

**AFTIMOON HINDI (*CUSCUTA REFLEXA* ROXB.): A MIRACULOUS HERB**Irfat Ara<sup>1</sup>, Shazad Yaqoob<sup>2</sup>, Basharat Bukhari<sup>1</sup>, Nighat Ara<sup>1</sup>, Weeqar Younis Raja<sup>3</sup> and Mudasir Maqbool<sup>3\*</sup><sup>1</sup>Regional Research Institute of Unani Medicine, Hazratbal Srinagar-190006, Jammu and Kashmir, India.<sup>2</sup>Medical Officer, Indian System of Medicine, Jammu & Kashmir, India.<sup>3</sup>Department of Pharmaceutical Sciences, University of Kashmir, Hazratbal Srinagar-190006, Jammu and Kashmir, India.**\*Corresponding Author: Dr. Mudasir Maqbool**

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**ABSTRACT**

*Cuscuta reflexa* Roxb. is a twining parasite and makes a tangled mass covering on the host plants. It is commonly known as dodder plant, amarbel, akashabela. Traditionally it is called as miracle plant. Medicinal properties of the plant are used to cure various diseases. These medicinal properties of the plant are due to the active phytoconstituents of the plants. Parasitic weed plant *Cuscuta reflexa* has been studied for the identification of its pharmacological activities. Various chemicals have been isolated from this miracle plant having therapeutic potential possessing ethnomedicinal and pharmacological activities. It contains important chemicals like cuscutin, cuscotalin, bergenin, kaempferol, amarbelin and sterol glycosides etc. Diverse pharmacological studies of Aftimoon have been reported such as anti-inflammatory, cytotoxic, antipyretic, hepatoprotective, anticonvulsant, nematicide, anti-androgenic, hypocholesterolemic, antiandrogenic, hemolytic, diuretic, dermatogenic, immunostimulant, antiarthritic, antiasthma and anticancer activities. In this paper, an attempt has been made to summarize the information described in classical Unani text and scientific research conducted on different parts of *Cuscuta reflexa* plant.

**KEYWORDS:** *Cuscuta reflexa* Roxb., Ethnomedicine, Unani, medicinal herb.**INTRODUCTION**

*Cuscuta reflexa* is commonly called as dodder plant, and also known as devil's hair, witch's hair, love vine, amarbel or akashabela etc. *Cuscuta reflexa* is a parasitic weed plant and also an extensive climber. It grows as homoparasite.<sup>[1]</sup> *Cuscuta reflexa* Roxb. belongs to family Cuscutaceae and is known as Aftimoon in Unani system of medicine.<sup>[2]</sup> Aftimoon Hindi is one of the ingredients in the preparation of various Unani compound formulations such as *Sharbat Dinar*, *Itrifal Ustukhudoos*, *Majoon Ushba*, *Itrifal Aftimoon*, and *Safoof chobchini*.<sup>[3-5]</sup> It has been used by Unani physicians since ages for the treatment of various ailments such as neurological disorders like melancholia, schizophrenia, epilepsy etc.<sup>[6]</sup> It is also used for the treatment of various other disorders like hepatitis, palpitation and skin disorders etc.<sup>[6]</sup> *Cuscuta* is found in the temperate and tropical region of the world with huge species diversity in tropical and sub tropical regions. It occurs throughout the India. This species is common over the northern regions of country, Bengal plains, Western ghats, Ceylon, Satara region, Himachal Pradesh, Uttar Pradesh and Uttarakhand. Ceylon, Satara region, Himachal Pradesh, Uttar Pradesh and Uttarakhand.<sup>[7]</sup> It is also found in plains of Afganistan, Malaysia, Nepal and Thailand.<sup>[6]</sup> The plant is

