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COMPREHENSIVE ANALYSIS OF AFTIMOON (CUSCUTA REFLEXA) FROM PERSPECTIVES OF TRADITIONAL UNANI SYSTEM OF MEDICINE.

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Abstract: Medicinal plants are the major subject of extensive research worldwide because they are thought to be a source of new pharmaceuticals, that are used in traditional and alternative systems of Medicine to treat several diseases, and they can also provide a path towards the development of new drugs. Cuscuta reflexa or Aftimoon, is one such plant having a variety of ethno-medical uses. It is one of the potent plants, having several therapeutic properties such as an effective anti-inflammatory, anti-bacterial, anti-microbial, hepatoprotective, anti-epileptic, relaxant, spasmolytic, anti-psoriatic, and anti-cancerous agent. Reviewing this, one of the most beneficial plants, gathering information from traditional Unani texts on the description of Cuscuta reflexa, it's ethnomedical applications, and various pharmacological studies conducted on it are the main objectives of this study.

Keywords: *Cuscuta reflexa, Aftimoon, ethno-medical, anti-psoriatic, anti-cancerous.*

Introduction:

Cuscuta reflexa is a herb also known as *Aftimoon* in Unani System of Medicine. *Aftimoon* is a parasitic herb and there are various species of *Cuscuta*, but all these species are mainly characterized by having a parasitic style of life. Color of *Cuscuta* is reddish orange. Stem of this herb is thread like, it gets wrapped around the branches of host plant and leaves have been reduced to tiny scales. The seeds are orange red in color, similar to mustard seeds. Flowers are tiny, scarlet and have petals that resemble hair. The best *Cuscuta* is thought to be red in color. The herb is a nuisance for the host plant. It parasitizes the host plant in actual sense. [1,2]

Whole dried plant of Cuscuta reflexa

Botanical Description of Plant:

Macroscopic Description of Plant: The parasitic climber of *Cuscuta reflexa* has a thin stem and branches. Light greenish yellow stem twines around the host plants branches. After drying, the stem takes on a brown color and thickness of 1-2 mm. Flowers are tiny, bell shaped, white, and grow usually alone or in short rhizomes. Bracts are fleshy, ovate-oblong, and about 1.5 mm in length. Calyx is glabrous, fleshy, broadly oval, and divided almost to the base. Lobes are 3 mm in length. Corolla is white, deltoid, acute, reflexed tube, 3-4 mm in length. Anthers are small and somewhat exerted, and there are four to five stamens. Ovary is ovoid in shape with two big, meaty stigmas, tiny, globose or ovoid capsule; 2-4 dark colored seeds; spherical or ellipsoidal in shape; without any specific odour or taste.[3,4,5]

Microscopic Description of Plant: Transverse section of the primary stem reveals epidermal cells that are oblong, have thick walls, are tightly packed and have stomata. A hypodermis with articulated laticifers and a cortex with five to six layers is broad. Radially elongated, thin-walled parenchymatous cells are cortical cells. A tiny pith region is located in the center of a ring of bicollateral, conjointly open vascular bundles. Each bundle has radial rows of xylem components, and the outside portion of each xylem strand contains phloem. Within a few days of germination, the plant uses chemo sensation to locate a host and attaches itself to a nearby host. The twinning stem forms haustoria, which pierce the host stem like roots and take water and nutrients. It covers the host plant over a short period of time and causes suffocation of host plant. The host plant influences the therapeutic properties of the parasitic plant. The host plant could be a tree, shrub, climber or herb. Flowers have five obtuse lobes and are bell-shaped. They can be solitary, in umbellate clusters of 2-4 or in short racemes. The bracts are 1.5 mm long, ovate-oblong, and fleshy at the obtuse end. Pedicelled and cupped flowers are present. There are numerous teeth on each cup. Located inside the cup is a corolla. Four tiny, light brown seeds with convex on one side and concave on the other, each contained in a spherical capsule, are available. The fruit is a capsule with a thin, membrane pericarp and

large, barrel shaped cells with thick walls in the inner layer. Round, brownish-black, smooth and extrillate seeds measure 0.4-0.6 cm in diameter and are convex on one side and concave on other.[3]

Taxonomical Classification:[6,7]

Kingdom: Plantae.

Subkingdom: Tracheobionta.

Superdivision: Spermatophyta.

Division: Angiosperms.

Class: Eudicots.

Subclass: Asterids.

Order: Solanales.

Family: Cuscutaceae.

Alternate: Convolvulaceae.

Genus: Cuscuta.

Species: Reflexa.

***Mutrādifāt* (Vernacular Names):**[8,9]

Arabic: Shar-al-Zabiha, Kashuth.

