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Cuscuta reflexa: A critical review on the medicinal plant used in Homoeopathy

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Abstract

Cuscuta reflexa is a parasitic plant that has a place in the family Convolvulaceae. It is regularly known as dodder plant, amarbel, akashabela. Generally, it is called the marvel plant. It is a rootless, lasting, leafless climbing parasitic twining spice that takes food from planted with the help of an extraordinary organ called a haustorium. This survey article will gather the definitive portrayal of the compound constituent's pharmacological employments of *Cuscuta reflexa* from various old-style Ayurvedic writing just as present-day research diaries. This survey article manages Antihypertensive, Antidiabetic, Antioxidant, Hair development advancing, Antimicrobial, Spasmolytic, Antitumor, Anti-ligament, Nephroprotective, Antiviral, Anti-incendiary, Antipyretic impact of *Cuscuta reflexa*. More investigation should be done in this plant to investigate its method of activity and employment.

Keywords: *Cuscuta*, amarbel, Ayurveda, Ethnomedicine

Introduction

Medicinal plants have been saviours for ages in traditional medications because of their helpful potential. The pursuit of medicinal plants has prompted the disclosure of novel medication up-and-comers used against different diseases. *Cuscuta reflexa* is usually called a dodder plant and is known as demon's hair, witch's hair, love plant, amarbel or akashabela, etc. *Cuscuta reflexa* is a parasitic weed plant and a broad climber. It develops as homo-parasite. It is a rootless, leafless, perpetual parasitic twining spice. The plant has no chlorophyll and can't make its food by photosynthesis. The dodder plant has the capacity not exclusively to perceive its host plant yet to move towards its prey with critical accuracy and productivity. The plants can likewise pick a proper host between many plants based on unstable mixtures discharged by the host plant as their typical course of transpiration. It spreads starting with one host plant then onto the next, and on every casualty, they twin and stick firmly with exceptional fanning organs called a haustorium. Haustorium infiltrates the host and associates with the host xylem just as to the host phloem and retains from it both water and expounded foodstuff, for example, sugar and amino acids. It is accepted that the parasitic species separate solid and likely sap from the host plant. If their host plants are rejuvenating plants, these parasitic species show numerous comparable properties to plants. Conventional healers give *Cuscuta* species benefiting from usually utilized restorative spices special consideration. It can carry on for as long as it can remember without connection to the ground and develops with the assistance of seeds which are minute and created in enormous amounts. Seeds have a massive covering and make due in the dirt for 5-10 years.

The stems are incredibly long, somewhat bold, intently twining, fanned, glabrous, pale greenish-yellow, once in a while speckled with red and blossoms lone or in umbellate bunches of 2-4 or in short. Racemes; pedicels short, glabrous, generally bent (seldom 0); bracts 1.5 mm. long, praise elongated, heartless plump. Calyx isolated nearly to the base; flaps 3 mm. long, marginally inconsistent, extensively praised, harsh, glabrous, and plump. Corolla white; tube 6-8 by 4 mm., practically round and hollow; flaps 2.5-3 mm. long, deltoid, intense, reflexed; scales nearly at the foundation of the corolla - tube, enormous, oval, subquadrate or to some degree obovate, fimbriate and incurved at the pinnacle. Stamens in the throat of the corolla-tube; fibers hardly any; anthers about ½ - applied past the highest point of the corolla-tube. Ovary ovoid; style basic, concise and thick; marks of disgrace 2, particular, enormous wide and plump, 1.5 mm. long, oblong.

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Containers 6-8 mm. diam., discouraged globose, glabrous, circumscissile close to the base. Seeds 2-4, enormous, dark, glabrous. *Cuscuta reflexa* is examined for antihypertensive,

antidiabetic, antioxidant, hair development advancing, antimicrobial, spasmolytic, antitumor, antiviral, anti-provocative, antipyretic impact.



Fig 1: *Cuscuta reflexa* in Mewar University

In Ayurvedic Literature

Cuscuta reflexa has no any reference in Vedic and Samhita Kala. It is referred to after Nighantus.

Bhavprakash Nighantu

In Bhavprakash Nighantu equivalents, akashavalli, amavallari, khavalli are portrayed. It will be tikta (severe) and kashaya (astringent), malasangrahak (stool cover), pichchhil (tacky), netraroganashak (eye problems), jathragnivardhak (canapé), hridya (cardiotonic) and obliterates the pitta (bile), kapha (cough) and aamnashak (undigested food).