attached to various trees, shrubs, herbs and affects commercially valuable crops.<sup>[8]</sup> It is parasite on a wide variety of plants including a number of agriculture and horticulture crop species. The common host plants are *Acalypha hispida* (Euphorbiaceae), *Adathoda vasica* (Acanthaceae), *Alstonia scholaris* (Apocynaceae), *Annona squamosa* (Annonaceae), *Bougainvillea spectabilis* (Nyctaginaceae), *Calotropis gigantea* (Asclepiadaceae), *Catharanthus roseus* (Apocynaceae), *Clerodendron viscosum* (Verbenaceae), *Campsis radicans* (Bignoniaceae), *Dalbergia sisso* (Fabaceae), *Dahelia* species (Asteraceae), *Duranta plumieri* (Verbenaceae), *Euphorbia* sps. (Euphorbiaceae), *Ficus glomerata* (Moraceae), *Hamelia patens* (Rubiaceae), *Hibiscusrosa sinensis* (Malvaceae), *Helenium autumnale* (Asteraceae), *Hevea brasiliensis* (Euphorbiaceae), *Ixora* (Malveaceae), *Impatiens* species (Balsaminaceae), *Jatropha curcas* (Euphorbiaceae), *Lantana camara* (Verbenaceae), *Linum usitatissimum* (Linaceae), *Medicago sativa* (Fabaceae), *Nerium oleander* (Apocynaceae), *Petunia* species (Solanaceae), *Phyllanthus niruri* (Euphorbiaceae), *Punica granatum* (Myrtaceae), *Ricinus Communis* (Euphorbiaceae), *Solanum tuberosum* (Solanaceae), *Vitex negundo* (Verbenaceae).<sup>[9, 10, 6, 11]</sup>

**Scientific Classification**<sup>[2,12]</sup>

Kingdom: Plantae  
 Subkingdom: Tracheobionta  
 Super division: Spermatophyta  
 Division: Magnoliophyta  
 Class: Magnoliopsida  
 Subclass: Asteridae  
 Order: Solanales  
 Family: Cuscutaceae  
 Genus: *Cuscuta* L.  
 Species: *C. reflexa*

**Vernacular Names**<sup>[2,12]</sup>

Arabic: Aftimoon, Shajarul sabagh  
 Persian: Darakht-e-Pechan  
 Bengali: Algusi  
 English: Dodder  
 Gujrati: Amar Bel  
 Hindi: Akash Bel  
 Marathi: Nirmuli  
 Punjabi: Nilathari  
 Sanskrit: Amarvela  
 Telugu: Sitana pugonalu

**Chemical Constituents**

*Cuscuta reflexa* is a parasitic weed plant; it sucks nutrients from the host plant for its growth and development, that's why its phytoconstituents also depends on the host plant. Various phytoconstituents have been isolated from *Cuscuta* grown on different host plants. Phytochemicals isolated from *Cuscuta reflexa* are flavonoids<sup>[13]</sup>, dulcitol, mannitol, sitosterol, lycopene, apigenin-7- $\beta$ -rutinoside, 6-7 dimethoxy coumarin, quercetin, hyperoside<sup>[14,15]</sup>, propenamide, reflexin, lutein, carotene, amarbellin, palmitic, oleic, stearic, linolenic acids, leuteolin, cuscutin, cuscutalin, kaempferol, kaempferol-3-O-glucoside, astragallic acid, benzopyrones, glucopyranosides, quercetin-3-O-glucoside, bergenin.<sup>[16-18]</sup> Lupeol isolated from *C. reflexa* is a pharmacologically active tri-terpenoids and shows antimicrobial, anti-inflammatory, antitumor, antiprotozoal and chemoprotective properties.<sup>[19]</sup> As an anti-inflammatory agent, lupeol is found to decrease interleukin -4 production by T-helper cells.<sup>[20,21]</sup> The main active principles presented in the plant are cuscutalin (1%) and cuscutin (0.02%). The plant also contains wax and reducing sugars. The seeds contain amarvelin, resins, oil (3%) and reducing sugars. These constituents are reported to vary with the host on which the dodder parasitizes.<sup>[22]</sup>

**Temperament (Mizaj):** Har Yabis.<sup>[23, 24]</sup>

**Correctives (Musleh)**

Zafran (*Crocus sativa*), Roghan Badam (Almond oil), Samagh Arbi (*Acacia arabica*), Kateera (*Astragalus gemmifer*).<sup>[23, 24]</sup>

**Substitute (Badal)**

Turbud (*Ipomoea turpethum*) in equal weight.<sup>[23, 24]</sup>

**Dose (Miqdare Khorak):** 3-5 gm.<sup>[23, 24]</sup>

**Pharmacological Actions (Afaal)**

*Mushil-e-Sauda* (Purgative of black bile), *Mushil-e-Balgham* (Purgative of phlegm), *Musaffi Dam* (Blood purifier), *Muhallil-e-Warm* (Anti-inflammatory), *Mufatteh Sudad* (Deobstruent), *Mudir-e-Tamth* (Emmenagogue), *Mudir-e-Baul* (Diuretic) Anonymous, *Mulattif* (Demulcent), *Muqawwi* (Tonic), *Muqawwi Bah* (Aphrodisiac), *Munaffis* (Expectorant), *Kasir-e-Riyah* (Carminative), *Qatil-e-Deedan* (Anthelmintic) (Kirtikar & Basu, Munavim (Sedative)).<sup>[2, 24, 25]</sup>

