A Classical Review on *Cuscuta reflexa* Roxb. (Amarbel): Ethnobotany, Phytochemistry, Therapeutic Applications, and Marketed Formulations

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Abstract

Amarbel or ****Cuscuta reflexa* **is a parasitic twining plant that is extensively found throughout the Indian subcontinent and has long been valued for its many therapeutic uses. Its ethnobotanical significance, phytochemical profile, medicinal potential, and present position in marketed formulations are all intended to be thoroughly examined in this classic review. According to ethnobotanical records, it is widely used in ancient medical systems like Ayurveda, Unani, and Siddha to treat conditions including inflammation, wounds, alopecia, liver problems, and jaundice. According to phytochemical analyses, it contains active components like Flavonoids, Alkaloids, and lignan that support its pharmacological activities, which include anti-inflammatory, hepatoprotective, antioxidant, and hepatoprotective properties. A summary of the several medicinal and cosmetic products that use extracts from *Cuscuta reflexa* is also included in the assessment, demonstrating the plant's increasing market importance. This evaluation highlights the medicinal potential of *Cuscuta reflexa* as well as its potential for additional study and product development by fusing traditional knowledge with contemporary scientific understanding. *Cuscuta reflexa* also known as Akashvalli or Dodder, is a member of the Convolvulaceae family. It lacks roots and leaves. The plant is found all over the world, with roughly six species found in India. It can occasionally totally cover trees bushes when it develops on prickly or other vegetation. This Herb studied as antitumor activity, Hepatoprotective activity, antioxidant activity. Thus, this is a significant medicinal plant with a wide range of pharmacological properties. Additionally, the plant is used in a number of commercially available Ayurvedic and herbal remedies that target liver function, hair development, and overall vigor. Standardization, quality control, and clinical validation concerns are still not sufficiently addressed despite their widespread traditional use and new pharmacological data. In order to support *Cuscuta reflexa* rational use and future pharmaceutical development, this review critically gathers classical references, ethnobotanical uses, phytochemical constituents, therapeutic applications, and marketed formulations.

Keywords: *Cuscuta, Dodder, Akash bail, Amarbel, Traditional use, Market.*

I INTRODUCTION

The holoparasitic, leafless climber Cuscuta reflexa Roxb. (Convolvulaceae), also known as amarbel, akashavalli, dodder, or aftimoon, is found throughout tropical and subtropical Asia.[1] Because it lacks substantial photosynthetic tissue, C. reflexa draws water, sugars, and secondary metabolites from its hosts. [2] This parasitic ecology both complicates and enriches the plant's phytochemical profile and ethnobotanical applications. The plant is distinguished by thin, twining golden-yellow stems that form intimate haustorial connections with a wide range of host species.[3] C. reflexa has long been used in Ayurvedic, Unani, Siddha, and many regional folk systems, according to ethnobotanical and classical medicine sources.[4] Ayurvedic, Unani, Siddha, and many regional folk systems have long used C. reflexa, according to ethnobotanical and classical medical texts. Traditional remedies, primarily stem decoctions, pastes, macerated oils, and powdered materia, are used to treat fever, neurological complaints (such as headaches and epilepsy), dermatological conditions, gastrointestinal disorders, jaundice and other hepatic disorders, hair tonics, and general revulsive tonics.[5] According to traditional Ayurvedic writings, Cuscuta reflexa is a medicine that possesses Laghu and Ruksha guna, Katu vipaka, Tikta and Kashaya rasa, and Ushna virya.[6] The plant is traditionally indicated in disorders related to the liver, skin, blood, reproductive system, and nervous system. It has been prescribed in conditions such as Kamala (jaundice), Kustha (skin diseases), Krimi (worm infestations), Klaibya (sexual debility), and Kesha vikara (hair disorders).Amarbel's rejuvenating and aphrodisiac properties are highlighted by its status as Rasayana and Vrishya.[7] According to ethnobotanical surveys, tribal and rural groups have long utilized Cuscuta reflexa to treat a variety of illnesses, including as diabetes, liver problems, fever, urinary symptoms, joint discomfort, and hair loss.[8] The plant's pastes and decoctions are frequently used topically and orally to treat wounds, skin conditions, and metabolic issues.