English: Dodder, Air Creeper, Devil's hair, Devil's ringlet, strange tare, dodder of Thyme, Lesser dodder, greater dodder, giant dodder, fire weed.

Hindi: Akashbel, Amarbel.

Urdu: Akashbel, Aftimoon, Imalbel.

Sanskrit: Akashdil.

Persian: Daraktpechan, Belparash, Tukhm-i-Kashus.

Bengali: Algussi, Hadialgusilutta.

Gujrati: Amarbel.

Telugu: Savara pukada, Sitammapogunulu.

Tamil: Kodiagundal, Sadadari.

French: Cuscute.

Marathi: Amarvela, Nirmuli, Akashavela.

Punjabi: Nilathari.

Suryani: Sour mor, hifoor noor.

Methodology:

Literature analysis was done on Plant of Cuscuta reflexa. The features of this plant were searched through the help of various search engines and websites. Google, Google scholar, Pubmed, Research Gate, Science Direct and PMC were used to collect information regarding the medical and pharmacological properties of Cuscuta reflexa. Classical Unani literature was also reviewed for information regarding it's uses and properties in Unani System of Medicine. After thorough reviewing of all the sources, including Classical Unani texts and modern scientific studies, a framework was developed to consolidate all the information.

Geographical Distribution:

There are several different *Cuscuta* species throughout the world.[10] The plant can be found in temperate and tropical climates. The greatest variety of species can be found in tropical and subtropical areas.[5]It is widely distributed throughout India, including coastal and highland areas up to an altitude of 3000 meters[1]. Dodder species are most diverse in America, from Cannada to Chile[2]. Central Europe is home to five of its species, with *C. europea* being the most well-known. The most significant *Cuscuta* species in term of agriculture are *C. pentagona* and *C. compestris,* which exhibit a nearly global distribution and have a diverse range of hosts[11].

Habit and Habitat:

Species of *Cuscuta* flourish in areas with a warm, more humid climate. All *Cuscuta* species completely rely upon the host plant to complete their entire life cycle. *Cuscuta* is an example of an obligatory holo-parasite. In order to access their host's vascular bundles and draw out water, sugar and other types of solutes, the parasite winds arounds plants and enters through haustoria. These species can be found in gardens, grasslands, wetlands, open woodlands, coastal vine thickets, degraded terrain, water course banks etc.[2,11]

Parts of Plant Used:[8,9]

Seeds and Whole Plant.

Description in Unani Medicine:

***Māhīyat* (Morphological Characters of *Aftimoon* As Described In Unani Medicine):** It is typically found in islands of northern and western water bodies in temperate and tropical climates. Indian variety of this plant is a yellowish orange colored herb, primarily parasitizes Linseed and Acacia plants. It has a bitter, extremely acrid taste. It is occasionally contaminated with *Hasha* (Thyme) and *Asad-al- Adas,* but we can easily differentiate by the distinctive red color of the original plant.[12,13,14,9,]

***Afāl* (Functions):**[8,9]

Mulaṭṭif (Demulcent).

Mushil-i-Sawdā' (Purgative of black bile).

Mushil-i-Balgham (Purgative of phlegm).

Mufattiḥa Ṣudā'(Deobstruent).

Muṣaffī-i-Dam (Blood Purifier).

Mudirr-i-Bawl Diuretic).

Mudirr-i-Ḥayḍ (Emmenogogue).

Kasir-i-Riyāḥ (Carminative).

Qātil Qirm Shikam (Anthelminthic).

***Mizāj* (Temperament):**[15] *Aftimoon* is hot in third degree and dry in first degree (As per Ibn Sīnā, and Ḥunayn ibn Isḥāq).

It is hot in second degree (According to Jālīnūs).

***Is'timālāt* (Therapeutic Uses):**

Diseases of the spleen, paralysis, Bilious diseases, vomiting, lumbago, quartan fever, chronic fever, liver and spleen disorders, long lasting fever, effective for jaundice, pains in the muscles and joints, and reduces inflammation. Flatulence, constipation, alopecia, Pain in throat, Gastric pain, cough, cold, Pain of Rheumatism[3,8,17,18,19,20] Locally, *Aftimoon* is useful for treating Pruritus, and also can be used in the form of wash for external sores on skin. [3]

Aftimoon is useful for *Mālankhūliyā* (melancholia), *Kābūs* (nightmare), *Iztrabe Nafsānī* (anxiety disorders), *Junūn* (schizophrenia).

