

# Taxonomic Studies on Amarbel (Cuscuta) : A Review

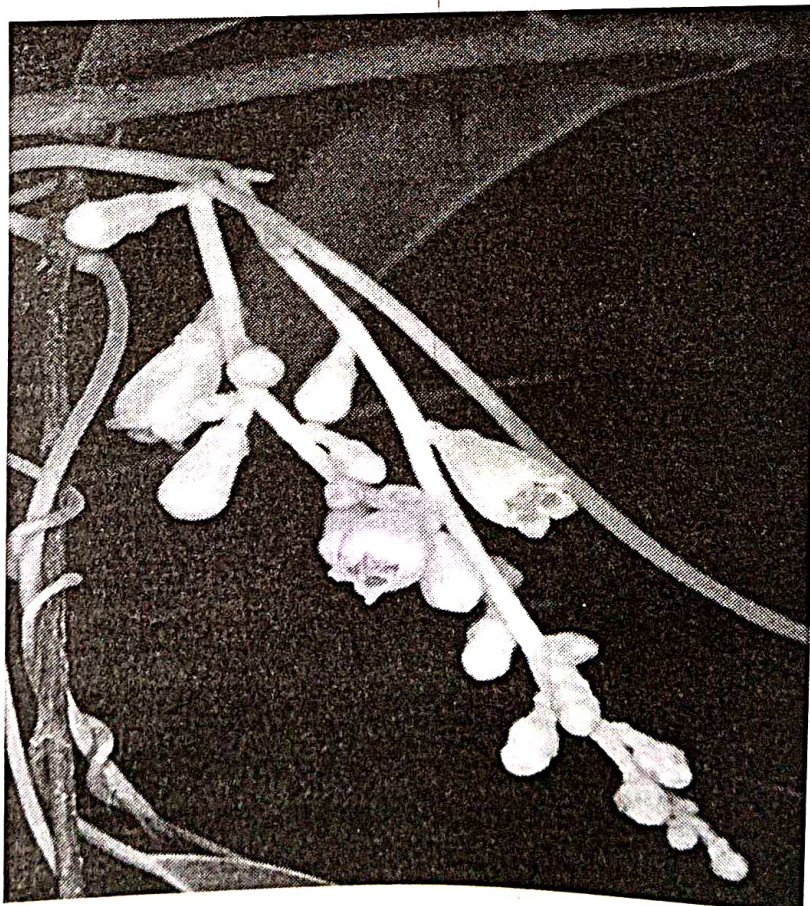
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## Abstract :-

Amar bel meaning immortal vine is a parasitic vine belongs to the morning glory family, botanical name is *Cuscuta reflexa* Roxb. It grows on host plant or on other support. It finds & selects its host through volatile chemicals. It is an important medical plant which also have toxic properties.

This paper deals with taxonomy, parasitism, host finding, chemical constituents- which mainly arecuscutin, amarbelin and medicinal properties, as the plant is an important ayurvedic medicinal plant valued as amruta (rejuvenating) and its poisonous properties.

Keywords - *Cuscuta reflexa*, parasitism, medicinal properties.



### **Introduction :-**

*Cuscuta* (Dodder) is a genus of parasitic plant which is about 100-170 species of yellow, orange or red (rarely green. Formerly treated as the only genus in the family *Cuscutaceae*, recent genetic researches have shown that it is correctly placed in the family *Convovulaceae*. The genus is found throughout the temperate to tropical regions of the world, with the greatest species diversity in subtropical and tropical regions; the genus becomes rare in cool temperate climates.

Old folk names include devil's guts, devil's hair, devil's ringlet, goldthread, hailweed, hairweed, hellbine, love vine, pull-down, strangleweed, angel hair, and witch's hair.

The plant is distributed throughout India, Ceylon and Malaya. The greatest species diversity is found in subtropical and tropical regions; the genus becomes rare in cool temperate climates, with only four species native to northern Europe.

### **Description :-**

Annual stem parasites with leafless, thread-like, orange, red, or yellow stems that twine over other plants. Dodder can be problematic in agricultural crops, especially alfalfa and tomatoes. It can be identified by its thin, glabrous stems appearing leafless, with the leaves reduced to minute scales-like leaves about 2 mm long; red, yellow, or orange, but contain some chlorophyll and are sometimes tinged green. Growing stems branch and attach to new host stems with haustoria. Each dodder branch obtains nutrients from the host independent of older branches. The flowers are also much longer, up to 10 mm long, white or pinkish with 5 obtuse lobes, in loose clusters. Inflorescences lateral, few to many flowered, in racemes or panicles. Pedicel 2-4 mm, together with peduncle, brown spotted or tuberculate. Calyx cupular; sepals 5, broadly ovate. Corolla white or creamy, fragrant, tubular. Stamens inserted at throat; filaments shorter than anthers or absent; anthers elliptic-ovate. Ovary ovate-conical. The capsule is elongated, conical-globose.

### **Parasitism :-**

After a dodder attaches itself to a plant, it wraps itself around it. If the host contains food beneficial to dodder, then it produces haustoria, that insert themselves into the vascular system of the host. The original root of the dodder in the soil then dies. The dodder can grow and attach itself to multiple plants. In tropical areas it can grow more or less continuously, and may reach high into the canopy of shrubs and trees; in temperate regions it is restricted to relatively low vegetation that can be reached by new seedlings each spring.

Dodder is parasitic on a very wide variety of plants, including a number of agricultural and horticultural crop species.

Dodder ranges in severity based on its species and the species of the host, the time of attack, and whether any viruses are also present in the host plant. By debilitating the host plant, dodder decreases the ability of plants to resist virus diseases, and dodder can also spread plant diseases from one host to another if it is attached to more than one plant.

#### Host finding :-

A report published in Science (Vol 313; Sept. 29, 2006) by Runyon, Mescher, and De Moraes, researchers at Penn State University, demonstrates that dodder use airborne (volatile) chemical cues to locate their host plants. Seedlings of *Cuscuta pentagona* exhibit positive growth responses to volatiles released by tomato and other species of host plants. When given a choice between volatiles released by the preferred host tomato and the non-host wheat, the parasite exhibited preferential growth toward the former. Further experiments demonstrated attraction to a number of individual compounds released by host plants and repellance by one compound released by wheat. These results do not rule out the possibility that other cues (e.g., light) may also play a role in host location.

**Chemical constituent** - cuscutin, amarbelin, beta-sterol, stigmasterol, kaempferol, dulcitol, myricetin, quercetin, coumarin and oleanolic acid, (Sharma et al., 2009 and Mohammad, 2004).

#### Medicinal and Toxic/ Poisonous Properties

**Medicinal properties** - It is antispasmodic, hemodynamic, bradycardia, antisteroidogenic, antihypertensive, muscle relaxant, cardiogenic, psycho-pharmacological, antiviral and anticonvulsant activities. The plant is considered as a rejuvenating plant and given name *amruta*, used in Ayurvedic medicine to treat difficulty in urinating, jaundice, muscle pain and coughs. Whole plant is used against diabetes, against hepatitis, retention of urine, hair fall and dandruff and against laziness. The seeds are alterative, anthelmintic and carminative. The stems are used in the treatment of bilious disorders. *Cuscuta reflexa* Roxb. (whole plant) and *Calotropis procera* (leaves) are used in folk medicine of Bangladesh to control blood sugar in patients suffering from diabetes mellitus.

**Toxic/ poisonous properties** - decoction is used for antifertility, nausea, vomiting and abortion.

**Toxic part** - whole plant.

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