activity and isolated tecomine, where the growth of *E. coli* and *B. subtilis* was inhibited at different

concentrations [16]. On the other hand, the methanol extract of *T. stans* leaf was reported to possess significant wound healing property [17]. Flavonoids have been proven to display a wide range of pharmacological and biochemical actions, such as antimicrobial and anticarcinogenic activities [18]. Flavonoids can act as free radical scavengers and terminate the radical chain reactions that occur during the oxidation of triglycerides in the food systems [19]. The presence of tannins in the extracts may explain its potent bioactivities known to possess potent antioxidants [20]. The saponins from plant extracts already have antioxidant activity [21]. The presence of phytoconstituents like phytosterol, triterpene, glycosides, phenols, flavonoids, saponins, and tannins either individually or combined together may exhibit the synergistic effect towards healing of wounds [22].

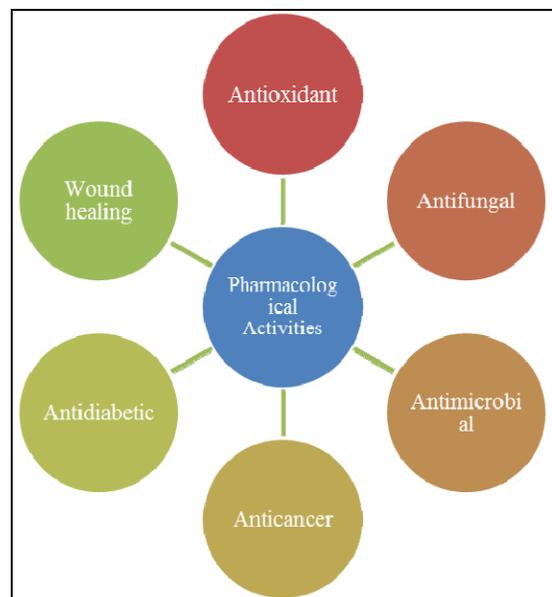


Fig 2: *Tecoma stans* have some Pharmacological activities

### Conclusion

Sustainable management of medicinal plant species is important due to their value as a potential source of new drugs. *Tecoma stans* is used by traditional medical practitioners for the treatment of various diseases. Phytochemical and Pharmacological reviews on plants will give valuable information which will assist the scientists in getting more advanced knowledge about a plant species.

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