

# Gokshura (*Tribulus terrestris L.*): In Traditional Medicine and its Pharmacological

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FIGURE 1: GOKSHURA ( Image Courtesy: healingearth.co.in, 2017)

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## SUMMARY

Gokshura (*Tribulus terrestris L.*) is very valued herb in the Indian Ayurvedic system of medicine for treatment of various kinds of diseases. Plant contains various chemical viz., Gitogenin, Astragalin, Dioscin, Gracillin, Hecogenin, Ruscogenin, Trillin, Spirosterol, Saponin etc. which are found medicinally important. Various studies which are done on Gokshura revealed the result that the plant possesses Antiuro lithiatic, Antimicrobial, Antihelminthic, Cardiotoxic, Anti-inflammatory, Hypolipidemic, Immunomodulatory, Antispasmodic, Analgesic, Aphrodisiac, Antidiabetic, Anti-tumour, Hepato-protective, Anticarcinogenic, Anti-oxidant, CNS modulator properties. Considering its therapeutic values, this article has been done to gather complete information on different aspects of Gokshura.

## INTRODUCTION

*Tribulus terrestris L.* is a well-known medicinal plant and popularly known as Gokshura in ayurveda system. It is one of the component of Dashmoola (group of ten medicinal plants principally comprising of roots as the useful part) which is used for the treatment of numerous diseases. In Brahatrayi (Charaka Samhita, Sushrut Samhita, Astanga Hridaya) and Ayurvedic Nighantus with its synonyms and therapeutic potential was well described. In the commentary of Madanapala Nighantu, it is mentioned that the root is used in Dashmoola while the fruit is Vrushya (aphrodisiac). In Samhitas and Nighantus, mentioned about two varieties of gokshura i.e. Brihat Gokshura (*Pedalium murex L.*) and Laghu Gokshura (*Tribulus Terrestris L.*) is also known as a punctate vine which belongs to family Zygophyllaceae mainly found in hot climate. It is distributed in the countries of subtropical part of world viz., Africa, Australia, India, Pakistan, North Africa, China, southern and Western Europe.

## Botany

It is a tap rooted herbaceous, it is an annual herb which is rarely perennial having yellow flowers and woody fruits with spines. The stems radiate from the crown to a diameter of about 10 cm to over 1m. Leaves are opposite and pinnately compound, the flowers are 4 -10 mm wide, with five lemon-yellow petals, five sepals, and ten stamens. After the flower blooms, a fruit develops that easily falls apart into five

burs, the burs are hard and bear two to four sharp spines. These burs strikingly resemble goats' or bulls' heads, characteristics which give the bur its common names in some regions. It is a common weed plant with divaricate spines. It has antihypertensive, diuretic, haemolytic antimicrobial, activity, antiacetylcholine, stimulate spermatogenesis and shows antitumour activity.

### (a) Synonyms

**Sanskrit Names:** Goksuraka, Trikanta, Svadamstra, Traikantaka

**English Name:** Small Caltrop, Land caltrop, Puncture vine

### (b) Chemical constituents

Chlorogenin, Diosgenin and its acetate, Gitogenin, Astragalin, Dioscin, Gracillin, Hecogenin, Ruscogenin, Trillin, Spirosterol, Saponin, Kaempferol, Glucose, Rutin, Harmine, Quercetin, Amino acids.

### (c) Pharmacological Properties

#### i. Antiuro lithiatic activity

It is used for the treatment of urinary tract disease. Ethanolic extract of the fruit showed protection against uroliths. Calcium oxalate monohydrate (COM) calcium oxalate dihydrate (COD) containing stones are commonly found as urinary stones. Inhibition of COM crystals growth was observed by fruit extract.

#### ii. Antimicrobial activity

The ethanol extract showed antimicrobial activity against both gram positive and gramnegative bacteria and

antifungal activity.

#### iii. Antihelminthic activity

Tribulosin and sitosterol glycosides have been found to have antihelminthic properties in 50% methanolic extracts of *Tribulus terrestris*.

#### iv. Cardiotoxic activity

In rats, (tribulosin) saponins are effective at treating cardiac ischemia/reperfusion injury and the underlying mechanism. The main phytochemical saponin has a positive response to dilate the coronary artery and improve blood vessel circulation.

#### v. Anti-inflammatory activity

The extract (methanolic) of *Tribulus terrestris* showed inhibition of rat paw volume in carrageena induced inflammation in rats.

#### vi. Aphrodisiac activity

Phytochemical and pharmacological studies in humans and animals revealed an important role for *T. terrestris* in treating erectile dysfunction and sexual desire problems. It was also reported that the drug *Tribulus terrestris* has more potential than Aswagandha and Kappikachu. Antidiabetic activity: it has hypoglycemic activity due to saponins. It reduces the level of serum glucose, serum triglyceride, and serum cholesterol, while serum superoxide dismutase (SOD) activity was found to be increased in alloxan-induced diabetic mice. The decoction of the fruit showed inhibition of gluconeogenesis in mice.

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## CONCLUSION

It is widely used as traditional curable medicines in several countries such as China, European nations, and America. Lots of studies on *Tribulus terrestris* have reported that the whole plant has tremendous pharmacological properties *i.e.*, diuresis, aphrodisiac, antiurolithic, immuno modulatory, antihypertensive, antidiabetic, anticancer, antibacterial, analgesic, and antiinflammatory.

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