[9] These numerous traditional applications demonstrate the plant's significance in traditional medicine and emphasize the necessity of a thorough scientific assessment. Cuscuta reflexa has unique macroscopic and microscopic traits that help with identification and standardization, according to pharmacognostic investigations. Papillose epidermis, fibrous anther walls, lignified pericarp fragments, spherical pollen grains, and distinctive testa cells are among the plant's distinguishing anatomical characteristics. To ensure authenticity, avoid adulteration, and preserve consistency in herbal compositions including C. reflexa, several quality control parameters must be established.[10] In light of the growing commercialization of Ayurvedic medicines, these characteristics are essential for guaranteeing consistency and combating adulteration in herbal formulations. Numerous bioactive substances, such as flavonoids, alkaloids, lignans, glycosides, tannins, sterols, and phenolic elements, have been found in Cuscuta reflexa, according to phytochemical studies.[11] However, differences in phytochemical profiles have been documented based on host plant, geographic region, and extraction technique, highlighting the significance of standardization in the development of herbal drugs. Studies on enzyme inhibition and hepatoprotective assessments emphasize its possible application in the treatment of hepatic and metabolic diseases. Nowadays, Cuscuta reflexa is used in several commercially available Ayurvedic products that address liver health, hair development, sexual vigor, and overall wellness. Thus, it is crucial to conduct a thorough classical evaluation that incorporates phytochemical data, medicinal applications, commercial formulations, and ethnobotanical knowledge. [12] Many of the traditional claims about Cuscuta reflexa have been confirmed by extensive pharmacological investigation. Antidiabetic, hepatoprotective, anti-inflammatory, antioxidant, antibacterial, neuroprotective, anticancer, and reproductive health-promoting properties have all been documented in experimental research.[13] The plant has demonstrated encouraging outcomes in scavenging free radicals, preserving hepatic tissue, enhancing glucose metabolism, and regulating inflammatory pathways. These results provide compelling evidence for its potential use in the treatment of degenerative, hepatic, and chronic metabolic illnesses.[14] Cuscuta reflexa has been used in a number of commercially available Ayurvedic and polyherbal preparations in the pharmaceutical and nutraceutical industries to promote liver health, encourage hair growth, improve reproductive function, and improve metabolic balance.[15]However, its broader popularity in evidence-based healthcare is constrained by the lack of consistent quality standards, thorough clinical evaluation, and full monographs. A interdisciplinary strategy incorporating phytochemistry, pharmacology, ethnobotany, and regulatory science is required to address these constraints.[16] There is a compelling need for an integrative review that unifies the body of information on Cuscuta reflexa Roxb given its historical significance, varied ethnomedical applications, and new scientific findings. Such a thorough evaluation is crucial for future study, clinical investigation, formulation creation, and scholarly comprehension. In order to provide insights that connect traditional viewpoints with contemporary scientific research, this review attempts to compile information on the ethnobotanical background, phytochemical ingredients, therapeutic applications, and commercial preparations of Cuscuta reflexa. [17-18]



Fig. 1.1*Cuscuta reflexa*

A. SCIENTIFIC NOMENCLATURE AND COMMON NAMES OF CUSCUTA REFLEXA

Synonym[19]	Akashbel, Amarbel, Nirmuli, Kasavalli, Hellweed, Love Vine, Dodder Plant and Giant Dodder
Scientific Name	*Cuscuta Reflexa*

TABLE I. SCIENTIFIC NOMENCLATURE

B. Common names of CUSCUTA REFLEXA

Sr. No	**Common names**	
1.	English	Dodder[20]
2.	Gujrati	Akasbel
3.	Hindi	Amarbel
4.	Gujrati	Nulutega
5.	Bengali	Swarnlata
6.	Tamil	Erumaikkottan
7.	Malyali	Nirmuli
8.	Assamese	Akakhilata

TABLE II. COMMON NAME OF *CUSCUTA REFLEXA*

C. CLASSIFICATION

Taxonomical classification			**Botanical classification** [21]		
1	Kingdom	Plantae	**1**	Kingdom	Plantae
2	Subkingdom	Tracheobionta	**2**	Subkingdom	Tracheobionta
3	Superdivision	Spermatophyta	**3**	Superdivision	Spermatophyta
4	Division	Angiosperms	**4**	Division	Angiospermes
5	Class	Eudicots	**5**	Class	Eudicots
6	Subclass	Asterids	**6**	Subclass	Asterids
7	Order	Solanales	**7**	Order	Solanales
8	Family	Cuscutaceae	**8**	Family	Cuscutaceae
9	Genus	Cuscuta	**9**	Alternate	Convolvulaceae
10	Species	reflexa Roxb [22]	**10**	Genus	Cuscuta
			11	Species	Reflexa [23]

TABLE III. TAXONOMICAL AND BOTANICAL CLASSIFICATION OF *CUSCUTA REFLEXA*

D. Habitat

It is a herbaceous, parasitic climber that grows by clinging to nearby vegetation and trees. It is found all over India, but it is particularly prevalent in Bengal's plains. It is commonly known as akasbel ("sky twiner") because it lacks subterranean roots and survives mainly as a parasitic climber on other plants.[24]

E. Morphological Characters

S. No	**Part use**	**Morphology**	**Images**
1.	Stem	It has a smooth, pale greenish-yellow surface, grows to a vast length, coils tightly.	 **Fig. 1.2**. *Cuscuta reflexa*
2.	Flowers	Flowers, 2-4 short racemes or umbellate clusters; short glabrous pedicles, normally curved; 1.5 cm	

		bracts, fleshy, long, ovate-oblong, obtuse, fleshy.[25]	 **Fig. 1.3**. *Cuscuta reflexa*
3.	Seeds	The seeds are silky, black, and have a number of two to four.	 Fig. 1.4. *Cuscuta reflexa*

TABLE IV. MORPHOLOGICAL CHARACTERS [26]

F. Microscopical Characters

The stem's diagrammatic TS has a round contour with occasional thin depressions. The cortex is parenchymatous, has few resin cells, and is surrounded by a ring of poorly formed, conjoint, bio- A layer of epidermis covered in cuticle and, occasionally, collateral vascular bundles is visible in the detailed TS of the stem. There are a lot of starch granules in the parenchymatous tissue.