It is also used for *Warm-i-Kabid* (Hepatitis), *Dīdānī Am'ā'* (intestinal worms), *Sawdāwī' Amrāḍ* (diseases due to excessive accumulation of black bile), *Ṣar'*(epilepsy), *Nafakh-i-Shikam* (flatulence*), Dimāgh-i-Amrāḍ* (brain diseases), *Laqwa* (facial palsy), *Fālij* (paralysis), *Khadar* (numbness), *Saraṭān* (cancer), *Waram-i- Ṭiḥāl* (splenomegaly), *Waja'-al-Aḍlā't* (anodynia), *Yarqān* (jaundice), *Waja'-al- Mafāṣil* (Osteoarthritis), *Khafqa'an* (palpitations) and *Amrāḍ-i-Jild* (skin diseases).[9,21,22,23,24]

Uses of *Aftimoon* in Unani System of Medicine:

According to Unani System of Medicine, *Aftimoon* has been mentioned for treating various dermatological, neurological, gastrointestinal, psychiatric and general physical diseases.

Efficacy in Gastrointestinal Disorders: Unani physicians have advised using *Aftimoon* for various GIT disorders for example Hepatitis, Splenomegaly, Round worm infestations, Bloating, Melancholic diarrhea[22].

Aftimoon powder in the quantity of 17-35 gm is added to boiling hot water and vessel is covered with a lid. Long-term boiling of medicine destroys its active ingredient, thus it should not be done. This remedy is employed to eliminate intestinal worms.[22, 25]

35 gm of *Maveez munaqqa* (*Vitis vinifera*) and 1 gm of *Aftimoon* are to be boiled together, and *Banafsha* is to be added to this Decoction. Successful treatment with this medication is done for melancholic delusions and intestinal worms. When other medications like *Badranjboya* (*Mellisa officianilis*) and *Gaozaban* (*Borago officianilis*) are added to the same decoction, its potency is increased.[15]

When combined with equal quantity of *Sikanjabīn*, 24.5 gm of *Aftimoon* performs as a potent purgative for altered black bile (*Sawdā Ghair Tabayah* or *Mirra-i- Sawdā*) and also acts as a potent cleanser of spleen. It also treats *Māniyā* and *Mālankhūliyā Ṭiḥālī*.[15,21,25]

Efficacy in Cardio Vascular diseases:

Aftimoon is a well-known herbal remedy for melancholic palpitations and anxiety (*Wahshat-i-Qalb).*[9]

35 gm of *Aftimoon* soaked in 210 ml of fresh milk ingested daily for a week together with 52 gm of *Sikanjabīn*. This is a tried-and-true remedy for heart palpitations caused by melancholic humours and spasms.[15]

When combined with *Ma al jubn*, 21 gm of *Aftimoon* is an important treatment for *Sū'-i- Mizāj Sawdāwī'* of heart and alleviates the headache it causes. [15]

Effect on Psychiatric Diseases:

Aftimoon is an efficacious herbal remedy that serves as a concoction and purgative for altered *Sawdā'*. It is said to be extremely effective in treating psychiatric illnesses. Melancholia, epilepsy, mania, delusions, paralysis, facial palsy, obsession, insanity, anxiety etc. are all treated with *Aftimoon*.

In order to treat Melancholia, 45 gm powdered *Aftimoon* seeds are dissolved in alcohol using a piece of cloth, then left outside for the entire night. 36 ml of *Sharbat e Warad* (syrup made of rose petals), 36 ml of *Sharbat e Banafsha*, together with a few drops of *Roghan Badam*, are used in the morning. Without causing any weakness, this preparation is extremely effective for purging *Mirra Sawdā'*. [25]

Patients who suffer from melancholia brought on by alcohol consumption, should take 1 gm of *Aftimoon* boiled together with 35 gm of *Maveez munaqqa.*[25]

For treatment of Melancholia, *Aftimoon* and *Afsanteen* are recommended in equal amounts. [15]

When consumed orally, *Aftimoon* 28 gm along with fresh milk and sugar has a healing impact on melancholy diseases such as mania, obsession, *Kābūs* (Night mare).[15]

For treatment of *Mālankhūliyā Marāqī*, pills were used in doses of 17-35 gm which are composed of powdered *Aftimoon* and *Maveez munaqqa*.[15]

Aftimoon functions as a brain cleanser when combined with *Ustukhuddus* (*Lavendulla stoechas)* and has considerable effects on facial palsy, insensibilty, spasm and phlegmatic and melancholic epilepsy. [15]

According to Ibn Sīnā, *Aftimoon* is beneficial for treating *Tashannuj Raṭb* because it eliminates viscous phlegm and normalizes temperament of nerves.[15,25]

