Pharmacognostical Characteristics and Medicinal Uses of *Tecoma Stans*: A Review

G. Divya Sri*, A. Narendra Babu, M. Sathish Kumar, V. Venkateswarlu, K. Ashok Kumar
Department of Pharmacology, Chalapathi Institute of Pharmaceutical Sciences, Lam, Guntur

ABSTRACT
Many herbal remedies have so far been employed for the treatment and management of various ailments since the beginning of human civilization. *Tecoma stans* linn. (*Bignoniaceae*) is a plant widely distributed in Mexico and India. *Tecoma stans* seems to hold great potential for in-depth investigation for various biological activities. Through this review, we hope to attract the attention of natural product researchers throughout the world to focus on the unexplored potential of *Tecoma stans*, for developing new formulations with more therapeutic value.

**Keywords:** *Tecoma stans, Bignoniaceae, anti diabetic, anti oxidant, anti cancer*

*Corresponding Author
G. Divya Sri
Department of Pharmacology, Chalapathi Institute of Pharmaceutical Sciences, Lam, Guntur
E mail: divyasri716@gmail.com

Received on: 25-01-2014
Accepted on: 14-02-2014
Published on: 01-03-2014
INTRODUCTION
A survey of literature on *Tecoma stans* (Family: *Bignoniaceae*) popularly known as Yellow Bells or Ginger Thomas revealed that alkaloids, steroids, saponins, anthaquinones and flavonoids, tannins, terpenes, phytosterols, phenols, and glycosides constitute major classes of phytoconstituents of this plant. Pharmacological reports revealed that it is having antidiabetic, anticancer, antioxidant, antispasmodic, antimicrobial, and antifungal, properties, and extensively used in the treatment of diabetes. It is a fast growing evergreen plant with 20-30 ft in height, having moderate growth and yellow flowers. Leaves are green, compound, imparipinnate, and lanceolate with serrate margin. Fruits are elongated and clustered. Ginger thomas leaves, bark and roots contains biologically active chemicals, and extracts from those tissues are in use as traditional folk medicines. Plant is in use through Mexico, India and Central America for diabetes, roots for diuretic and urinary disorder control. *Tecoma stans* was also investigated for antifungal effect in roots. Standardization of a plant is first requirement for its use in herbal medicines\(^1\).

CLASSIFICATION\(^2\)

<table>
<thead>
<tr>
<th>Botanical name(^3)</th>
<th><em>Tecoma stans</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>Magnoliopsida</td>
</tr>
<tr>
<td>Common name(^4)</td>
<td><em>Yellow trumpet bush, tecoma yellow bells, golden bells, trumpet bush, yellow tecoma, yellow bignonia, yellow elder, ginger-thomas</em></td>
</tr>
<tr>
<td>Domain</td>
<td>Eukaryota</td>
</tr>
<tr>
<td>English name</td>
<td><em>Ginger thomas, tecoma, yellow bignonia, yellow cedar, yellow elder, yellow trumpet tree.</em></td>
</tr>
<tr>
<td>Family</td>
<td><em>Bignoniaceae</em></td>
</tr>
<tr>
<td>Genus</td>
<td><em>Tecoma</em></td>
</tr>
<tr>
<td>Hindi name</td>
<td><em>Ganer, trumpet flower.</em></td>
</tr>
<tr>
<td>Infraphylum</td>
<td>Radiatopseps</td>
</tr>
<tr>
<td>Kingdom</td>
<td>Pianae</td>
</tr>
<tr>
<td>Order</td>
<td><em>Scrophulariales</em></td>
</tr>
<tr>
<td>Other common name(s)</td>
<td><em>Yellow bells, golden bells, yellow trumpet bush, trumpet bush, yellow tecoma, tecoma, yellow bignonia, yellow elder, ginger-thomas.</em></td>
</tr>
<tr>
<td>Phylum</td>
<td><em>Tracheophyta</em></td>
</tr>
<tr>
<td>Specific epithet</td>
<td><em>stans</em> - (l.) Juss. Ex kunth</td>
</tr>
<tr>
<td>Subclass</td>
<td>Lamiidae</td>
</tr>
<tr>
<td>Subkingdom</td>
<td><em>Viridaeplantae</em></td>
</tr>
<tr>
<td>Subphylum</td>
<td>Euphylyphytina</td>
</tr>
<tr>
<td>Superorder</td>
<td>Lamiiane</td>
</tr>
<tr>
<td>Tamil name</td>
<td><em>Sannapatti, nagasambagam, sorndpatti, swarna patti, naga chambagam, nakacenpakam, comappatti, cunacci, ponnarali2, tankarali2, nakacanpakam, nakakam</em>(^5)</td>
</tr>
<tr>
<td>Telugu name</td>
<td><em>Suvarna ganmeru, swama ganmeru, panchaganneru, paccagotla, pachagotla, patcha ganmeru.</em></td>
</tr>
<tr>
<td>Tribe</td>
<td>Tecomeae</td>
</tr>
</tbody>
</table>

![Figure 1](image1.png)

**GEOGRAPHICAL DISTRIBUTION**

**Native:**
Argentina, Boliva, Brazil, Chile, Colombia, Costa rica, Ecuador, French, Guiana, Guatemala, Guyana, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Puerto rico, Surinam, Uruguay, Venezuela.