A cuticle-covered epidermis, papillose corolla epidermal cells, A papillose epidermal anther wall with a fibrous texture, traces of a lignified pericarp, yellowish spherical pollen grains, hexagonal to rectangular lignified cells of the inner seed testa, and elongated palisade-type cells with thick walls—which may or may not be lignified—are all visible under a microscope when the stem is examined in transverse section.[27]

G. Chemical Constituents, Therapeutic use of CUSCUTA REFLEXA

Plant part	**Chemical Constituents**[28]	**Therapeutic uses**	**Adverse effect**
Whole Plant	Alkaloid, Protein, flavonoids, resin, tannin, glycosides, Aluminum, iron, calcium, sodium and potassium.	• Skin disorders • Intestinal worm • Paralysis • Facial paralysis • Epilepsy • Pain in muscles & joints • Cancer	• Causes dryness • Syncope • Nausea &Vomiting
Stem	Cuscutin, Cuscutatin, beta-sitosterol, luteolin, bergenin and kaempferol		
Seed	Amarbelin and kaempferol		

TABLE V. CHEMICAL CONSTITUENTS, THERAPEUTIC USE OF *CUSCUTA REFLEXA*

H. Powder characters

There are several spherical to irregularly shaped resin masses and starch grains that are either embedded in or dispersed throughout the parenchymatous cells. Corolla lobe appendages, surface-view stem epidermal cells, a fibrous another layer with papillose epidermis, lignified pericarp fragments, and yellowish, spherical pollen grains are also visible in the TS. The corolla's papillose epidermis is visible. Testa pieces show hexagonal to rectangular lignified inner testa cells of the seed in addition to lengthy, thick-walled, palisade-like cells that are both lignified and non-lignified. There are also pieces of vessel and fiber.[29]

I. Ayurvedic properties and uses of Cuscuta Reflexa

Ayurvedic properties	**Uses**	**Classification to internally useful and externally useful**
Rasa(taste): - Kashaya (astringent taste) Tikta (bitter taste) Katu (spicy taste) Madhur (sweet taste) Kashaya (Astringent taste) **Guna(property): -** Pishchil (squeezing) Ruksha (unctuousness) Laghu (Lightness) **Virya (potency): -** Sheeta guna (cold) Ushna guna (hot) **Vipak (metabolic action): -** Katu (pungent) **Doshakarma: -** Kapha-pittahara (reduce kapha and pitta) Hridya (cardiac tonic), Krimighan (anti helmentic)	• Ama vata (Rheumatic arthritis) • Grahni (undigested) • Agnimandya (weakened digestive fire) • krimighna (antimicrobial) • keshya (strengthen and nourish hair) • Pitta sarak (cholagogue) • Mutrakriccha (dysuria) • Balya (strengthen body) • kaphapitahara (reduce kapha and Pitta [30]	**Internally useful: -** • Jaundice • Appetite stimulation • Reproductive disorder • Inflammatory **Externally useful: -** • Antiseptic and anti-inflammatory • Wound healing • Hair fall, dandruff • Musculoskeletal disorder • Skin diseases

TABLE VI. AYURVEDIC PROPERTIES AND USES OF *CUSCUTA REFLEXA*

J. Classification of Cuscuta reflexa according to part used

Part used [31]	**Useful**
Whole plant	Itching and skin conditions Swelling and urinary complaints
Stem	Useful in fever, constipation and liver disorders
Fruit	Antihelminthic (aids in worm expulsion) beneficial for certain digestive conditions
Seeds	Used historically for stomach problems Mild anti-helminthic and laxative properties

TABLE VII. CLASSIFICATION OF *CUSCUTA REFLEXA* ACCORDING TO PART USED

K. GEOGRAPHICAL DISTRIBUTION:

Cuscuta reflexa Roxb. is common in India. This species can be found in the northern part of the country, Himachal Pradesh, Uttar Pradesh, Uttarakhand, the Satara region, the Bengal lowlands, and the Western ghats. The lowlands of Thailand, Nepal, Malaysia, and Afghanistan are also home to it.

L. *CUSCUTA REFLEXA TRADITIONAL USES*

Sr.no	**Part used**	**Dosage form**	**Traditional uses**	**Images**
1	**whole plant**	Kalka (paste)	• Testicular swelling • Gout • Anti-inflammatory	 **Fig.1.5**. *Cuscuta reflexa*
		Maceration	• Antirheumatic • Analgesic [32-33]	
		Infusion	Infectious diseases [34]	
		Juice	• Anti-poisonous [35] • Bactericidal • Skin Disorder • Jaundice [36-37]	
		Tablets	Tuberculosis	
		Powder	• Cure fertility • astringent • diaphoretic [38]	
		Decoction	• skin disorders • Anti-ulcer treatment [39] • Acute diarrhea	

2	**Stem**	Decoction	Hepatic disorders, diarrhea Bowel obstruction Rejuvenating and aphrodisiac [40] Digestive disorders [41]	 **Fig. 1.6**. *Cuscuta reflexa*
		Paste	UTI (urinary tract infections) Stimulate the growth of hair reduce inflammation, stiffness	
		Juice	Hair loss and alopecia, anti-rheumatic,[42] Ringworm, eczema and itching to lessen eye redness and burning	
		Crushed	Ear inflammation Therapy for jaundice Blood cleanser, purgative Beneficial to the brain surplus body heat	
3	**Seeds**	Decoction	Cause abortion, liver disorders useful in ulcer, sedative, diuretic[43]	 **Fig.1.7.** Cuscuta reflexa
4	**Fruit**	Extract	Cleansing blood, revitalizing and repairing, skin complexion Antihypotoxic[44]	 **Fig. 1.8**. Cuscuta reflexa