35 gm of *Aftimoon* soaked in 810 ml of fresh milk every day, then boiled with 52.5 gm of *Sikanjabīn Sada.* The milk's liquid component is filtered off after curdling and utilized. This preparation can be used as a curative treatment for spasm and insensibility (*Khadar*) for eight days.[15]

Efficacy in General Physical Disease:

Aftimoon has been widely discussed in classical Unani texts for treating skin disorders for example moles on skin, Psoriasis, pruritus, ptyriasis, Leprosy, vitiligo, various types of Musculo skeletal disorders like joint pain, rheumatic pain, even useful for treating various types of fever, spasm, cancer.[12]

Powdered *Aftimoon* should be taken with 324 ml of milk for spasm.[25]

When combined with *Ma' al-Jubn* (water of milk), powdered *Aftimoon* totally excretes *Mirra Sawdā'*, especially in patients with ulcerating cancer[13,25]

To treat Psoriasis, the aforementioned preparation is boiled with *Roghan Banafsha* and combined with Liquorice, rose petals, and *Munaqqa.* [9,25]

When combined with *Afsanteen, Aftimoon* is useful for disorders related to ageing. [15]

Bolis advises mixing 21gm of *Aftimoon* with 288 ml of milk since milk balances out the dryness that *Aftimoon* causes.[15]

Caution: *Aftimoon* should not be processed into fine powder nor should be boiled for an extended period of time since this can diminish its active ingredients.[15,22,25]

***Muḍir Atharāt* (Toxicity, Adverse Effect, And Contraindication):**[12,13,15,22,25]

It is harmful for those with choleric hot temperaments and can cause nausea, vomiting, thirst and dizziness. It is considered harmful for Lungs.

***Muṣliḥ* (Correctives):**

In case of excessive thirst and dryness of mouth, use *Almond Oil (Roghane Badam*), *Crocus sativus (Zafran), Gum tragacantha (Kateera).*

For nausea and vomiting, take correctives such as *Sharbat-i-Sandal, Rūb-i-Seb.*

The drug *Aftimoon* is known to cause dryness, in order to balance that dryness, take Milk, *Gul-i-Banafsha* and *Gaozaban.*

In case of Gastric irritation, use *Gum acacia.*[12,15,22,25]

Badl (Substitute):[12,13,14]

In case of Diarrhea, use *Lajward* or *Hajr-i-Armani* as a substitute drug.

Ustukhaddus or *Bisfaij* is also a substitute.

For expelling *Mirra-i-Sawdā*' take *Turbud (Operculina turpethum)* in equal quantity and one third of *Hasha (Thymus vulgare)* as substitute. Some Unani physicians recommend using *Turbud (Operculina turpethum)* and *Gharigun (Agaricus albus)* for the same.

Miqdār Khurak (Dosage):[12,13,15,22,25]

Without adding any corrective medicine, 3-7 gms of dried *Aftimoon* can be used.

Zakariyyā Rāzī advises taking it in doses of 14 to 21 gms as a decoction or infusion.

Aftimoon 35 gm is used along with grape vine (*Duqus*).

Its infusion can be used in doses ranging from 7 to 14 ml without using any corrective medication.

Pharmacological Actions of _Aftimoon_:

Aftimoon have important medicinal properties like *Mushil-i-Sawdā'* purgative of black bile), *Mushil-i-Balgham* (purgative of phlegm), *Muḥallil Waram* (anti-inflammatory), *Muṣaffī-i-Dam* (Blood Purifier), *Mudirr-i-Bawl* Diuretic), *Mudirr-i-Ḥayḍ* (emenogogue), *Mufattiḥa Ṣudā'* (deobstruent), *Mulaṭṭif* (demulcent), *Muqawwī-i-Bāh*(aphrodisiac), *Muqawwī-i-Aam* (General Tonic), *Munaffiṭ* (expectorant), *Qātil-i-Dīdān-i-Am'ā'* (anthelminthic), *Kāsir-i-Riyāḥ* (carminative), *Munawwim* (sedative), *Muqawwī-i-Qalb* (Cardiotonic).[21,22,9,23,24]

Besides *Aftimoon* is also Antibacterial, Antiseptic, Astringent, Aphrodisiac, Anodyne[3,17,21,22,23,24,]. Seeds are sedative, diuretic, emenogogue.[3]

Murakkabāt (Important Compound Formulations): *Iṭrīfal Aftimoon, Iṭrīfal Ustukhudoos, Sikanjabīn Aftimooni*, *Sharbat Dinar, Ma'jūn Ushba, Safūf Chobchini*, *Sharbat Ahmad Shahi*.[14,15,16]

