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"PHARMACOLOGYANDPHYTOCHEMISTRY OF *CUSCUTA REFLEXA* LINN"

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ABSTRACT:

Aftimoon (*Cuscutareflexa*Roxb.) is also known as Akashbel, Amarbel, and dodder plant in traditional medicine. India, Sri Lanka, Iran, Australia, Ceylon, and Malaya are all home to the plant. It belongs to the Convolvulaceae family and is an evergreen, perennial, rootless, leafless climber parasitic plant that is used to treat a variety of illnesses, including jaundice, gout, rheumatism, constipation, flatulence, chronic fever, and hiccups. Researchers are looking at the *Cuscutareflexa's* potential for having anticancer, antibacterial, antispasmodic, antihypertensive, hepatoprotective, antioxidant, haemodynamic, muscle relaxant, psychopharmacological, cardiotonic, and anticonvulsant properties, among others. A parasitic weed plant known as *Cuscutareflexa* has therapeutic properties and plays a significant role in Ayurveda. The therapeutic capabilities of *Cuscutareflexa* are dependent on its host plant since it grows over it and absorbs nutrients from it. Many compounds with medicinal potential and pharmacological and ethnomedical properties have been identified from this wonder plant.

Phytochemical screening and gas chromatography-mass spectroscopy (GC-MS) methods were used to determine the phytochemical component of *Cuscutareflexa* (whole plant) chloroform and methanol extracts. In the plant sample, steroids, terpenoids, flavonoids, phenolic compounds, and cumarins were found through qualitative analysis.

The parasite Roxb. twines and forms a tangled mass that covers the host plants. In Tamil, it is referred to as Akasvalli. The stem and seeds of this plant are extremely valuable medicinally. According to certain studies, the traditional societies and Indian tribes employed this plant as a purgative, a carminative, and an exterior treatment for skin conditions. For liver issues and constipation, stem decoction is utilized. Studies conducted in vitro demonstrated the antiviral and anticancer properties of the *Cuscuta* stem extract. To isolate and characterise the phytochemical ingredients with efficient pharmacological analysis, more research is required.

KEYWORDS: *Cuscuta Reflexa Linn*, Amarvel, Medicinal Activity.

INTRODUCTION:

Medicinal plants are the treasure of various secreted chemicals. The application of plants as medicines dates back to prehistoric period. Plants are more effective healers because they support the restore mechanisms in the natural way. Medicinal plants give about 80% drugs worldwide(27). In the traditional system of medicines, plant sources are main supply to cure diseases. Medicinal plants are receiving attraction of most of the researches for the estimation of new drugs, because of the polyvalent action and slighter side effects of plant products(4). India has a richtradition of knowledge on plant-baseddrugs both for employ in curative and preventive medicine (45).

Among the flowering plants, there are approximately 3,900 known parasitic plant species in more than 20 plant families (24). Dodder (Convovulaceae) presence as a rootless, leafless stem, slender thread -like yellow-to-orange, twining stems, and inconspicuous flowers that coil about and fasten to their hosts plant wart-like attachments called haustoria (2,13,14,).Similar to other angiosperms, the life cycle of cuscuta begins with seed germination. Germinating cuscuta seedlings depend on partial seed reserves; theyare not capable to survive for alonger time and must find a suitable host plant stem with in the first few days(24).Seeds of cuscuta have rough coats and differ in size, dependent on the species and may be able to survive more than 20years in the soil(43).

*Cuscutareflexa*Roxb. is an widespread climber parasite. It occurs throughout the plains of India. It is more often called dodder in English (25). *CuscutareflexaRoxb*.usually known as devil's hairs, witch's hairs, strangle weed, angles hair's, golden thread, love vine, amarbel, ahashabela, etc.Plant of genus cuscuta are obligateholoparasitic species. Formerly treated as the only genus in family cuscutaceae. It is now recognized as belonging in the morning glory family Convovulaceae(1,5,11,41,42,48).*Cuscutareflexa* are parasitic plant with nearly 170 different species distribution throughout the world (12).

