

CHAPTER III

Medicinal Characters of plants.



INTRODUCTION:

Several thousand plants have been and are still used for medicinal purposes. The medicinal value of drug plants is due to the presence of some chemical substances in the plant tissues as secondary products that produce a definite physiological action in human body. Most of these substances are essential oils, fatty oils, glucosides, resins, gums, mucilages, tannins, steroids, and alkaloids. Because of the physiological effects of these substances of plant origin, on human and animal system. Various components of plants have been used in pharmacy, ^{components} components of plants have been used in pharmacy since the time immemorial.

MEDICINAL VALUE:

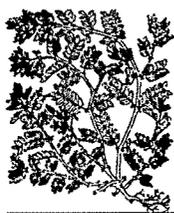
All the components i.e. root, stem, leaves, flowers and fruits of the plant *T. terrestris* are the important ingredients of many Ayurvedic preparations. The drugs are diuretic tonic, aphrodisiac and often used in painful micturition. The freshly expressed juice of the aqueous extract of the whole plant contains inorganic nitrites, mostly potassium nitrite in toxic amounts. It is used for the treatment of piles, cough, calculi and leprosy. Bose et. al. (1963) carried out the pharmacological study on the Indian variety of *T. terrestris* L. The minor alkaloidal fraction did not affect the blood pressure of the dog but depressed the frog heart in situ.



It causes the inhibition of acetyl choline, induced contraction of isolated intestine of rats and also of frog rectus muscle and had moderate diuretic effect. The aqueous fraction induced mild hypotension, showed anti-acetylcholine like action on the rat intestine. Its diuretic effect was insignificant. These findings are supported by the results of preliminary clinical trials on selected cases of ascite and edema. Leaves are diuretic tonic increase the menstrual flow, cure gonorrhoea. A decoction is useful as a gorgle for mouth troubles and painful gum and reduce inflammation *Kirtikar and Basu (1975)*.

Fruits are acidic with a disagreeable taste diuretic, removes gravel from the urine and stone in the bladder. They are regarded as cooling, diuretic, tonic and amphrodisiac and one used in the painful micutrition urinary disorders and of importance in same countries. They are reputed tonic and astrigent, used for coughs, scalaes, anaemia and ophthalmia.

Root is a good stomachic and appetiser, diuretic and carminative. The entire plant but more particular by the fruits are used in medicines. It was given a good trial in brights disease with dropsy. It was also used combined with bdellium in a patient suffering from the gonorrhocal rheumatism with cystilis. The diuretic property of the drug is due to the presence of large quantities of nitrates present as well as the essential oil which occurs in the seeds.



The following substances are found in the fruit. Fruit contains the alkaloids in minute quantity. Fixed oil (35%) consisting mainly of the unsaturated acids, essential oil in small quantities resins and fair amounts of nitrates.

The plant causes geeldikkop (dikgeel) in small stock, a condition characterised by edema of head, fever and jaundice. Preparations are Dasmularista Gokshuradi Kwath, Gokshuradi-gugula, Gokshuradi awaleha, Gokheradi-Churna, Abhayarista Rasna-saptak-Kwath, Haritakayadi Kwath, Vrihad varuna-di Kwath.

In action it is alternative anthelmintic, antiarthritis and aphrodisiac, conceptive (roots of white flower variety) cooling demulcent, expectorant and tonic used in calculous affections, kidney diseases, painful micturation and urinary discharges.

The cardiac action of *T. terrestris L.* was also studied by *Seth and Jagadeesh (1976)*. They have reported the cardiac stimulant action of the semipurified water soluble extract of fruits. These investigations are carried out on rabbit auricle, cat papillary muscle and on arterial blood pressure of guinea pig.

The extract has a potent stimulant effect on the isolated heart muscle in hypodynamic state. An increase in the force of myocardial contraction with a negative chronotropic effect. Suggested the presence of a glucoside fraction



in the extract *Chakraborty and Neogi (1978)* studied the various pharmacological action and reported that an alcoholic extract of the plant (Whole) produced a sharp vasodepression in an anaesthetised dogs mediated through cholinergic mechanism. It also brings some characteristic changes in CNS and Carbohydrate metabolism. The seeds of *T.terrestris* was found to be toxic to the liver of rat *Indian Forester (1963)*. The extracts from seeds of Gokhru was fed to liver, lungs and kidney of a rat for two months. Lungs and kidney on histopathological examination were found to be normal. Liver showed the metamorphosis of internal cells. Lobular architecture of the liver cells was greatly disturbed, with some cells had undergone complete necrosis.

Sastry (1964) studied the toxicity effect of *T.terrestris* on goats, sheeps and calves. He gave 4 lbs of fresh gokhru plant to goats, sheeps and 8 lbs of fresh plant to calves. The temperature pulse, respiration and body weight of the animals were recorded at the regular intervals. All the animals were exposed to strong sunlight everyday. Diarrhoea was recorded in calves and all other animals remains healthy within two month period. Fresh juice from 1kg of the green plant was administered orally of calf and sheep for a period of eight days. No toxic symptoms were observed.



ANTIMICROBIAL SCREENING:

George *et. al.* (1947) studied the antibacterial activity of the plant extract (alcoholic and aqueous extracts) against *Salmonella aureus* and *Escherichicola* and reported that alcoholic and aqueous extracts of leaf are effective against both the organisms. Where as the extract of leaf are also effective against both the organisms. The aqueous extract of seeds was only active against *S. aureus*. Both alcoholic as well as the aqueous extract of the stem was not showing any antibacterial activity.

Joshi and Magar (1952) studied the antibacterial activity of 0.9% saline solution extract, treating 15gm of plantfruit material with 70ml of 0.9% saline solution for 2-3 minutes and keeping it for one hour in (i) dilute sulphuric acid (ii) acetate buffer (pH 3.5) (iii) phosphate buffer (pH9) and (iv) ether, against the *S. aureus* and *E.Coli*.

The extracts in acetate and phosphate buffer were having no activity against these organisms, where as the dilute sulphuric acid and ether solution extracts were effective against both the organism. Dhar *et.al.* (1968) reported the antimicrobial activity of the 50% ethanolic extract of the seed and the whole plant (except roots) against the *Bacillus subtilis*, *Salmonella typhi*, *A. tumefaciens*, *E.coli* and *Mycobacterium tuberculosis*.



Singh et al (1974) studied the anti bacterial activity of the 95% ethanolic extract of fruits of *T. terrestris* against *E. coli* by the disk method. They have reported that the plant is completely active against the above organism.

ANTITUMOUR ACTIVITY:

Itokawa et al. (1979) reported the antitumour activity of the crude extract of *Tribulus terrestris L.* The preliminary examination of the antitumor screening was done with sarcoma 180 ascites mice. *Ali et al. (2000)* have investigated the aerial part of *T. terrestris Linn* for its chemical composition.