**Therapeutic Uses (Istemaal)**

*Malikhuliya* (Melancholia), *Iztrab-e-Nafsani* (Anxiety Disorder), *Kaboos, Junoon* (Schizophrenia) *Zof-e-Kabid* (Liver weakness), *Warm-e-Kabid* (Hepatitis), *Deedan-e-Ama* (Intestinal worms), *Saudavi Amraz* (Ailments due to excessive black bile), *Nafakh-e-Shikam* (Flatulence), *Sara* (Epilepsy) *Dimaghi Amraz* (Brain disorders), *Faalij* (Paralysis), *Laqwa* (Facial paralysis), *Khadar* (Numbness), *Sartan* (Cancer), *Amraz-e-Jild* (Skin disorders), *Warm-e-Tehal* (Splenomegaly), *Waja-ul-Azlaat wa Mafasil* (Pain in muscles & joints), *Yaraqan* (Jaundice), *Khafaqan* (Palpitation).<sup>[2, 24, 25]</sup>

**Compound Formulations**

*Sharbat Dinar*, *Itrifal Ustukhudoos*, *Majoon Ushba*, *Itrifal Aftimoon*, and *Safoof chobchini*, Sikanjbeen Aftimooni, *Sharbat Ahmad Shahi*.<sup>[3-5]</sup>

**Scientific Studies**

Traditional system of medicine relies on the plant sources to cure various disorders. *Cuscuta reflexa* has been studied for the identification of its plant properties to be used as medicinal plant. *C. reflexa* possesses antiviral, anticonvulsant activities, bradycardia, antisteroidogenic, antispasmodic and hemodynamic activities.<sup>[25]</sup> Rural people of India used juice of *C. reflexa* for the treatment of jaundice, its warm paste is used to treat rheumatism and paste of whole plant is used for the treatment of headache.<sup>[26]</sup> *C. reflexa* is used in the treatment of urination disorders, muscle pain and cough and also used as blood purifier. Seeds of *Cuscuta reflexa* have carminative and anthelmintic properties and used to treat bilious disorder.<sup>[27]</sup> Seeds of *C. reflexa* have neutral nature and sweet in taste; it's used in the treatment of liver and kidney disorders. This plant has the ability to control the loss of fluids from the body. *C. reflexa* is also used in the combination with other medicinal plant to cure various diseases. Juice of *Cuscuta reflexa* in the combination with the juice of *S. officinarum* is used for the treatment of jaundice.

*Cuscuta reflexa* is used in the treatment of constipation, flatulence, body pains, itchy skin, frequent urination, dry eyes, and white discharge from vagina, ringing in the ears, lower back pain, blurred vision and tired eyes. It is also used as hair growth promoters.<sup>[28]</sup>

**Anticonvulsant activity**

Gupta M et al (2003) reported that, methanolic extract of both *Cuscuta reflexa* stem showed marked protection against convulsion induced by chemo convulsive agents in mice. The catecholamines contained were significantly increased in the processed extract treated mice. The extract also significantly elevated the levels of GABA, glutamine and glutamate as compared to the control groups. The study revealed that *Cuscuta reflexa* extract possesses anticonvulsant activity.<sup>[29]</sup>

**Anxiolytic activity**

One study carried out by Thomas S et al (2015), showed that methanol extract of *Cuscuta reflexa* 400 mg/kg significantly increased the time spent on the open arms and decreased the number of entries into closed arms. The extract 400 mg /kg showed significant anxiolytic effect compared to 200 mg/kg in both models. The 400 mg/kg effect was comparable to standard. Thus methanol extract of *Cuscuta reflexa* could serve as good anxiolytic agents and seems to be promising for the development of phytomedicines for anxiety.<sup>[30]</sup>

**Hepatoprotective activity**

Balakrishnan et al (2010) documented that the methanol extract of *Cuscuta reflexa* improved liver function by decreasing the serum ALT, AST and alkaline phosphatase levels in hepatotoxic rats. It also reduced the ALP as well as total bilirubin levels indicating its protective effect of liver and improvement of its functional efficiency.<sup>[31]</sup>