*C. reflexa*is a parasitic weed plant and cause a vast loss to the crop plants each year, at rest *C. reflexa*is called as miracle medicinal plant because a lot of chemical compounds have been isolated from this plant having medicinal properties (16). It is one of the commonly used herbals ingredients in functional foods and medicinal boosts to nourish different body parts(6).Cuscuta species contains flavonoids, lignans, quinic acid and polysaccharides(43). Cuscutin, Kaempferol, Quercetin, Lupeol, ß-sitosterol, α-amyrin, ß-amyrin, Stigmasterol are the pharmacologically active markers testified from *Cuscutareflexa*(22).

CuscutareflexaRoxb. has been used from earliest times, for several purposes viz. as a purgative, in the action of liver disorders, cough and itching and for its carminative and anthelmintic actions.InAyurvedic medicine, used in the treatment of fits, headache, jaundice, diseases of the spleen, eye and heart, diaphoric, diuretic and cleanses the body, lessen inflammation (9,20). Plant are exceptional with a large variety of natural antioxidants owning different composition, properties, reaction pathways and definitive goals of action in the body (7). There are different species of cuscuta which have been reported for various therapeutic activities(44). The Cuscuta is known to hold several antibacterial, antiviral and antiproliferative substances. It is known to contain compound like phenolics and flavonoids and since flavonoids exhibit antiinflammatory and anticancer activities(31).Lupeol is a triterpenoid informed to possess biological activities such as anti-malarial, hepatoprotectant, anti-protozoal, anti-inflammatory, anti-tumour and antimicrobial(22).The herb consumes a bitter sharp taste; used as expectorant, tonic, blood purifier and lessens inflammation. It is also useful in jaundice, pain in the muscles and joints, headache, paralysis and in lumbago(33). The genus*Cuscutareflexa* has been investigated to encompass the followtherapeuticeffectsbradycardiac, psychopharmacological.antisteroidogenic, antihypertensiveand anticonvulsant effect.

BOTANICAL DESCRIPTION:

Stems: It is very long, closely twining, rather stout, , branched, glabrous, pale greenish yellow, sometimes dotted with red.

Flowers: Flowers solitary or in umbellate clusters of 2-4 or in short racemes, pedicels short, glabrous, curved (rarely 0); bracts1.5 mm. long, ovate-oblong. Calyx divided in to the base; lobes 3 mm. long, slightly unequal, broadly ovate, obtuse, glabrous and fleshy. Corolla white; tube 6-8 by 4 mm.,cylindrical; lobes 2.53 mm. long, deltoid, acute, reflexed; scales almost at the base of the corolla–tube, large, oblong, subquadrate or obovate, fimbriate and incurved at the apex. Stamens in the throat of the corolla- tube, filaments scarcely any; anthersabout ½ - exerted beyond the top of the corolla-tube.Ovary ovoid; style simple, very short and thick; stigmas 2, distinct, large thick and fleshy, 1.5 mm. long, ovoid. Capsules 6-8 mm. diam. depressedglobose, glabrous.

Seeds: Seeds 2-4, large, black, glabrous(18).

Botanical Classification Of*CuscutaReflexa:*

Table no 1. Botanical Classification Of *CuscutaReflexa*

Kingdom	**Plantae**
Subkingdom	Tracheobionta
Super division	Spermatophyta
Division	Angiosperm
Class	Eudicods
Subclass	Asteroids
Order	Solanales
Family	Cuscutaceae
Alternate	Convolvulaceae
Genus	*Cuscuta*
Species	*Reflexa*

Various hosts of *Cuscutareflexa*Roxb(3,26):