Some Scientific Studies Done so far on Cuscuta reflexa :

Anticonvulsant activity:

According to Gupta et al (2003), a methanolic extract of *Cuscuta reflexa Roxb*. Stem significantly protected mice from convulsions brought on by chemo convulsive drugs. The mice treated with the processed extract had considerably more catecholamines. In comparison to the control groups, the extract also markedly increased GABA, glutamine, and glutamate levels. According to the study, *Cuscuta reflexa Roxb.* Extract has anticonvulsant properties.[24]

Anxiolytic activity:

According to a study carried out by Thomas et al. in 2015, *Cuscuta reflexa Roxb*. 400 mg/kg of methanol extract significantly enhanced the time spent on the open arms and decreased the frequency of entrances into the closed

arms. In both models, the 400mg/kg extract significantly reduced anxiety compared to 200 mg/kg extract. The effect of 400 mg/kg was comparable to the standard. As a result, *Cuscuta reflexa Roxb* methanol extract might be effective as anxiolytic and appears potential for the development of phytomedicines for anxiety.[24]

Hepatoprotective activity:

Study conducted by Balakrishnan et al. (2010), demonstrated that methanol extract of *Cuscuta reflexa Roxb*. Enhanced liver function in hepatotoxic rats by lowering their levels of ALT, AST, and alkaline phosphatase in the serum. Additionally, it decreased the levels of both ALP and total bilirubin, demonstrating the liver's protective impact and improvement in functional efficiency.[25]

Another study conducted by Katiyar et al. (2015), discovered that rats treated with alcoholic and aqueous extracts of *Cuscuta reflexa Roxb*. Stem had hepatoprotective action. AESCR and AQESCR demonstrated an important hepatoprotective effect against liver damage brought on by paracetamol. When compared to the common standard medication Silymarin (25 mg/kg), the medium and high doses of AESCR and AQESCR treated groups demonstrated superior hepatoprotective efficacy.[26]

Anti-inflammatory and Anti-Cancer Activities:

Suresh et al. in 2011 reported that water extract of *Cuscuta reflexa Roxb*. Possess anti-inflammatory and anti-cancer activities, after down regulated polysaccharide induced over expression of TNF α and COX-2 in RAW264.7 cells; blocked NF-kb binding to its motifs and induced apoptosis in Hep 3B cells as evidenced from MTT, DAPI staining, and annexin V staining assays. Researchers came to the conclusion that *Cuscuta reflexa Roxb*. Suppresses LPS-induced inflammatory responses in RAW 264.7 cells through interaction of TNF α, COX-2, and NF-Kb signaling because the extract upregulated pro-apoptotic proteins BAX and P53 and downregulated anti apoptotic factors Bcl-2 and survival. By upregulating p53 and BAX and downregulating BCL-2 and survivin, it caused apoptosis in Hep3 cells.[27]

Anti-tumour activity:

In 2011, the chloroform and ethanol extracts of *Cuscuta reflexa Roxb*. Were proven by Chatterjee et al. These extracts were tested for their ability to inhibit the growth of the Ehrlich ascites carcinoma tumor in mice at doses of 200 and 400 mg/kg body weight, respectively. Acute oral toxicity tests were also carried out to ascertain the extract's safety. 96 mice were subcutaneously injected with EAC cells, and following a one-day incubation period, the extracts were given to the mice every day for 16 days. Six animals from each group were slaughtered on day 21 to assess anti-tumor activity, and the remaining animals were kept under observation to gauge host life span. Tumor volume, viable and non-viable tumor cell count, and hematological characteristics of the host were all taken into consideration while assessing the anti-tumor effect. 5-fluorouracil was the standard anti-tumor medication used. According to the results, *Cuscuta reflexa* extracts in chloroform and ethanol exhibit anti-tumor activity in EAC-bearing mice that is comparable to that of the gold standard, 5-fluorouracil. [28,29]

Hypoglycemic activity:

Methanolic extract of *Cuscuta reflexa* and its ethyl acetate fraction significantly inhibited α Glucosidase. The small intestine's epithelium contains this membrane bound enzyme. On inhibiting α glucosidase, absorption of glucose is prolonged in the blood, after taking meals.[30]

Anti Pyretic Activity:

The study revealed that *Cuscuta reflexa Roxb* aqueous and ethanol extracts were both effective. Significant antipyretic action that was dose dependent was seen in rats whose body temperature were elevated as a result of yeast infection, and the effects were comparable to those of the standard antipyretic medication (paracetamol). It was discovered that the ethanol extract was marginally more powerful than the aqueous extract. The presence of above group of phytoconstituents in *Cuscuta reflexa Roxb.* That is Flavonoids and Saponins may be responsible for this activity.[31]