5	**Flower**	Paste	Male infertility Skin cancer hair fall	 **Fig.1 9**. *Cuscuta reflexa*

TABLE VIII. TRADITIONAL USE OF *CUSCUTA REFLEXA* PLANT

M. Ayurvedic Literature

The Vedic and Samhita kalas have no mention of Cuscuta reflexa. Its birthplace was Nighantus.

S. No.	CLASSICAL LITERATURE	SYNONYMS	RASPANCHAKA OF Cuscuta reflexa	USES	FORMULATIONS
1	**Raj Nighantu**	Akashvalli, khavalli, asprsha, vyomvallika	Madhur rasa (sweet taste)	Pittashama (cholagogue)	Akashvalli Arka
2	**Bhavaprakasa Nighantu**	Akashballi, khaballi, Amarballri	Tikta (bitter) and kashaya (astringent)	kapha(cough) and Aam (indigestive food) [45]	
3	**Nighantu Adarsh**	Aakashbel and Amarbel	Karpurtwakadi varga	Keshya (Promotes hair growth), Vranaropana (Tissue repair)	
4	**Sankara Nighantu**	Amarbel, Akasbel and Aloklata	Harsh	Netrarognasak (eyedisorders), Hridaya (cardiotonic)	
5	**Madanpal Nighantu**	Akashvalli, Amarvallari and Amarbel	Rog nashak	Grahini (astringent), Tikshna (infiltrating), and Pichchhil (tacky)	

TABLE IX. AYURVEDIC LITERATURE OF *CUSCUTA REFLEXA* PLANT

N. *Product Formulations (Market-Ready Forms) of Cuscuta reflexa*

The following are the main commercial formulations of *Cuscuta reflexa* available in the market, along with their composition and typical packaging:

S.No.	Product Type	Form	Example Uses	Target Market
1	**Powder (Churna)**	Fine powdered herb	Mixed with honey, ghee, or water for traditional use	Ayurvedic users
2	**Capsules/Tablets**	Powdered or extract-filled	Liver protection, male reproductive health	Herbal medicine users, Ayurvedic clinics
3	**Hair Oils**	Infused with carrier oils	For hair growth, anti-dandruff	Cosmetic segment
4	**Syrup/Tonic**	Water/alcohol-based extract	Tonic for general debility, hepatic issue	Ayurveda practitioners, pharmacy
5	**Creams/Ointments**	Topical use	Anti-inflammatory or wound healing	Natural skincare
6	**Herbal Tea Bags**	Dried stems	Detox, antioxidant drink	Wellness segment

TABLE X. PRODUCT FORMULATIONS (MARKET-READY FORMS) OF *CUSCUTA REFLEXA*

O. Phytochemical Composition

Cuscuta reflexa contains a wide range of phytochemicals responsible for its therapeutic activities. The key bioactive constituents include:

Phytochemical Group	Constituents	Therapeutic Role
Flavonoids[43]	Quercetin, Kaempferol	Antioxidant, Anti-inflammatory
Alkaloids	Cuscutine	Nervine tonic, Reproductive health
Phenolics	Caffeic acid, Gallic acid	Antioxidant, Liver protection
Glycosides	Scopoletin glycosides	Hormonal regulation
Tannins	Polyphenolic compounds	Astringent, Antimicrobial
Fixed oils	Essential fatty acids (in extracts)	Hair and skin health

TABLE XI. PHYTOCHEMICAL COMPOSITION OF *CUSCUTA REFLEXA*

P. Activities of Cuscuta reflexa in Pharmacology

Activities	Pharmacological Action
Antidiabetic	The fuel and binary chemical extracts given at doses of 200 and 400 mg/kg body weight significantly lowered blood glucose levels in polygenic disorder rats during the third hour of the oral glucose tolerance test (OGTT). Additionally, the treatment reduced HbA1c levels, enhanced body-weight regulation, and improved the lipid profile. The dicot genus Cuscuta reflexa's methanolic extracts have significant therapeutic qualities and successfully promote advantageous metabolic alterations.[46]