Table 2: The Common host plants

Sr no	**Name of the plant**	**Local name**	**Family**
1	*Acacia nilotica*	Babul	Mimosaceae
2	*Capperis spinosa*	Karonda	Apocynaceae
3	*GrewiatenaX*	Gengati	Tiliceae
4	*Nerium indicum*	Mitho	Apocynaceae
5	*Salvadoraoleoides*	Limdo	Salvadoraceae
6	*Ipomoea pes-tigridis*	Vagpadini	Convolvulaceae
7	*Cordia perrottetii*	nani gundi	Ethretiaceae
8	*Eugenia heyneana*Duthie	kathjamun	Myrtaceae
9	*Acacia catechu*	khair	Mimosaceae
10	*Achyranthes aspera*	chirchiri	Amaranthaceae
11	*Adhatodazeylanica*Medik	Adosa	Acanthaceae
12	*Artocarpusintegrifolia*	Kathal	Moraceae
13	*Aegle marmelos*	Bel	Rutaceae
14	*Syzygiumcumini*	Jammun	Myrtaceae
15	*Spondiasmangifera*	Amra	Anacardiaceae
16	*Ziziphus xylopyrus*	kathber	Rhamnaceae
17	*Lawsoniainermis*	Mehendi,	Apiaceae

MACROSCOPY STUDY

COLOUR:Pale greenish yellow (fresh stem). Blackish brown (light brown) colour (dried stem) TEXTURE: Filiform, wiry and succulent.
DIAMETERS: 2mm thick, glabrous.

TASTE: Bitter and astringents taste.

ODOUR: Aromatic

PHYTOCHEMISTRY OF *CUSCUTA*:

The parasitic plant *Cuscutareflexa* sucks nutrient from the host plant for its growth and developments, therefore its phytoconstituents also depends on the host plant.Phytochemicals isolated from *Cuscutareflexa* are dulcitol, flavonoids, sitosterol, hyperoside, carotene, lutein, steric, oleic, linolenic acid, reflexin, propenamide, palmitic, astragalin, benzopyrones, kaempferol, bergenin, glycoside, glucopyranoides, quercetin-3-O-glucoside,mannitol, stigmasterol, lycopene, leuteolin. Pharmacologically active tri-terpenoids compound Lupeol isolated from *Cuscutareflexa* have an antiinflammatory, amtimirobial, antiprotozoal and chemoprotective properties(4,5).

Kaempferol ,Kaempferol – 3- O-glucoside (Astragalin),Oleanolic acetate, Myricetin,Myricetin glucoside, Quercetin ,Quercetin -3-O- glucoside, Kaempferol -3- O-galactoside , Quercetin -3-O- galactoside, Isorhamnetol, AzaleatinCuscutalin, Cuscutin, Amarbelin , Beta sitosterol , Bergenine ,Dulcitol, Myricetin, Myricetin glucoside , Coumarin, Maragenin, n-Pentacosane , n-Heptacosane, Cusctutamine , nOctacosane, n-Nonacosane ,n-Triacontane ,n-Hentriacontane ,1- Triacontane, Cuscutoside-A, Cuscutoside-B, ArbutinChlorogenic acid, Caffiec acid, p-Coumaric acid , Stigmasterol , Avenasterol,Campesterol, Matrine , Saphoronal , Methylcytisine ,Cus-1,Cus – 2 ,3,5 Dicaffeoylquinic acid, 4,5 Dicaffeoylquinic acid, Laceeroic acid Australiside A, Cuscutic acid A, Cuscutic acid B, Cuscutic acid C, Cuscutic acid D, 6Alpha – Amyrin, Beta – Amyrin, Alpha Amyrin Acetate, Beta Amyrin Acetate, Oleanolic acid ,Sesamin ,Trihydroxyauran, Daucosterol, Propenamide ,,7,8- Trimethoxy -2H-1benzopyran-2-one Lupeol, 7-Propenamide, 6,7Dimethoxy-2H1-benzopyran-2-one,Hydroxyoleanane ,Ethyl 3-(3,4-dihydroxyphenyl)-2-propeonate 3-2Propenol,2-3-5-dihydroxy-7-0-beta-Dglucopyranoside -4H-1-benzopyran-4-one (15).