Antibacterial Activity:

Cuscuta reflexa Roxb methanolic extract was found to be broadly bactericidal against all strains tested, according to D K Pal et al. With a zone of inhibition extending from 16 to 25 nm, MECR at a dose of 125mg/ml demonstrated considerable antibacterial activity against S. aureus, S. boydii, P. aeruginosa, S. dysenteriae, and E. coli. Its action was comparable to chloramphenicol's at this dosage.[32]

Anti-Microbial Activity:

In order to test for antibacterial activity, P. Paudel et al.(2014) extracted essential oil from the parasitic plant *Cuscuta reflexa Roxb*. They discovered that a rare alkene cis-3-butyl-4-vinylcyclopentane dominated the essential oil. There was also a substantial amount of limonene in the oil. Antimicrobial biological screening did not detect any discernible activity against either gram positive or gram-negative microorganisms. However, minute action was observed against Aspergillus niger.[33]

Antiepileptic and Anticonvulsive Activities:

Cuscuta reflexa Roxb. Anticonvulsant properties were investigated by Borole et al (2011) in mice subjected to maximal electroshock convulsive and pentylenetetrazole induced convulsions. Additionally, they evaluated phytochemicals including flavonoids, glycosides, steroids, alkaloids, cuscutalin, cuscutin, and amarvelin. The duration of convulsion in tonic seizures brought on by pentylenetetrazole (85 mg/kg i.p.) was found to have been greatly reduced by *Cuscuta reflexa Roxb* (200 and 400 mg/kg).[34]

Antioxidant Activity:

By using the DPPH assay, Sharma et al (2012) examined the in vitro antioxidant activity of an alcoholic *Cuscuta reflexa Roxb* stem extract. Ascorbic acid served as the standard. They claimed that the *Cuscuta reflexa Roxb* exhibits DPPH radical scavenging activity, causing the reaction mixture's color to shift from purple to yellow. They

discovered that the alcoholic extract of *Cuscuta reflexa Roxb.* Has dose dependent anti-DPPH radical activity, and they also reported that *Cuscuta reflexa Roxb*. Is more effective than *Casytha filliformis* at scavenging free radicals and superoxide radicals.[35]

Diuretic Activity:

Sakshy et al in 2010 used wistar rats to study the diuretic effects of an alcoholic and aqueous extract of *Cuscuta reflexa*. Frusemide served as the typical reference medication. The amount of urine voided overall as well as the concentration of Na+, K+, and Cl- were measured. In comparison to controls treated with saline, *Cuscuta reflexa* demonstrated a notable increase in Na+ and K+ excretion as well as strong diuretic action.[36]

Cholinergic Activity:

Kayath et al (1995) examined the effects of *Cuscuta reflexa* extract on a frog's rectus abdominis and a piece of isolated rabbit ileum, comparing the results to acetylcholine as the reference. *Cuscuta reflexa* extract produced effects that were similar to those of acetylcholine.[37]

Effect on Blood Pressure: In Pentothal anesthesized rats, Gupta et al (2008) observed that an extract of *Cuscuta reflexa Roxb* caused a dose dependent drop in arterial blood pressure and heart rate. Atropine did not prevent these effects, nor did *Cuscuta reflexa* change the norepinephrine pressor response.[38]

Anti Helminthic Activity:

The in vitro anthelminthic activity of *Cuscuta reflexa Roxb.* On adult Indian earthworms, *Pheretima posthuma*, was assessed by Pavan et al (2012). Earthworms' natural motility has been demonstrated to be dose-dependently inhibited by *Cuscuta reflexa Roxb*. Extract. They had noted that every pet, methanolic and chloroform. The anthelminthic activity of ether extracts was compared to that of albendazole, the standard medication.[39]

Anti-Psoriatic Effect of *Cuscuta reflexa*:

Anti Psoriatic effect of *Cuscuta reflexa* has been demonstrated in a study titled "Evaluation of role of whey with dodder oxymel on mild to moderate Psoriasis: A double-blind, randomized, controlled trial". This trial was randomized, double-blind, and controlled. The intervention involved ninety Psoriatic patients. Two groups were randomly assigned to receive the same amount of drug and placebo. (whey with dodder oxymel and lactose) Dermatological examination was done twice. The Psoriasis Area and Severity Index (PASI), the Dermatology Life Quality Index (DLQI), the Visual Analogue Scale (VAS), and the Body Surface Area (BSA) were used to assess their clinical responses.