Antioxidant activity	The degree of non-enzymatic hemoprotein glycosylation was assessed using calorimetric analysis at 440 nm to assess the in vitro inhibitory action of the Cuscuta reflexa stem extract from the dicot genus. The ethanolic extract's ester fraction showed the strongest inhibitory efficacy among the fractions that were examined. Furthermore, under cadmium (atomic number 48) stress, the plant demonstrated the capacity to produce phytochelatins and regulate antioxidant responses. In both callus and seed cultures of Cuscuta reflexa, cadmium exposure raised phytochelatin levels and the activity of antioxidative enzymes, including glutathione reductase, peroxidase, and glutathione.[47]
Antipyretic activity	Both the binary compound and the alcoholic extract of Cuscuta reflexa caused a significant reduction in raised rectal temperature after two hours at a dosage of 400 mg/kg body weight, with reductions of 79% and 83.8%, respectively. The common medication paracetamol, on the other hand, had a 96.5% decrease. Cuscuta reflexa's capacity to inhibit prostaglandin synthesis is probably connected to its antipyretic properties. The extract's flavonoids and saponins, which are well known for their ability to lower fever, further complement this therapeutic action.[48]
Antitumor activity	When the alcoholic extract and binary compounds of the entire Cuscuta reflexa plant were given to tumor-bearing mice at a dose of 240 mg/kg body weight, the mice's lifespan was prolonged. Tumor volume and viable cell count were significantly ($p < 0.05$) reduced by the treatment, although mean survival time and non-viable cell count increased. Additionally, the extract-treated mice's leukocyte, hemoglobin, WBC, and RBC levels returned to almost normal levels, indicating that the treatment successfully stabilized and enhanced hematological parameters.[49]
Antibacterial activity	The methanolic extract of Cuscuta reflexa Roxb. has strong, broad-spectrum bactericidal activity, according to research by D. K. Pal et al. Inhibition zones measuring 16 to 25 mm were produced by the methanolic extract (MECR) when evaluated at a concentration of 125 mg/ml. Shigella boydii, Pseudomonas aeruginosa, Shigella dysenteriae, Escherichia coli, and Staphylococcus aureus were among the microorganisms against which it showed notable antibacterial effectiveness. The extract's activity was similar to that of the common antibiotic chloramphenicol at this dosage.[50]
Anti-inflammatory activity	Using a carrageenan-induced paw edema model in rats, the anti-inflammatory effectiveness of the alcoholic and binary chemical extracts made from the stem of Cuscuta reflexa was assessed and contrasted with the common medication ibuprofen. Before the carrageenan challenge, the extracts were given orally at a dose of 1200 mg/kg body weight. After five hours, the extracts significantly reduced paw edema at medium and high doses (200 mg/kg and 400 mg/kg), resulting in decreases of 47.27%, 72.72%, 57.72%, and 80.00%, respectively, in comparison to the reference NSAID. These findings show that in this experimental setting, the chosen Cuscuta reflexa extracts have strong anti-inflammatory properties.[51]
Hepatoprotective activity	According to Jha et al. (2011), albino rats that had their livers damaged by paracetamol showed notable hepatoprotective effects from the hydroalcoholic extract of Cuscuta reflexa. The results show that this extract has a great deal of promise as a hepatoprotective agent.

Antiepileptic and Anticonvulsive activities	Cuscuta reflexa demonstrated a marked decrease in tonic seizure convulsion duration. caused in mice by pentylenetetrazol (30 mg/kg ip). Additionally, it lessens the maximum electroshock-induced convulsions' tonic extension convulsion (Borole et al, 2011).[52]
Hypoglycaemic activity	The methanolic extract of Cuscuta reflexa Roxb. and its ethyl acetate fraction were shown by Eram et al. (2002) to significantly inhibit α-glucosidase, an enzyme found in the small intestine's epithelial lining. By effectively slowing the intestinal absorption of glucose, suppression of this enzyme activity helps to enhance postprandial blood glucose homeostasis.[53]
anti-HIV activity	There have been reports of significant anti-HIV activity in the crude aqueous extract of Cuscuta reflexa. This is probably due to the synergistic impact of several phytoconstituents working through several biochemical processes. The results of Mahmood et al. (1997), who showed that the methanolic extract of C. reflexa shows notable antibacterial activity together with considerable free radical–scavenging (antioxidant) activities, further support its broad therapeutic potential.[54]
Relaxant and spasmolytic action	It has been demonstrated that Cuscuta reflexa aqueous and alcoholic stem extracts had significant relaxing and spasmolytic actions on isolated intestinal tissues from rabbits and guinea pigs. Additionally, the extracts produced reactions similar to those brought on by acetylcholine, indicating a possible modulatory effect on smooth muscle activity (Prasad et al., 1965).[55]
Influence on Blood Pressure	The alcoholic extract of Cuscuta reflexa showed significant cardiotonic and inotropic activity in perfused frog heart preparations. Following extract administration, dogs' blood pressure significantly decreased, according to later studies (Singh et al., 1973). Additionally, in rats under pentothal anaesthesia, the ethanolic stem extract caused a dose-dependent reduction in heart rate and arterial blood pressure. Interestingly, neither cholinergic receptor stimulation nor adrenergic inhibition affected these bradycardic and hypotensive effects, indicating that the extract mediates its cardiovascular actions by directly affecting cardiac or vascular tissues (Gilani et al., 1992).[56]
Cholinergic Action	Research on the frog rectus abdominis, frog heart, and isolated rabbit ileum showed that the stem extract of Cuscuta reflexa elicited reactions that were very similar to those of acetylcholine. The extract's involvement with cholinergic pathways was further supported by Kayath et al. (1995), who found that neostigmine considerably enhanced the extract's activity on frog rectus abdominis muscle while pancuronium significantly inhibited it.[57]
Diuretic Activity	Cuscuta reflexa aqueous and alcoholic extracts showed a strong diuretic effect in Wistar rats, suggesting that they may improve urine production and support renal function (Sharma et al., 2009).[58]
Anticancer activity	According to Chatterjee et al., Cuscuta reflexa extracts in ethanol and chloroform demonstrated strong anticancer properties, suggesting that they were successful in inhibiting the proliferation of cancer cells.[59]
Spasmolytic action	Cuscuta reflexa stem extracts, both aqueous and alcoholic, exhibit a spasmolytic and relaxing effect on rabbit and guinea pig small