ETHANOMEDICINAL USES:

*Cuscutareflexa*plant is traditionally used for different medicinal purposes. Its juice is used as an inhalant for treat jaundice by mixing it with milk and its warm paste is used in the treatment of rheumatism, gout and headache. The stem of plant have carminative and anthelmintic activity, it is also used in the treatment of bilious disorder, flatulence, constipation and other liver complaints, internally used in treating fevers and externally in the treatment of body painitchy skin, dry skin, white discharge from vagina, blurred vision, tired eyes, ringing in the ears, also in flatulence, urination disorders, cough, liver complaints, constipation. Fruits of *C. reflexa*are used in treating cough and fever. Seeds are used in diseases of Liver and spleen, chronic fever and hiccough. It is also used as a hair growth promoter. The whole plant of *Cuscutareflexa*is useful in curing the disease of bile as well as mental diseases such as melancholy and insanity(5,20, 27)

PHARAMACOLOGY ACTIVITY:

1. ANTIHISTAMINIC ACTIVITY:

The antihistaminic activity of ethanolic*Cuscutareflexa*extract was in vestigated by Firdous A. in male albino rat of Wister strain.All rats were administered subcutaneously 0.5 ml of horse serumside way by0.5ml of triple antigen containing 20,000 million *Bordetella pertussis* organisms and divide into four teams.In this study group I was served as control and have received water with ad-libitum but it is not treated and sacrificed for the remark of mast cells which was found 15.50±2% whole and 88.20±2 % interrupted.

In the II group rats was treated byethanolic extract, it was seen that when the dose of 50 mg/kg body weight was assumed orally with water by using oral feeding tube needle, the disturbance of mast cells were found 35.60±2 % disrupted and whole mast cells were found 64.40±2 %.

In group III, the dose of 100 mg/kg body weight for the extract, the disruption of mast cells was found 27.70±2 % and whole mast cells was found 72.30±2 %. However, in the group IV the standard drug Prednisolone of 10 mg/kg body weight, the percentage of whole mast cells presented was 84.50±2% and disrupted was 20.40±2%.Thus, the results of the present study clearly suggest an antihistaminic activity of *Cuscutareflexa*ethanolic extract (17).

2. ANTIMICROBIAL EFFECTS:

The antimicrobial activity was studied byManirujjaman.The bacterial strains used for this study to measure antimicrobial susceptibility.Theantimicrobial activity of complete plant extracts from *C. ReflexaRoxb*. Wasestimated against both Gram positive and Gram-negative bacteria by using kanamycin and amoxicillin as the standard antibiotic controls. In general, plant extracts at all concentrations established the maximum antimicrobial activity against E. coli compared to the other bacteria. A concentration of 500 µg/mL produced the highest zone of inhibition in all bacteria excluding*S. typhi* which was not liable to any plant extracts irrespective of dose. This research suggests that the ethanolic extracts from *C. reflexa*Roxb. does hold significant antimicrobial properties as only micrograms of crude plant extract were able to draw out a bactericidal effect against both Gram positive and Gram-negative bacteria (19, 28, 34, 46).

3. ANTIOXIDANT ACTIVITY:

The antioxidant actions was investigated by Sharma S. by using extract of *Cuscutareflexa,*were measured in different systems of assay, e.g. DPPH assay, superoxide radical-scavenging assay, hydroxyl radicalscavenging assay and lipid peroxidation assay.Relative Anti-oxidant effect of alcoholic extracts of genus *Cuscutareflexa*was evaluated and compound answerable for activity were known by direct Bioautographic analysis.

The main characteristic of an antioxidant is its capability to trap free radicals.DPPH radicals are broadly used in evaluation of antioxidant activity. When DPPH radical is scavenged, the colour of the reaction mixture changes from purple to yellow with diminishing of absorbance at wavelength 517 nm. Results showed that, the scavenging action against DPPH radicals of alcoholic extracts of both plants *Cuscutareflexa* and*Cassythafiliformis* was found, whereas ascorbic acid was used as standard. All three examples exhibit dose-dependent anti-DPPH radical activity. IC50 values was calculated from these regression equations. IC50 value is inversely related to the action.Though, since all the results, it can be decided both *Cuscutareflexa* and *Cassythafiliformis* possess antioxidant activity, in which *Cuscutareflexa*presence more effective than the *Cassythafiliformis* in scavenging free radicals and superoxide radicals(15 21 37).