Raj Nighantu

The equivalent words akashvalli, khavalli, asprsha, vyomvallika are referenced. The equivalent of Akash (Sky) co-joint with valli (climber) word makes the identical word "akashavalli." Akashvalli has madhurrasa (sweet taste). It is pittashamak (cholagogue), rasayana (rejuvenator), balavardhak (fortify the body), and has the properties of divyaausadhies (Divine power).

Nighantu Adarsh

The plant is appropriated with the name of aakashbel and amarbel. It is found on certain trees as a parasite and referenced under karpurtwakadivarga. It is balya (reinforce body), keshya (hair fortifying), vranropan (wound healer), and vrishya (sexual enhancer).

Shankar Nighantu

The equivalent words are akasvalli, amerbel, akashbel and aaloklata. Its taste is harsh, yellow-hued with white blossom. The portion is one to twelve masa. The properties are pichchhil (tacky), netrarognashak (eye problems), jathragni vardhak (hors d'oeuvre), and hridya (cardiotonic). It spreads over Ber and Aadu trees. It is a rootless climber, so it is called as Akashbel.

Madanpal Nighantu

It is referenced under Abhayaadivarga. Equivalent words are akashvalli, amavallari and amarbel. It has grahini (astringent), tikshna (infiltrating), and pichchhil (tacky) - rog nashak property.

Botanical classification of *Cuscuta reflexa*

Kingdom Plantae

Subkingdom..... Tracheobionta

Superdivision.....Spermatophyta
Division.....Angiosperms
Class.....Eudicots
Subclass.....Asterids
Order.....Solanales
Family.....Cuscutaceae
Alternate.....Convolvulaceae
Genus.....*Cuscuta*
Species.....*Reflexa*

Habitat

This parasitic plant moves over the trees and bushes. *Cuscuta* can be easily found in the calm and tropical locales of the world, with enormous species variety in tropical and subtropical areas. It is found all through around six species are observed bountiful in Bengal plains. It is generally found in India and Sri Lanka up to an elevation of 2348 m. It is also seen in Malaysia, Nepal, and Thailand. It develops on prickly, non-prickly, and different bushes, some of the time covering shrubs and trees. *Cuscuta reflexa* spread starting with one host then onto the next, and on great expanding organs called haustoria.

Botanical description

Cuscuta reflexa is a parasitic climber with a thin stem and branches. Stems extremely long, bold, intently twining, extended, glabrous, pale greenish-yellow, now and again dotted with red. Blossoms single or in umbellate groups of 2-4 or short racemes; pedicels short, glabrous, normally bent (seldom 0), bracts 1.5 mm. long, applanate, harsh beefy. Calyx separated nearly to the base, flaps 3 mm. long, somewhat inconsistent, extensively celebrate, uncaring, glabrous, and beefy. Corolla white; tube 6-8 by 4 mm., practically tube-shaped; flaps 2.5-3 mm. long, deltoid, intense, reflexed; scales nearly at the foundation of the corolla - line, huge, oval, subquadrate, or to some degree obovate, fimbriate and incurved at the pinnate. Stamens in the throat of the corolla-tube; fibers hardly any; anthers about ½ - exerted past the highest point of the corolla-tube. Ovary ovoid; style straightforward, extremely short and thick; marks of disgrace 2, unmistakable, massively thick and beefy, 1.5 mm. long, oblong. Cases 6-8 mm. diam., discouraged globose, glabrous, circumscissile near the base. Seeds 2-4, huge, dark, glabrous.

Ethno medicinal uses of *Cuscuta reflexa*

The rustic individuals of Chhattisgarh use its juice in jaundice by blending it in with the milk. Its glue is utilized in the treatment of Gout. The plant's juice blended in with *Saccharum officinarum* is used to treat jaundice. The stem is being used to treat the bilious problem, inside in treating extended fevers and remotely in the treatment of body torment and irritated skin. Branches of *Cuscuta reflexa* are likewise utilized in obstruction, fart, liver objections, and bilious kind gestures. *Cuscuta reflexa* is again applied as a hair development promotor. Seeds are supposed to be tonic, diaphoretic and demulcent and are utilized to clean the blood. The chilly imbue of sources is given as a depurative and carminatives in agony and stomach throb.