**Exotic:**
Benin, Burkina fas, Cameroon, Chad, Gambia, Ghana, India, Kenya, Liberia, Mali, Mauritania, Nigeria, Pakistan, Rwanda, Senegal, Sudan, Tanzania, Togo, Uganda, United States of America.

**Biological limits:**
It grows at an altitude of about 0-2000m; the mean annual rainfall is 600mm. The species prefers clay loamy soil, but tolerates most of soils and is particularly tolerant to alkaloids conditions\(^5\).

**Reproductive biology:**
It occurs naturally, *Tecoma stans* is probably pollinated by ants, insects, honeybees and humming birds\(^6\)\(^7\).
Morphological parameter | Observation
--- | ---
Condition | Fresh
Type | Simple or compound
Size: Length | 12.5-13.5 cms
Width | 4.5-5.5 cms
Shape | Ovate
Apex | Acute
Margin | Serrate
Vernation | Parietally pinnate
Base | Decurrent
Petiole | Long
Surface | Glabrous
Phyllotaxy | Opposite
Color: Outer | Dark green in color
Inner | Light green in colour
Odour | Characteristic
Taste | Bitter

**Figure 2:** Powder characters of roots of *Tecoma stans*

**IDENTITY, PURITY AND STRENGTH**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Parameter</th>
<th>Range</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Palisade ratio</td>
<td>6.00 – 8.00</td>
<td>6.85 ± 0.3841</td>
</tr>
<tr>
<td>02</td>
<td>Stomata number</td>
<td>8.00 – 10.00</td>
<td>8.80 ± 0.1864</td>
</tr>
<tr>
<td>03</td>
<td>Stomata number</td>
<td>5.00 – 9.00</td>
<td>6.95 ± 0.2348</td>
</tr>
<tr>
<td>04</td>
<td>Stomata index</td>
<td>17.02 – 23.26</td>
<td>20.2785 ± 0.4150</td>
</tr>
<tr>
<td>05</td>
<td>Stomata index</td>
<td>13.95 – 17.65</td>
<td>16.0275 ± 0.2617</td>
</tr>
<tr>
<td>06</td>
<td>Vein islet number</td>
<td>3.00 – 4.50</td>
<td>3.35 ± 0.2915</td>
</tr>
<tr>
<td>07</td>
<td>Vein termination number</td>
<td>2.75 – 3.00</td>
<td>2.85 0.0612</td>
</tr>
</tbody>
</table>

**MEDICINAL USES**

Leaves: It contains the alkaloids tecomine and tecostamine called as hypoglycemic alkaloids, which are potent hypoglycemic, vermifuge^9^.

Flowers: These flowers contain beta carotene and zeaxanthene to treat eye disorder.(10)

It is used to determine antinociceptive activity by hot plate method, formalin induced paw licking model, acetic acid induced writhing test and also used for anti-inflammatory activity by carrageenan-induced rat paw edema^11^.

As antidiabetic, anti spasmody, anti oxidant, anti proliferative, wound healing, cytotoxic, anti microbial, anti fungal.

It is used in the horticulture industry because it is drought and semi-salt tolerant.

Yellow elder has been used for a variety of purposes in herbal medicine.

Its primary applications have been in digestive problems.

Extracts from *Tecoma stans* leaves have been found to inhibit the growth of the yeast infection, *candida albican^2^*.

**FUNCTIONAL USES**

Products

Fuel: Trees provide firewood and charcoal.

Timber: Wood is used in the construction of buildings.

Medicine: Leaf infusion can be taken orally for diabetes and stomach pains; a strong leaf and root decoction is taken orally as a diuretic.

Shade or shelter: Tecoma tans provide useful shade, especially in gardens.

Ornamental: The species is valued as an amenity tree by virtue of its many yellow trumpet-shaped flowers.

Boundary or barrier or support: Trees can be planted as a live hedge.

**CONCLUSION**

It is concluded from this review that *Tecoma stans* is reported to possess anti-diabetic, diuretic, anti-spasmodic, anti microbial, anti-fungal and anti-oxidant activities and offers promise for further investigation.

**REFERENCES**

10. Study demonstrates essential role of zeaxanthin in eye health; 2012.

Conflict of Interest: None declared