	intestines. Additionally, the extracts had an effect similar to that of acetylcholine.[60]
Effect on Cardiovascular system	Alcoholic extracts of Cuscuta reflexa were shown in experiments to significantly lower blood pressure in dogs. This effect was unaffected by atropine, mepyramine, or propranolol, indicating that the hypotensive response is independent of adrenergic, cholinergic, and histaminergic pathways. Similarly, when pentothal-anesthetized rats were given an ethanolic stem extract, their arterial blood pressure and heart rate decreased in a dose-dependent manner that atropine was unable to reverse. All of these results suggest that mechanisms other than traditional adrenergic or cholinergic receptor activation mediate the bradycardic and hypotensive effects of C. reflexa.[61]
Nephroprotective and anti-arthritic activity	Both in vitro (protein-denaturation assay) and in vivo (formaldehyde- and turpentine oil-induced arthritis) models were used to assess the anti-arthritic potential of aqueous and methanolic extracts of Cuscuta reflexa. Joint swelling and paw edema were significantly reduced by treatment with AMECR at a dose of 600 mg/kg, reaching up to 76.74% inhibition in the formaldehyde-induced model after 10 days and 71.22% inhibition in the turpentine oil model at 6 hours. With inhibition values of 89.30% for bovine serum albumin and 93.51% for egg albumin at 800 µg/mL, complementary in vitro results showed a robust, concentration-dependent protective action against protein denaturation. These findings imply that AMECR's significant anti-arthritic and nephroprotective properties are a result of its rich phytochemical profile.[62]

TABLE XII. ACTIVITIES OF *CUSCUTA REFLEXA* IN PHARMACOLOGY

Q. Traditional and Modern Uses

Use	**Form**	**Purpose**
Decoction	Boiled stems	Liver ailments, menstrual regulation
Powder (Churna)	Dried plant powder	Blood purification, fertility support
Hair oil	Extract + carrier oil	Hair growth, dandruff
Tincture	Alcoholic extract	General weakness, liver support
Paste/Cream	Fresh plant or extract base	Skin disorders, wound healing

TABLE XIII TRADITIONAL AND MODERN USES OF CUSCUTA REFLEXA

II CONCLUSION

"Amarbel (*Cuscuta reflexa*) is a valuable medicine herb with significant therapeutic and economic potential. Its usefulness in both traditional and modern medicine is further supported by its diverse spectrum of biological activity and incorporation into contemporary herbal compositions. To ensure its safe and efficient use, standardization, quality assurance, quality control and clinical evaluation are essential."

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References

[1] Noureen S, Noreen S, Ghumman SA, Batool F, Bukhari SN. The genus Cuscuta (Convolvolaceae): An updated review on indigenous uses, phytochemistry, and pharmacology. Iranian Journal of Basic Medical Sciences. 2019 Nov;22(11):1225.

[2] Lalchand SR, Rakshpal G, Prakash RO. Cuscuta reflexa (Dodder Plant): a critical review on the medicinal plant used in Ayurveda. Int. J. Res. Ayurveda Pharm. 2017;8(6):38-42.

[3] Nisha Verma NV, Yadav RK. Cuscuta reflexa: a parasitic medicinal plant.

[4] Muhammad N, Ullah S, Abu-Izneid T, Rauf A, Shehzad O, Atif M, Khan H, Naz H, Herrera-Calderon O, Khalil AA, Uddin MS. The pharmacological basis of Cuscuta reflexa whole plant as an antiemetic agent in pigeons. Toxicology Reports. 2020 Jan 1;7:1305-10.

[5] Mishra S, Alhodieb FS, Barkat MA, Hassan MZ, Barkat HA, Ali R, Alam P, Alam O. Antitumor and hepatoprotective effect of Cuscuta reflexa Roxb. in a murine model of colon cancer. Journal of Ethnopharmacology. 2022 Jan 10;282:114597.

[6] Joshi VK, Joshi A, Dhiman KS. The Ayurvedic Pharmacopoeia of India, development and perspectives. Journal of ethnopharmacology. 2017 Feb 2;197:32-8.

[7] Kokate CK, Purohit AP, Gokhale SB. Pharmacognosy. Pune. India: Nirali Prakashan. 2002.

[8] Kapoor LD. CRC handbook of Ayurvedic medicinal plants. CRC press; 2018 Jan 18.

[9] Rastogi RM. Compendium of Indian medicinal plants. Central Drug Research Institute, Lucknow, India. 1990;1:388-9.

[10] Khare CP. Indian medicinal plants: an illustrated dictionary. Springer Science & Business Media; 2008 Apr 22.

[11] Harborne JB. Phytochemical Methods Harborne JB ed.

[12] World Health Organization. Quality control methods for herbal materials. Geneva: World Health Organization; 2011 [Internet]. 2017

[13] Evans WC. Trease and Evans' pharmacognosy. Elsevier Health Sciences; 2009 May 27.