Chemical Constituents

Cuscutin, quercetin, amarbelin, amino acids, cuscotaline, scoparone, melanettin, hyperoside, aromadendrin, taxifolin, astragalin, myricetin, kaempferol, apigenin 7-O-glucoside, luteolin, quercetin, 6,7 - dimethoxy - 2H-1 benzopyran - 2-one, 3-(3,4-dihydroxyphenyl) - 2-propen-1-ethanoate, 6,7,8-trimethoxy-2H-benzopyran-2-one, 3-(4-O- β -D-glucopyranoside-3,5-dimethoxyphenyl)- 2-propen-1 - old β -sitosterol, α -amyrin, β -amyrin, β -amyrin acetic acid derivation, α -amyrin acetic acid derivation, oleanolic acetic acid derivation, oleanolic acetic acid derivation, oleanolic corrosive, lupeol, 3 β -hydroxyolean-12(13)-enetridecanoate and heptadecanoate, coumarin, 3,4-O-dicaffeoylquinic corrosive, 3-Ocaffeoylquinic corrosive, D-mannitol, myricetin 3-O- α -rhamnoside. Dulcitol, laurotetanine (alkaloid) it, makes spasm, if utilized in an enormous amount, cause death. Dulcitol, sitosterol, carotenoids, flavonoids violaxanthin, lutein, lycopene, carotene, α -cryptoxanthin Choline kinase, benzofuran 2, 3, dihydro-, 2-methoxy-4-vinylphenol and 2-propenoic corrosive, 3-(4-hydroxyphenyl)-methyl ester the vitally dynamic standards introduced in the plant are cuscotalin (1%) and cuscutin (0.02%). The plant likewise contains wax and decreasing sugars. The seeds contain amarvelin, pitches, oil (3%) and diminishing sugars. These constituents are accounted for to fluctuate with the host on which the dodder parasitizes. On Santalum collection, it yields D-mannitol, while on Glycomis triphylla leutolin or kaempferol, and dulcitol on others. A significant cell divider corrupting protein, gelatin methyl esterase in B structures has been disconnected from the fibres containing haustorium.

Pharmacological activities

Impact on Cardiovascular Framework

In a progression of tests, alcoholic plant concentrates caused a fall in pulse on the canine. This activity is not hindered by atropine, mepyramine or propranolol, hence it couldn't be applied through cholinergic, histaminergic, or adrenergic mechanisms. An ethanolic concentrate of the stem of *Cuscuta reflexa* caused a portion subordinate abatement in blood vessel circulatory strain and pulse in pentothal-anesthetized rodents, and this impact was not hindered by atropine. Hypotensive and bradycardia consequences of *Cuscuta reflexa* were viewed as free of cholinergic receptor excitement or adrenergic blockade.

Antidiabetic impact

The methanol and fluid concentrate (200 and 400 mg/kg body wt) showed a critical decrease in blood glucose during OGTT in diabetes rodents at 3h. The treatment likewise came about an improvement in body loads, diminished Hb1c, and re-established lipid profile. Methanolic concentrates of *Cuscuta*

reflexa have critical antidiabetic impacts and work on metabolic adjustments.

Antioxidant activity

In vitro cancer prevention agent movement of *Cuscuta reflexa* stem removed by assessing the level of non-enzymatic hemoglobin glycosylation was estimated calorimetrically at 440 nm. Ethyl acetic acid derivation part of ethanolic remove showed higher movement than other fractions. Orchestrated phytochelators and did the balance of cancer prevention agents because of cadmium stress in *Cuscuta reflexa*. The impacts of cadmium on development, the antioxidative compounds specifically catalase-peroxidase glutathione reductase, glutathione and phytochelators were found in callus and seedling of *Cuscuta reflexa*.

Antipyretic activity

At the portion of 400 mg/kg body weight, the watery and ethanol remove diminished 79% and 83.8% separately of the raised rectal temperature when contrasted with reference drug Paracetamol (96.5%) following 6 hours treatment. The antipyretic action of *Cuscuta reflexa* might be because of the hindrance of prostaglandin union. Again, the concentrates contain flavonoids and saponins, the antipyretic capability of which has accounted.