One another study carried out by Katiyan N et al (2015) reported that alcoholic extracts of stem of *Cuscuta reflexa* (AESCR) and aqueous extracts of stem of *Cuscuta reflexa* (AQESCR) revealed hepatoprotective activity in rats. AESCR and AQESCR showed a significant hepatoprotective effect against paracetamol induced hepatic damage. The medium and high doses of AESCR and AQESCR (200 and 400 mg/kg) treated groups showed better hepatoprotective activity when compared to standard drug silymarin (25 mg/kg).<sup>[32]</sup>

**Anti-inflammatory and anti-cancer activities**

Suresh V et al (2011) reported that water extract of *Cuscuta reflexa* exhibit anti-inflammatory and anticancer activities, after down regulated lipopolysaccharide (LPS) induced over expression of TNF- $\alpha$  and COX-2 in RAW264.7 cells; blocked NF- $\kappa$ B binding to its motifs and induced apoptosis in Hep3B cells as evidenced from MTT, DAPI staining and annexin V staining assays. The extract up regulated pro-apoptotic factors BAX and p53, and down regulated anti-apoptotic factors Bcl-2 and surviving and researcher concluded that *Cuscuta reflexa* inhibits LPS induced inflammatory responses in RAW264.7 cells through interplay of TNF- $\alpha$ , COX-2 and NF- $\kappa$ B signalling. It induced apoptosis in Hep3B cells through the up regulation of p53, BAX and down regulation of Bcl-2 and surviving.<sup>[33]</sup>

**Antitumor Activity**

Chatterjee D et al (2011) documented that, the chloroform and ethanol extracts of *Cuscuta reflexa* was evaluated against Ehrlich ascites carcinoma (EAC) tumor in mice at doses of 200 and 400 mg/kg body weight orally, respectively, while acute oral toxicity studies were performed to determine the safety of the extracts. Briefly, the EAC cells were injected (i.p.) into ninety six mice (divided into 6 numerically equal groups), and after a one-day incubation period, the extracts were administered to the mice daily for 16 days. On day 21, six animals in each group were sacrificed for observation of antitumor activity and the remaining animals were observed to determine host the life span. Antitumor effect was determined by evaluating tumor volume, viable and nonviable tumor cell count and hematological parameters of the host. The standard antitumor used was 5-fluorouracil. The results suggest that the chloroform and ethanol extracts of *C. reflexa* exhibit significant antitumor activity in EAC-bearing mice that is comparable to that of the reference standard, 5-fluorouracil.<sup>[34]</sup>

**Hypoglycemic activity**

Methanolic extract of *Cuscuta reflexa* Roxb. and its subsequent ethyl acetate fraction showed significant inhibition against  $\alpha$ -Glucosidase. It is a membrane bound enzyme at the epithelium of the small intestine. Inhibition of this enzyme prolongs the absorption time of glucose in the blood after a meal.<sup>[35]</sup>

**Antipyretic activity**

The study showed that both aqueous and ethanol extracts of *Cuscuta reflexa* dose dependently exhibited significant antipyretic activity in yeast induced elevation in body temperature in rats and the effects are comparable to the reference antipyretic drug (paracetamol). The ethanol extract was found to be slightly potent than the aqueous extract. The activity may be due to presence of the above group of phytoconstituents in *Cuscuta reflexa* i.e. flavonoids and Saponins.<sup>[36]</sup>

**Anti-HIV activity**

The crude water extracts of *Cuscuta reflexa* exhibited anti-HIV activity which could be due to combinatory effects with compounds of different modes of action. The methanol extract of *Cuscuta reflexa* exhibited antibacterial and free radical scavenging activity.<sup>[37]</sup>

**Relaxant and spasmolytic action**

The study revealed that aqueous and alcoholic extracts of *Cuscuta reflexa* stem exhibit relaxant and spasmolytic action on small intestine of guinea pig and rabbit. Also the extracts exhibited acetyl choline-like action.<sup>[38]</sup>

**CONCLUSION**

This review paper provides information that *Cuscuta reflexa* is a very important medicinal plant. *C. reflexa* is a parasitic weed plant and causes a huge loss to the crop

plants every year. Still *C. reflexa* is called as miracle medicinal plant because many chemical compounds have been isolated from this plant having medicinal properties. *Cuscuta* is not so popular with urban community but the rural people are aware in some states of India. It has been used for their health care and ethnoverinary practices. The research activities carried out in this plant is very less in India and abroad. Different parts of this plant are used to treat different diseases. The plant needs to be researched more so that more formulations can be proposed and used practically for treatment of several diseases.

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