[14] Lilhare T, Kawale M. Pharmacognostic and phytochemical studies on Holarrhena antidysenterica (Roth) Wall. Ex. A. Dc. Global Journal of Bioscience and Biotechnology. 2019;8(2):162-7.

[15] Mohammed SS. *An ethnobotanical study of medicinal plants and their biodiversity in and around Bhubaneswar* (Doctoral dissertation, OUAT, Bhubaneswar).

[16] Mahara A, Ojha N. Ethnobotanical Study of Medicinal Plants in Kepilasgadhi Rural Municipality of Khotang District, Nepal. European Journal of Medicinal Plants. 2024 Sep 21;35(6):105-31.

[17] Baghel US, Singh BP, Singh D. Herbal Medicine: Traditional Approach to Treat Infections. InInfectious Diseases 2024 Aug 6 (pp. 92-115). Bentham Science Publishers.

[18] Sharma P, Piyushbhai MK, Venkatachalam K, Binesh A. Exploring the role of secondary metabolites from plants and microbes as modulators of macrophage differentiation. Cardiovascular & Hematological Disorders-Drug Targets. 2024 Oct 11.

[19] Chatterjee D, Sahu RK, Jha AK, Dwivedi J. Evaluation of antitumor activity of Cuscuta reflexa Roxb (Cuscutaceae) against Ehrlich ascites carcinoma in Swiss albino mice. Tropical Journal of Pharmaceutical Research. 2011;10(4):447-54.

[20] Khan WA. Cuscuta reflexa: A critical review on the medicinal plant used in homeopathy.

[21] Inamdar FB, Oswal RJ, Chorage TV and Garje k: In vitro antimicrobial activity of Cuscuta reflexa Roxb. IRJP., 2011; 2: 214-216.Roychoudhury N, Singh RB, Mishra RK. Amarbel, Cuscuta reflexa Roxb.–An invasive alien species.

[22] Balakrishnan BR, Sangameswaran B, Bhaskar VH. Effect of methanol extract of Cuscuta reflexa aerial parts on hepatotoxicity induced by antitubercular drugs in rats. Int J Appl Res Nat Prod. 2010 Mar;3(1):18-22.

[23] Borole SP, Oswal RJ, Antre RV, Kshirsagar SS, Bagul YR. Evaluation of anti-epileptic activity of Cuscuta reflexa Roxb.

[24] Sharma Sakshy SS, Hullatti KK, Sachin Kumar SK, Tiwari BK. Comparative antioxidant activity of Cuscuta reflexa and Cassytha filiformis.

[25] Pandit S, Chauhan NS, Dixit VK. Effect of Cuscuta reflexa Roxb on androgen-induced alopecia. Journal of Cosmetic Dermatology. 2008 Sep;7(3):199-204.

[26] Patel S, Sharma V, Chauhan NS, Dixit VK. An updated review on the parasitic herb of Cuscuta reflexa Roxb. Zhong xi yi jie he xue bao= Journal of Chinese integrative medicine. 2012 Mar 1;10(3):249-55.

[27] Lalchand SR, Rakshpal G, Prakash RO. Cuscuta reflexa (Dodder plant): a critical review on the medicinal plant used in ayurveda. International Journal of Research in Ayurveda and Pharmacy. 2017;8(6):38-42.

[28] Khan A, Siddiqui A, Jamal A. Traditional uses, Chemistry and Pharmacological activities of Cuscuta reflexa Roxb: A Compendious Review. Int J Sci Res Rev. 2018;7(10):685-93.

[29] Vijikumar S: Cuscuta reflexa Roxb. –A Wonderful Miracle Plant in Ethnomedicine, Indian Journal of Natural Sciencs 2011; 11: 677.

[30] Vijikumar S, Ramanathan K, Devi BP. Cuscuta reflexa Roxb—A wonderful miracle plant in ethnomedicine. Indian J Nat Sci. 2011;976:997.

[31] Sastry JLN. Dravyaguna Vijnana. vol-2. Varanasi: Chaukhambha Orientalia; 2006. p.863.

[32] Nandkarni KM. The Indian Materia Medica. vol-1. Mumbai: Bombay popular prakashan; 2005. p. 419-420.

[33] Khan WA. Cuscuta reflexa: A critical review on the medicinal plant used in homeopathy.

[34] Chopra RN, Nayar SL and Chopra IC. Glossary of Indian Medicinal plants. New Delhi: National Institute of Science Communication and information Resources (CSIR); 2009. p. 85.

[35] Khan A, Siddiqui A, Jamal A. Traditional uses, Chemistry and Pharmacological activities of Cuscuta reflexa Roxb: A Compendious Review. Int J Sci Res Rev. 2018;7(10):685-93.

[36] Gupta AK, Tandon N, Sharma M. Quality Standards of Indian Medicinal plants. vol-5. New Delhi: Medicinal Plants Unit Indian Council of Medical Research; 2008. p.185 192

[37] Sharma PV. Dravya-guna Vijnana. vol-2. Varanasi: Chaukhambha Bharti Academy; 2006. p. 487-88.

[38] Gogte VM. Ayurvedic Pharmacology & Therapeutic uses of Medicinal Plants Dravyaguna Vignyan. Varanasi: Chaukhambha Publications; 2009. p. 534.