Spasmolytic activity

Watery and alcoholic concentrates of the *Cuscuta reflexa* stem have a relaxant and spasmolytic activity on the small digestive tract of guinea pig and bunny. Additionally, the concentrates displayed acetylcholine-like activity.

Against HIV action

The unrefined water concentrates of *Cuscuta reflexa* displayed an enemy of HIV action because of combinatory impacts with mixtures of various methods of action.

Antitumor activity

Organization of Aqueous and ethanol concentrate of *Cuscuta reflexa* entire plant at portions of 200 and 400 mg/kg body weight came about in a vast ($p < 0.05$) decline in cancer volume and suitable cell count yet expanded non-feasible cell count and mean endurance time, in this manner expanding the life expectancy of the growth bearing mice. Rebuilding of hematological boundaries - RBC, Hb, WBC, and lymphocyte include to ordinary levels in extricating treated mice was additionally noticed.

Against ligament and nephroprotective impact

Antiarthritic movement of Aqueous and Methanol concentrates of *Cuscuta reflexa* was assessed *in vivo* utilizing formaldehyde and turpentine oil-initiated joint pain models and *in vitro* using formaldehyde and turpentine oil-incited joint inflammation models and *in vitro* utilizing protein denaturation techniques. AMECR at 600 mg/kg essentially decreased paw edema and joint expanding with the most extreme hindrance of 71.22% at the sixth hour for turpentine oil and 76.74% on the tenth day for formaldehyde. Moreover, *in vitro* outcomes verify critical focus subordinate expansion in % security at 800 μ g/mL against both ox-like serum egg whites (89.30%) and egg whites (93.51%) denaturation. This outcome shows that AMECR gives assurance against joint inflammation and nephrotoxicity because of the presence of phytoconstituents.

Mitigating movement

Drunkard and watery concentrate of the stem of *Cuscuta reflexa* were assessed for their mitigating movement in carrageenan incited paw edema model in rodents and contrasted with the action of the standard medication, Ibuprofen. These concentrates were given orally at 100, 200, and 400 mg/kg bd centralization. Wt. Before carrageenan infusion. The concentrates with medium and higher portions, such as 200 mg/kg and 400 mg/kg, have diminished edema volume by 47.27%, 72.72%, and 57.72%, 80.00% separately at fifth h when contrasted with standard deviation medication Ibuprofen 96.36%. Accordingly, this study uncovered that the chosen concentrates of *Cuscuta reflexa* displayed a critical mitigating action in the carrageenan-initiated paw edema model in rodents.

Antimicrobial action

The ethanolic entire plant removed from *Cuscuta reflexa* was screened against Gram-positive (*Bacillus subtilis* and *Staphylococcus aureus*) and Gram-negative (*Escherichia coli* and *Salmonella typhi*) microscopic organisms to assess their antimicrobial movement. Of the four convergences of plant separate tried (200 µg/mL, 300 µg/mL, 400 µg/mL or 500 µg/mL), 500 µg/mL evoked the best zones of bacterial restraint across three of the microscopic organisms. Interestingly, the development of *Salmonella typhi* was not stopped paying little mind to remove fixation. Generally, albeit the best antimicrobial action was shown to be against *E. coli* at a grouping of 500 µg/mL (24.6±0.24), upon correlation with different microscopic organisms, both *B. cereus* and *S. aureus* diminished comparative zones of restraint upon correlation with their positive anti-toxin control the ethanolic concentrate of *Cuscuta reflexa* contains a horde of mixtures, for example, alkaloids, starches, glycosides, flavonoids, tannins, phenolic combinations and steroids. The creators established that it is the flavonoid, glycosides held inside the plant which are answerable for the intrinsic antimicrobial action. This fundamental examination recommends that the ethanolic separates from *Cuscuta reflexa* do have critical antimicrobial properties.

Hair development action

The oil ether and ethanolic concentrate of *Cuscuta reflexa* were given at the portion 250 mg/kg in male Swiss pale-skinned person rodents. Cyclophosphamide (125 mg/kg) was utilized to prompt alopecia. This study was demonstrated to be equipped for advancing follicular multiplication or forestalling balding in cyclophosphamide-instigated hair fall.