In conclusion of the study, it seems that combining whey with dodder oxymel can help people with Psoriasis and improve their overall quality of life.[40]

Conclusion:

Aftimoon, also known as *Cuscuta reflexa* is widely used traditional plant for it's several useful medicinal properties. It's plays a pivotal role as an anti-inflammatory, anti-oxidant, diuretic, anti-bacterial, anti-pyretic, as well as anti-psoriatic. Present review aims at exploring the various pharamacological properties of *Cuscuta reflexa* and thus validating it's medico-pharmacological benefits. Present review aims at providing brief information regarding *Aftimoon (Cuscuta reflexa).* Various books, research papers, review papers were consulted for the comprehensive analysis of several properties of *Cuscuta reflexa* which have been mentioned in the reference section of this review paper. It is believed that the information provided in this review about *Cuscuta reflexa* will help the researchers worldwide to use this plant in different treatment modalities. However, there is an immediate need for more research studies on the active components of the plant.

Conflict of Interest: None.

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References:

1. Prasad DN. Preliminary pharmacological investigation on Cuscuta reflexa Roxb. Indian J Med Res. 1965; 53:465-470.
2. Stefanovic S, Costea M. Reticulate evolution in the parasitic genus Cuscuta: over and over again. Botany 2008 August: 86 (8), 791-808.
3. Kirtikar K.R, Basu B.D, Indian Medicinal Plants, New Delhi. Periodical Expert Book Agency, 2012; Vol-3, 1741-42, 1221.
4. Khory R.N, Katrak NW, Materia Medica of India and their Therapeutics. New Delhi, Neeraj Publishing House, Daryaganj.1984; 424-25.
5. Singh MP, Panda H, Medicinal Herbs and their formulations. New Delhi, Daya Publishing House, 2005; 325.
6. Vijayakumar S, Ramanathan K, Devi BP. Cuscuta Reflexa Roxb. – A Wonderful Miracle Plant in Ethnomedicine. Indian Journal of Natural Sciences. 2011 Jan; 1:676-683.
7. Patel S, Sharma V, Chauhan NS, Dixit VK. An updated review on the parasitic herb of Cuscuta reflexa Roxb. Journal of Chinese Integrative Medicine. 2012; 10(3):249-55.
8. Aslam M, Imtiyaz S, Ahmad K, Ali H, (2013). Cuscuta reflexa Roxb: A review; Int. J of Universal Pharmacy and Bio Sciences: 2 (3): 484-490.
9. Kabirudddin HM Makhzanul Mufradat, New Delhi, Siddiqui Publications, Lahore (YNM): 79,80,287.
10. Khare CP. Indian Medicinal Plants. An illustrated Dictionary, New Delhi Springer, 2007; 189,476.
11. Mabberley DJ, The Plant Book: A Portable Dictionary Of the Higher Plants Of Genera and Families of Angiosperms. J. California Native Plant Soc. 1987; 30 (2): 1-36.

12. Hubul I. Kitabul Mukhtarat Fil Tib (Urdu Translation). Vol-4. New Delhi: CCRUM, Ministry of Health and Family Welfare; 2007, pg no 104-105.

13. Ibn al Quff. Kitabul Umda Fil Jarahat (Urdu Translation). Vol-1,2. New Delhi: CCRUM, Ministry of Health and Family Welfare; 1986: 174-75, 102-7, 234, 236, 268, 271-72, 273, 274, 292, 293.

14. Nabi M.G, Makhzan e Mufradat wa Murakkabāt. New Delhi, CCRUM, Janakpuri, Ministry of Health and Family Welfare, Govt of India. P-41.

15. Maghrabi A.S. Kitab al Fatah fi Tadawi min Jamee Sunoof ul Amraz wa Ashkawi. AYUSH, Ministry of Health and Family Welfare, Govt of India, 2007; 90,91,48.

16. Azam HM. Moheet Azam New Delhi, CCRUM, Ministry of Health and Family Welfare, Govt of India, 2012; 354-57.

17. Prajapati ND, Kumar U, Agro's Dictionary of Medicinal Plants. Agrobios India Publishers 2005; 182.

18. Anonnymous. Medicinal Plants in folklores of Kashmir Himalayas. New Delhi; CCRUM; Ministry of Health and Family Welfare, Govt of India, 2001; 88, 94-95, 122.

19. Anonnymous. Medicinal Plants in folklores of Bihar and Orissa. New Delhi; CCRUM; Ministry of Health and Family Welfare, Govt of India, 2001; 193-194.

20. Anonnymous. Medicinal Plants in folklores of Northern India. New Delhi; CCRUM; Ministry of Health and Family Welfare, Govt of India, 2001; 138,194-95, 480.