[39] Sastry JLN. Dravyaguna Vijnana. vol-2. Varanasi: Chaukhambha Orientalia; 2006. p.863.

[40] Bapalal G. Nighantu Adarsh. vol-2. Varanasi: Chaukhambha Bharti Academy; 2005. p. 97-99.

[41] Costea M, Tardif FJ. The biology of Canadian weeds. 133. Cuscuta campestris Yuncker, C. gronovii Willd. ex Schult., C. umbrosa Beyr. ex Hook., C. epithymum (L.) L. and C. epilinum Weihe. Canadian Journal of Plant Science. 2006 Jan 1;86(1):293-316.

[42] Paudel N, Adhikari DC, Das BD. Some medicinal plants uses in ethnical group from Biratnagar, Eastern, Nepal. American Academic Scientific Research Journal for Engineering, Technology, and Sciences. 2018;41(1):233-9.

[43] Rahmatullah M, Khatun Z, Hasan A, Parvin W, Moniruzzaman M, Khatun A, Mahal MJ, Bhuiyan SA, Mou SM, Jahan R. Survey and scientific evaluation of medicinal plants used by the Pahan and Teli tribal communities of Natore district, Bangladesh. African Journal of Traditional, Complementary and Alternative Medicines. 2012 Sep 20;9(3):366-73.

[44] Singh EA, Kamble SY, Bipinraj NK, Jagtap SD. Medicinal plants used by the Thakar tribes of Raigad district, Maharashtra for the treatment of snake-bite and scorpion-bite. Int J Phytother Res. 2012;2(2):26-35.

[45] Singh S. Ethnobotanical study of some climbers of Parsa district forest of Nepal. J Med Plants. 2016;4:6-10.

[46] Ahirwar RK: Diversity of ethnomedicinal plants in Boridand forest of district Korea, Chhattisgarh, India. American Journal of Plant Sciences 2015; 6(02): 413.

[47] Khattak NS, Nouroz F, Rahman IU, Noreen S. Ethno veterinary uses of medicinal plants of district Karak, Pakistan. Journal of ethnopharmacology. 2015 Aug 2;171:273-9.

[48] Akter MH, Akter H, Rahmatullah M. Synergistic antihyperglycemic activity of Coccinia grandis leaves and Cuscuta reflexa stems. J Pharm Pharm Sci. 2016 Oct 6;5:236-43.

[49] Sharma PV. Dravyaguna. Chawkhamba Biswabharati Academy. 2009;2:759.

[50] Kirtikar KR, Basu BD. Indian medicinal plants. vol 3. International Book Distributors; 1999.

[51] Plants Profile for Cuscuta coryli (hazel dodder)". Plants.usda.gov 2018.

[52] Azam MN, Ahmed MN, Rahman MM and Rahmatullah M: Ethnomedicines used by the Oraon and Gor tribes of Sylhet district, Bangladesh. Am-Eur J Sustain Agr 2013; 7: 391-402.

[53] Pandey GS. Bhavprakash Nighantu (Indian Materia Medica). Varanasi: Chaukhambha Bharti Academy; 2004. p. 447-448.

[54] Mukhopadhyay N, Kumar A, Suchitra M. A comprehensive Review of the Phytochemistry, Pharmacology, and Therapeutic Benefits of Cuscuta reflexa Roxb. RGUHS Journal of Pharmaceutical Sciences. 2020;10(1).

[55] Rath D, Kar DM, Panigrahi SK, Maharana L. Antidiabetic effects of Cuscuta reflexa Roxb. in streptozotocin induced diabetic rats. Journal of ethnopharmacology. 2016 Nov 4;192:442-9.

[56] Bhattacharya S, Roy B. Preliminary investigation on antipyretic activity of Cuscuta reflexa in rats. Journal of advanced pharmaceutical technology & research. 2010 Jan 1;1(1):83-7.

[57] Prasad DN. Preliminary pharmacological investigations on Cuscuta reflexa Roxb. The Indian journal of medical research. 1965 May; 53:465-70.

[58] Alamgeer, Niazi SG, Uttra AM, Qaiser MN, Ahsan H. Appraisal of anti-arthritic and nephroprotective potential of Cuscuta reflexa. Pharmaceutical biology. 2017 Jan 1;55(1):792-8.

[59] Pal DK, Mandal M, Senthilkumar GP, Padhiari A. Antibacterial activity of Cuscuta reflexa stem and Corchorus olitorius seed. Fitoterapia. 2006 Dec 1;77(7-8):589-91.

[60] Manirujjaman M, Suchana S, Collet T, Nawshin L, Chowdhury M. Antimicrobial effects of ethanolic extracts from Cuscuta reflexa Roxb .(Convolvulaceae). International Journal of Pharmacognosy and Phytochemical Research (IJPPR). 2016;8(6):930-2.

[61] Saini P, Mithal R, Menghani E. A parasitic medicinal plant Cuscuta reflexa: an overview. Int. J. Sci. Eng. Res. 2015 Dec;6:951-9.

[62] Mukhopadhyay N, Kumar A, Suchitra M. A comprehensive Review of the Phytochemistry, Pharmacology, and TherapeuticBenefits of Cuscuta reflexa Roxb. RGUHS Journal of Pharmaceutical Sciences. 2020;10(1).