4. ANTIPYRETIC ACTIVITY:

The author Bhattacharya S. was examining theantipyretic activity of aqueousand ethanol extracts from genus

CuscutareflexaRoxb. by usingBrewer's yeast induced pyrexia in rats. Both the extracts at 200 and 400 mg/kg body weight dose expressively reduced the increased rectal temperature. The extractsreducing the elevated rectal temperature after 3 h of treatment in a dose associatedmethod. At the dose of 400 mg/kg body weight the aqueous and ethanol extract reduced 79 % and 83.8 % separately of the raised rectal temperature as related to reference drug paracetamol after 6 h of treatment. It was therefore decided that both the extracts of *C. Reflexa*confirmed antipyretic activity, the ethanol extract was found to be slightly potent than the aqueous extract (23).

5. ANTI-ULCER ACTIVITY:

The effect of alcoholic and aqueous extracts of *Cuscutareflexa* was investigated in rats to evaluate the antiulcer action. Author Prakash D. examine anti-ulcer action by using pyloric ligation model.Its significant reduction in gastric volume, free acidity, total acidity, ulcer score and rise in pH when related to that of standard drug. The anti-gastric ulcer action of aqueous extract at 400mg/kg is more significant than that of alcoholic extract at 400mg/kg. Thus,it has been scientifically inveterate that these extracts have energy potential as an antiulcerogenic agent (30).

6. ANTIBACTERIAL ACTIVITY:

The Relative anti-bacterial studied by Bais N. by using ethyl acetate extract of genus *Cuscutareflexaroxb*. parasite grownup on *Cassis Fistula* and *Ficusbenghalensis* was done using disc diffusion technique. Antibacterial actionexaminations were approved out on crude ethyl acetate extract of *C. reflexa* from both the host plants using disk diffusion method in contradiction of five pathogenic bacteria counting gram positive and gram-negative bacteria, *Escherichia coli, Staphylococcus aureus, Klebsiellapneumoniae, Bacillus subtilis, Salmonella typhi*(32).

7. ANTIINFLAMMATORY ACTIVITY:

The anti-inflammatory activity was studied by using Carrageenan induced paw oedema model by Katiyar N.S. After the studies it can be determined that alcoholic and aqueous extract (200, 400 mg/kg) have revealed significant anti-inflammatory action against carrageenan induced paw edema model in rats. Theaqueous extract was found to be more potent than alcoholic which is established by its advancedproportion reduction in paw oedema volume than the other in carrageenan induced paw oedema model in rats (33, 47).

8. ANTIFUNGAL ACTIVITY:

Author JagtapM.D.was study antifungal action of *C reflexa*. In this research he used Disc Diffusion Assay method to check the antifungal property of aqueous, ethanol, methanol, butanol and acetone extract of*C. reflexa*roxb. stem studied against the test fungi viz. *Fusarium* sp., *Penicillium* sp., *Aspergillus* sp., *Rhizopus* sp., by measuring the diameter of growth inhibition zone nearby of disc. Butanol, ethanol and aqueous extracts of genus *C. reflexaroxb*. were effective against the Fusarium sp., Aspergillus sp., and Penicillium sp. but acetone and methanol extracts did not illustration any antifungal activity. It is interesting to note that *Rhizopus* sp. do not respond any extract (50).

9. HYPOGLYCEMIC ACTIVITY:

The hypoglycaemic properties of methanol and chloroform extracts of whole plants of *Cuscutareflexa*, and methanol extract of leaves of *Calotropisprocera* were examined by Mohammed R. in oral glucose tolerance tests in Long Evans rats and Swiss albino mice, separately.Mutually fuel and chloroform extracts of genus *Cuscutareflexa* whole plant confirmed vital oral hypoglycaemic action in glucose-loaded rats(50, 100 and 200 mg/kg weight). The fuel extract of leaves of *Calotropisprocera*, once tested at doses of 100 and 250 mg/kg weight didn't prove any oral hypoglycaemic impact once verified in glucose-loaded mice (15, 53).

10. ANTITUMOR ACTIVITY:

The authorDandopani study theantitumor action of the chloroform and ethanol extracts of genus *Cuscutareflexa* was evaluatedin contradiction ofECA(*Ehrlich ascites carcinoma*)tumour in mice at doses of 200 and 400 mg/kg body weight vocally.