21. Khan AA, Bashir F, Akhtar J, Anjum N, Alam S. Phytochemical and pharmacological investigations of Aftimoon (Cuscuta reflexa). International Journal of Unani Integrative Medicine 2019; 3(3); 45-48.

22. Ghani N. Khazainul Advia. Idara Kitabus Shifa New Delhi; 2011, 698-699, 242-243.

23. Anonymous Standard Unani Medical Terminology. Central Council for Research in Unani Medicine, New Delhi; 2012.

24. Kalam MA and Gufran A. Medicinal Importance of Climbers used in Unani System of Medicine. In: Biotechnological strategies for the conservation of medicinal and ornamental climbers. A. Shahzad et al. (eds), Springer International Publishing Switzerland 2016.

25. Ibn Betar Al Jamiul Mufradat al Advia wa Aghziya, CCRUM, Ministry of Health and Family Welfare, Govt of India, New Delhi; 1985; 95,96.

26. Gupta M, Mazumdar UK, Pal DK, Bhattacharya S, Chakrabartiya S. Studies on brain biogenic amines in methanolic extract of Cuscuta reflexa Roxb and Crochorus; Acta Pol Pharm; 2003 May-June, 60(3):207-10.

27. Balakrishnan B, Sangameswaran B, Bhaskar V. Effect of methanolic extract of Cuscuta reflexa aerial parts on hepatotoxicity induced by anti-tubercular drugs in rats. International Journal of Applied Research in Natural Products, 2010 March; 3(1): 18-22.

28. Suresh V, Sruthi V, Padmaja B, Asha VV. In vitro anti-inflammatory and anti-cancer activities of Cuscuta reflexa Roxb. Journal of ethnopharmacology, 2011 Apr 12; 134(3): 872-7.

29. 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.

30. Katiyar NS, Singh AP, Gangwar AK, Rao NV. Evaluation of hepatoprotective activity of stem extracts of Cuscuta reflexa (Roxb) in rats. International Journal of Pharmacy and Pharmaceutical Sciences, 2015 Jan; 7(6): 231-4.

31. Sanjib Bhattacharya, Bodhisattya Roy; Preliminary investigations on Anti-Pyretic activity of Cuscuta reflexa in rats; J Adv Pharm Technol Res; 2010Jan-March; 1(1):83-87.

32. Pal DK, Mandal M, Senthikumar GP, Padhiari A. Antibacterial activity of Cuscuta reflexa stem and Corchorus olitorius seed. Fitoterapia, 2006 Dec, 77 (7-8):589-91.

33. Paudel P, Satyel P, Maharjan S, Shreshtha N., Setzer W.N. Volatile analysis and antimicrobial screening of the parasitic plant Cuscuta reflex Roxb. From Nepal. Nat Prod Res 2014; 28 (2), 106-10.

34. Borole SP, Oswal R, Antre R.V., Kshirasagar S.S, Bagul Y.R. Evaluation of antiepileptic activity of Cuscuta reflexa Roxb. Research Journal of Pharmaceutical, Biological and Chemical Sciences; 2011; 2 (1): 657-663.

35. Srivastava S, Rudra D, Upendra N. Synthesis of phytochelatins and modulation of antioxidants in response to cadmium stressin Cuscuta reflexa- an angiospermic parasite. Journal of plant physiology. 2004 June; 161 (6), 665-74.

36. Sharma S, Hulatti KK, Prasanna SM, Kuppast IJ, Paras S. Comparative study of Cuscuta reflexa and Cassythia filiformis for diuretic activity.Pharmacognosy Research, 2009; 1, 5, 327-330.

37. Kayath HP, Goel NK. Effect of Cuscuta stem extract on various animal tissues, Indian Journal of Pharmacology. 1995; 27 (4), 227-229.

38. Gilani AH, Aftab K. Pharmacological actions of Cuscuta reflexa Roxb. Pharmaceutical biology. 1992; 30 (4): 296-302.

39. Pavan B, Suggala VS, Upasani CD. Invitro Antihelminthic activity of stems of Cuscuta refelxa. International Journal of Bioassays, 2012; 01 (08), 18-19.

40. Akram Atyabi, Gholamreza Kordafshari, Fatemah Nejatbakhsh, Parvin Mansuri, Eghbalain E, Nasiri M, Shirbegi L.Evaluation of the role of whey with dodder oxymel on mild to moderate Psoriasis: A double-blind, randomized controlled trial; Biomedical Research and Therapy; 2018 August; 5(8):2620-2632 DOI:10.15419/bmrat.v5i8.470.