Formulation

Akashvalli arka

Conversation

Cuscuta needs roots or leaves however has explicit infiltrating organs, called haustorium. It makes colossal misfortune the harvest establishes each year. Still, *Cuscuta reflexa* has a few restorative properties including antispasmodic, antidiabetic, antimicrobial, antiviral, antihypertensive, muscle relaxant, cell reinforcement, and hair development advancing movement, antipyretic and antitumor. As evidenced by various investigations referred to above. Multiple parts are utilized to treat various illnesses and have a significant spot in Ayurveda. The plant should be investigated all the more so more details can be proposed and used essentially for the treatment of infections.

References

1. Suresh V, Sruthi V, Padmaja B, Asha VV. *In-vitro* anti-inflammatory and anti-cancer activities of *Cuscuta reflexa* Roxb. Journal of Ethnopharmacology. 2011;134(3):872-877.
2. Sermakkani M, Thangapandian V. GC-MS analysis of *Cassia italic* leaf methanol extract. Asian Journal of Pharmaceutical and Clinical Research. 2012;5(2):90-94.
3. Dawson JH, Musselman LJ, Wolswinkel P, Dorr I. Biology and control of *Cuscuta*. Reviews of Weed Science. 1994;6:265-317.
4. Saini P, Mithal R, Menghani Ekta. A parasitic medicinal plant *Cuscuta reflexa*: An overview. International Journal of Scientific & Engineering Research. 2015;6(12):951-959.
5. Kirtikar K, Basu BD. Indian Medicinal Plants, Periodic Expert Book Agency. 1991;3:2171-2172.
6. Kaur A. *Cuscuta reflexa* Roxb. A parasitic plant in Ayurved. International Journal of Pharmaceutical Research and Bioscience. 2013;2(2):180-190.
7. Kumar A, Rani S, Sagwal S. Recent review on Plant Molecular Biology. Phytophysiology, Phytochemistry and Ethnopharmacology of *Cuscuta reflexa* Roxb. An excellent Parasitic Plant. International Research Journal of Pharmacy. 2012;3:30-38.
8. Chuneekar KC. Bhava Prakash Nighantu. Varanasi: Chaukhambha Bharati Academy; c2004. p. 447-448.
9. Saleem Lupeol M. A novel anti-inflammatory and anti-cancer dietary triterpene. National Library of Medicine. 2009 Nov 28;285(2):109-115
10. Vijikumar S. *Cuscuta reflexa* Roxb. An excellent Miracle Plant in Ethnomedicine. Indian Journal of Natural Sciences. 2011;11(9):676-683.
11. Wafaa Kamal Taia, Abdelbasit Musa Asker, Fatma Alwashish M, Salem Ahmed Mohamed. Ethnobotanical survey of medicinal plant *Teucrium* L. (Lamiaceae) in eastern Libya. International Journal of Agriculture Extension and Social Development Research. 2021;4(1):176-181.
12. Pandit S, Chauhan, SN, Dixit VK. Effect of *Cuscuta reflexa* Roxb. On androgen-induced alopecia. Journal of Cosmetic Dermatology, 2008 Sep;7(3):199-204
13. Mukherjee R, Bordoloi J, Goswami A, Goswami BC. Carotenoids of dodder grown on hedge, *Clerodendrum enerym*. Advances in Natural and Applied Sciences. 2008;2(3):99-102.
14. Hassan W, Buabeid MA, Kalsoom U, Bakht S, Akhtar I, Iqbal F, et al. *Cuscuta reflexa* Roxb. Expedites the Healing Process in Contact Frostbite. Bio Med Research International. 2020;2020:1-8.
15. Setty PN, Krishnana PS. Choline kinase in *C. reflexa*. Biochem J. 1972;126(2):313-324.
16. Bais N, Kakkar A. Phytochemical Analysis of Methanolic Extract of *Cuscuta reflexa* Grown on *cassia fistula* and *Ficus benghalensis*. International Journal of Pharmacy and Pharmaceutical Sciences. 2014;25(2):33-36.
17. Singh GS, Garg KN. Some pharmacological studies on *C. reflexa* plant. Indian Journal of Pharmacology. 1973 Apr 1;5(2):344-345.
18. Yadav SB, Tripathi V, Singh RK, Pandey HP. Antioxidant activity of *C. reflexa* stems. Indian Journal of Pharmaceutical Sciences. 2000;62(6):477-478.
19. Nandkarni KM. Indian Materia Medica. Bombay: Popular Prakashan Pvt Ltd. 1976;1:419-420.