Administration of the extracts caused in a significant ($p < 0.05$) reduction in tumor volume and viable cell count, but improved non-viable cell count and mean existenceperiod, so increasing the life span of the tumor-bearing mice. Refurbishment of haematological parameters - red blood cells (RBC), haemoglobin,

white blood cells (WBC) and lymphocyte count - to regular levels in extract-treated mice was also detected.Theoutcomesadvise that the chloroform and ethanol extracts of *C. Reflexa*showimportant antitumor activity in EAC-bearing mice that is similar to that of the reference standard, 5fluorouracil (15, 54)

11. HEPATOPROTECTIVE ACTIVITY:

The hepatoprotective action of genus *Cuscutareflexa*was studied by Amaresh P. against carbon tetrachloride, ethanol and paracetamol induced liver damage. Aqueous extracts of *Cuscutareflexa* had revealed the presence of carbohydrates, reducing sugars, phenolic composites, tannins, flavonoids and saponins. Approximation of biochemical parameters like aspartate aminotransferase, alanine amino transferase and alkaline phosphatase were showed that highest dose (200 mg/kg) of aqueous extract of *Cuscutareflexa* whole plant hold hepatoprotective activity equivalent to that of standard silymarin at a dose of 20 mg/kg against carbon tetrachloride, ethanol and paracetamol induced hepatotoxicity. Corresponding hepatoprotective activity of *Cuscutareflexa* whole plant with standard silymarin had also stayed supported by histopathological study of liver sections. Plain hepatic lesions induced by chloroform, ethanol and paracetamol were strangely dropped after the administration of CR 200 mg/kg to the respective control groups which is also recognized by the results of the biochemical investigation and was analogous to the liver section of standard SL treated groups without any statisticalsignificant change. However aqueous extracts of *Cuscutareflexa* whole plant (100 mg/kg and 200 mg/kg) had exposed reducing effect on SGOT (Serum Glutamate Oxaloacetate Transaminase) and ALP((Alkaline Phosphatase) in situation of paracetamol induced hepatotoxicity, on the other hand were statistically not equal (p-value < 0.05) with their respective SL (Silymarin) treated standard groups in the same context (55).

12. CYCLOPHOSPHAMIDE INDUCED ALOPECIA:

The cyclophosphamide induced alopecia studied by Satish Patel in male Swiss albino rats.Petroleum ether extract and ethanolic extract of *Cuscutareflexa*show the ability to stay away from damage to hair follicles by cyclophosphamide when administered after cyclophosphamide administration and improved hair regrowth. therefore, *C. reflexa* have inveterate its ability to avoid hair loss and damage to the skin construction produced by cyclophosphamide to rats in cyclophosphamide induced alopecia. The effect shows that the petroleum ether extract and ethanolic extract of *Cuscutareflexa* were used to stop hair loss or to treat the alopecia throughout chemotherapy (49).

13. ANTI CONVULSANTACTIVITY:

The anticonvulsant action of ethanol extract of stems of *Cuscutareflexa* at two dose levels (200 and 400 mg/kg) was studied bySyed A.H. bypentylenetetrazol induced seizure model. In pentylenetetrazolinduced seizure model, PTZ produced clonic convulsions and lethality in mice, while pre-treatment with ethanol extract of stems at two different dose levels have resulted in to delayed onset of convulsions, extended latencies of tonic seizures and decrease in lethality. So,results of this study showconfident anticonvulsant property of ethanol extract of stems against both the toxicants and provided a scientific maintain to the usefulness of this traditional plant in neurological disorders like epilepsy (39, 61).

14. ANTIPYRETIC ACTIVITY:

Antipyretics agents tapering the body temperature infever. AuthorSweta study theEfficiency of *C. reflexa*as an antipyretic agent wasdefinite in yeast induced pyrexia in rats. Aqueousandethanolic extracts were both createenergeticandhappening rectal temperature turn down after three hours ofdose. A dose of 400 mg/kg weight reduced the prominenttemperature approximately 83.8 % (ethanolic) and 79% (aqueous) as compared to the standard drug (96.5%, Paracetamol) after six hours of treatment (23, 62).

