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

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DOI: https://doi.org/10.33545/2618060X.2022.v5.i1a.96

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 plum, 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.
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](image)

**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, amarvallari, khavalliare portrayed. It will be tikta (severe) and kashaya (astringent), malasangrhahak (stool cover), pichchhil (tacky), netraroganashak (eye problems), jathragnivardhak (canapé), hridya (cardiotoxic) 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 blosssom. The portion is one to twelve masa. The properties are pichchhil (tacky), netrarognashak (eye problems), jathragnivardhak (hors d'oeuvre), and hridya (cardiotoxic). 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, amarbel and aamrbel. 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 dabbed 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, applaud oval, 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 incurred at the pinnacle. 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.
Chemical Constituents
Cuscutin, quercetin, amarbelin, amino acids, cuscutaline, scoparone, melantanin, hyperoside, aromadendrin, taxifolin, astragal, myricetin, kaempferol, apigenin 7-O-glucoside, luteolin, quercetin, 6, 7 - diethoxy - 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-amyрин, β-amyрин, β-amyrin acetic acid derivation, α-amyрин acetic acid derivation, oleanolic acetic acid derivation, oleanolic acetic acid derivation, oleaolic corrosive, lupeol, 3β-hydroxyolean-12(13)-enetrionate and heptadecanoate, coumarin, 3,4-O- dicaffeoylquinic corrosive, 3-Ocaffeoylquinic corrosive, D- mannotiol, myricetin 3-O-a-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, benzoferan 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 cuscutalin (1%) and cuscutitin (0.02%). The plant likewise contains wax and decreasing sugars. The seeds contain amarvelin, piches, oil (3%) and diminishing sugars. These constituents are accounted for to fluctuate with the host on which the dodder parasites. 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 propanolol, hence it couldn't be applied through cholingeric, 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 cholingeric 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 phytochelatins 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 phytochelatins 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.

Spasmylocytic activity
Watery and alcoholic concentrates of the Cuscuta reflexa displayed a relaxant and spasmylocytic 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 combinatorial 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 utilizing formaldehyde and turpentine oil-elicited 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 μg/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

Drunken 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 microbial 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, antiabetical, 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