

An Updated Review on the Genus *Cascabela* Plant

Family: Apocyanaceae

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ABSTRACT

Nature is the best combinatorial chemist and possibly has answers to all diseases of humankind. Till now, natural product compounds discovered from medicinal plants have provided numerous clinically useful drugs. In India itself, there are more than 1100 medicinal plants grown all over the wild forests. Of these, some 60 genes are used immensely in medicinal preparations. *Cascabela* is a very small genus under which 9 species are present. Most of the species under this genus is widely constituted with polysaccharides, cardenolides and triterpenoid saponins. These groups of plants are well known among the tribes for its anti cancer, treating mild heart-failure, asthma, epilepsy, leprosy and various other properties.

Keywords: *Cascabela*, Cardenolides, triterpenoids, Heart-failure, Anti-cancer.

INTRODUCTION

All the plants under genus *Cascabela* were previously known as *Thevetia* species but now they are categorized under separate genus *Cascabela* which consists of 9 species and much information is not reported about the genus and species.

GEOGRAPHICAL DISTRIBUTION

It originates from tropical America and is widely cultivated throughout the tropics as an ornamental, also in tropical Africa. It is found in tropics and sub-tropics. Also found on the margins of monsoon forest and rain forest.

GENERAL MORPHOLOGY

Plants of this genus are a shrub or tree up to 8 m tall. Its branchlets are smooth and exude white latex.

The leaves are arranged spirally, simple, linear-lance-shaped, measuring 6-15 cm x 0.4-0.7 cm, long-acuminate, with obscure venation and leathery texture. The petiole is very short. The inflorescence is subterminal, cymose and few-flowered. The flowers are 5-merous and only faintly fragrant. The sepals are acute and spreading. The petal lobes are overlapping to the left in bud, with infundibuliform petal, with tube widening around the middle, and measure about 3 cm long with densely hairy

corona lobes near the throat alternating with the stamens. The yellow lobes are about 3 cm long. The stamens are completely included while the anthers are attached to each other apically across the top of pistil head but not adnate to it. They are yellow to orange or peachy pink. The ovary consists of 2 carpels with several ovules per carpel.

The fruit is a drupe with mericarps that are united into an obdeltoid shape, laterally compressed, measures about 3-4 cm in diameter, yellowish-green turning red, with ripening black, fleshy exocarp and stony mesocarp while the endocarps are free from each other.

The seed is flattened with a small wing where there is one seed per mericarp. Seedling is with epigeal germination.

Members of the genus *Cascabela*

C. alliodora, *C. gaumeri*, *C. ovata*, *C. Peruviana*, *C. pinifolia*, *C. plumerifolia*, *C. thevetia*, *C. thevetioides*, *C. bicornuta*.

Of these 9 species, only 5 species are accepted and includes their geographical areas but no activities have been reported so far on these plants or genus. Other 4 plants have no information either about the plant and its identity nor its geographical distribution.

C. gaumeri : Belize and Mexico.



Fig. 1: *Cascabela gaumeri*

C. ovata : Mexico to Central America.



Fig. 2: *Cascabela ovate*

C. pinifolia : Pacific islands, South Africa, Sri Lanka and South America.
No figure is reported.

C. thevetioides : Native to the deciduous forests of central and southern Mexico.



Fig. 3: *Cascabela thevetioides*

C. thevetia : Native to tropical America (i.e. possibly Peru, Mexico and the Caribbean). It is most common in coastal southern and central

Queensland. Also naturalized in Asia, Malaysia and Pacific islands.



Fig. 4: *Cascabela thevetia*

***C. alliodora*, *C. Peruviana*, *C. plumerifolia*,
*C. bicornuta***

No information about the plants or the figure is reported so far.

FOLK FORE USE

OF *Cascabela thevetia* (L.)

- *Thevetia peruviana* (*Cascabela thevetia*) is used medicinally throughout the tropics in spite of its toxicity.
- A bark or leaf decoction is taken to loosen the bowels, as an emetic, and is said to be an effective cure for intermittent fevers.
- In Senegal, water in which leaves and bark were macerated is taken to cure amenorrhoea.
- In Mali, the latex is applied to soften corns and calluses.
- In Côte d'Ivoire and Benin, the leaf sap is used as eye drops and nose drops to cure violent headaches; the leaf sap is also dropped in the nostrils to revive people that have fainted and to cure colds.
- In Kenya, the Luo people use water in which leaves have been crushed to treat colds.
- The seeds may be used as a purgative.
- The seed oil is applied externally in India to treat skin infections.
- Care should be taken in all medical applications, in particular those used internally, as toxic doses are only a little higher than therapeutic ones.
- In Benin and Uganda, an infusion of the roots is taken to treat snakebites.
- In Ghana, the leaves in decoction are taken to treat jaundice, fever and as a purgative for intestinal worms.
- In Ghana and Uganda, the wood is used to make tool handles and building poles. It is also used as fuel.
- The bark and seeds are used to poison rats, and also for criminal purposes.
- In southern Africa and Cameroon, the seeds are used as an arrow or ordeal poison.
- In India and Sri Lanka, seeds have been used for committing suicide or homicide.
- Other reports state the use of the seeds as an abortifacient.
- The seeds act as a contact poison; mashed with a soap solution they are used as an insecticide.
- It is also used as fuel. The fruit pulp is sometimes eaten.
- *Thevetia peruviana* (*Cascabela thevetia*) is widely planted as an ornamental in gardens, and also as a hedge.
- In cooler climates it can be grown in tubs in the glasshouse and outdoors in summer.
- It is also planted for shade or for soil conservation. After purification, the originally poisonous seed oil is suitable for consumption.
- Medicinally used for toothache, skin sores and as purgative, if used judiciously.

CONCLUSION

The plants coming under the genus *Cascabela* is chemically constituted with the constituents like triterpenoids, cardenolides, polysaccharides, glycosides and alkaloids which vary from one plant to another. Hence it can be considered that these plants may possess a lot of medicinal value which may be in one way or the other beneficial for the

human well being. Much attention can be given in complete exploration of the different species of this genus as they have not yet come in the limelight of the researchers.

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