15. ANTIHYPERTENSIVE:

AuthorGllan study the antihypertensive activity of *C. reflexa.* Ethanolic extract of *C. reflexa*decreased arterial blood pressure and heartbeat rate in Pentothal anesthetized rats. Experimental data indicated that it is a non-specific depressant on all the isolated tissues tested (29).

16. ANTI-HIV ACTIVITY:

Several secondary metabolites like flavans, flavones,andquinic acid derivatives have been found activeagainstHIV infection. AuthorN Mahmood reported that the aqueous extract of *Cuscutareflexa* include secondary metabolites that active against the HIV infection. So,Crude aqueous extracts of *C.reflexa*exhibit anti-HIV activity. Virus inhibitioncan be credited to the combinatory property of nineintimately related compounds (59).

17. ANTIARTHRITIC ACTIVITY:

The antiarthritic action of aqueous and methanolic Extract was evaluated by Alamgir in vivo by formaldehyde and turpentine oil-induced arthritis models and in vitro using protein denaturation methods. Formaldehydecausesdischarge of chemical mediators like histamine, serotonin and prostaglandin. Inflammation caused byformaldehyde is biphasic in nature, i.e., itshowsneurogenicelementswhich result brain activity and next lead to tissue-mediatedreaction. Neurogenic phase openlystimulates paw swelling beside with centrally mediated propertyofpain through the release of pain mediators in the later phase. Ithas been proclaimed that drugs that works on CNS reducebothphasesconsistently, even as peripherally acting drugs reducelatephase. Inhibition of paw edema and pawdiameter observed in the formaldehyde model may be due to theaptitude of aqueous and methanolic extract to inhibit histamine, serotonin and prostaglandin,whicharedependable for swelling. The maximum dose(600 mg/kg) of aqueous and methanolic extract showed cleardecrease in joint swellingequal to that of standard aspirin (100 mg/kg).Furthermore, aqueous and methanolic extract reserved both phases of inflammation, thusit acts centrally (66).

18. ANXIOLTIC EFFECT:

The author S. Thomas studied anxiolytic effect of *Cuscutareflexa.* The methanol extract of whole plant ofgenus*Cuscutareflexa.* (doses of 200 and 400 mg/kg) was estimated by elevated plus maze and light and dark chamber in mice.

The methanol extract of *Cuscutareflexa*400 mg/kg improved the number of crossing in open field model, increase the time spent in open arm, entry in open arm (in elevated plus model) andlift the time spent in light field (in Light Dark field) than the dose (200 mg/kg) thus we can conclude thatgenus*Cuscutareflexa*shows anxiolytic action as dose dependent method (65).

19. IN VITRO THROMBOLYTIC ACTIVITIES:

Dominant thrombolytic properties wereproduced in the crude ethanol extracts (44.63%) and its petroleum ether soluble fraction (42.03%), aqueous soluble fractions (36.20%) and chloroform soluble fraction (35.93%). Carbon tetrachloride soluble fraction showed themodest clot lysis capacity which was allowing for >25% lysis. This study has discovered the importantprogress of thrombolytic action by all extractives of *C. reflexa*. This statement showed that the thrombolytic activities of the extracts related to both negative and positive control (63).

20. IN VITRO MEMBRANE STABILIZING ACTIVITY:

Aqueous soluble fractions showed the maximum level of membrane stabilizing action (66.20%) which wasstatistically significant (p <.0001) to acetylsalicylic acid (71.98%). All the other fractionsexhibited significant membrane protecting activity when the boundary of hemolysispercentage of inhibition was >50%.Here also aqueous soluble fractions has exhibited the highest level of membrane protection activity(64.80%) which was statistically significant (p<0.001) when acetylsalicylic acid hasshowed (78.90%). The practicable mechanisms of action of *C. reflexa*plant extract andits fractions for potential membrane stabilizing effect is not well-understood yet. Inany case, various investigations have demonstrated that flavonoids and other phenolicmixtures had showed analgesic and anti-inflammatory activities including membranestabilizing action (63).

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