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A COMPLETE REVIEW ON ACHYRANTHES ASPERA: A TRADITIONAL MEDICINAL PLANT

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ABSTRACT:

Previously many literature reviews of *Achyranthes aspera* have published. It is very essential herbal remedy. It is a traditional remedy which belongs to family Amaranthaceae. Its common name is birdweed. Approximately 36000-68000 Varieties are available in world. Its beneficial effect is spread in every field like Medical and food field. Its geographical source is Tamilnadu, Kerala, Karnataka, Maharashtra. It consists many biological activities like against various types of bacteria, fungi and virus. It produced activity against the heart disease, Liver disease, fertilization, infection of immune system, larva, Parasites, Diabetics, Pain, Pyretic, carcinoma, depression, protect the UV-B radiation. It produced activity against lipid, Glucose. It is very essential and safe medications for animals and humans. In field of food it consists healthy nutrients. It consists chemical entities like saponins, Phenolic compound, Alkaloids, Tannins, Glycosides, Fatty acid. The experiments are performing on the animal's like rat, mice, rabbit, guinea pig and dog in laboratory and human beings. Conclusion: It is very essential medication for rural area. It is no side effect. In future it may have more biological activity. So much pharmaceutical research is required for new activities finding and it will be helpful to society in natural plant sources medication.

Introduction:

Approximately 36000-68000 herbal variety resources are helpful for treatment of various diseases in the world. *Achyranthes aspera* is a very essential herbal plant. It is responsible for treating the various conditions of the disease and disorder. Its common name is Birdweed and family Amaranthaceae. An herbal remedy is found in India. [1] Herbal medicines are available in very low cost and safe for health system.

All parts of *Achyranthes aspera* plant are very useful. It is very useful for reducing the depression condition. It is used for the treatment of arthritis, various infectious diseases, Polyp, diabetes, anxiety, Parkinson's disease, depression, bronchitis, Eye infections, snake bites and healing the wound. [2] *Achyranthes aspera* consists chemical constituents like achyranthine, ecdysterone, oleanolic acid, Spinasterol, apigenin, achyrantheric acid, ursolic acid,

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corrosolic acid, Betain etc. Nitrogen containing, complex form of phenol, Isoprenoids, Flavanoids and steroids are produced activity against microbes. Ursolic acid & Corrosolic acid is responsible for ant carcinogenic activity. Phenol containing compound and Flavanoids are gives activity against the oxidant. [2] As reported that during ancient times it was used on daily basis home remedies in Tamilnadu. [3] It produced many activities in prevent the liver disease and it is also consist of various activities like antimalarial and as immune system stimulant. [4] *Achyranthes aspera* having activates against asthma, Allergy, Anal bleeding, Joint pain and dermal disease. [5] The leaves and seeds of *Achyranthes aspera* provide the protection against the UV-B radiation in Asian catfish *clarias batrachus*. [11] It is used in form of herbal tea for reduced blood glucose level in albino wistar rat. [13] The seeds of *Achyranthes aspera* contains ethanol, show activity against obesity.[16] It consist some minerals like sodium, potassium, magnesium, calcium, manganese, copper, zinc and iodine which is protect from the heart problem in human and animals. [19]

BOTANICAL NAMES [4]

Latin	:	<i>Achyranthes aspera</i>
Hindi	:	Latjira, Chirchira
Gujrati	:	Safad Aghedo
Punjabi	:	Kutri
Sanskrit	:	Aghata
Unani	:	Chirchitaa
Ayurvedic Shikhari	:	Apaamaarga, Chirchitaa,

BOTANICAL CLASSIFICATION [4]

Kingdom	:	Plantae
Subclass:		Caryophyllidae
Order	:	Caryophyllales
Family	:	Amaranthaceae
Genus	:	<i>Achyranthes</i>
Species	:	<i>Aspera</i>

BRIEF DESCRIPTION OF PLANT [5]

Height	:	0.2-2.0 m woody in nature
Root	:	0.1-10 m thick, cylinder in shape, Brownish colour
Stem	:	Square form, Yellowish in colour, Hair is present
Leaf	:	Simple, petiole and stomata is present on the inner most later.
Flower	:	White or Red colour, Flower present in month of May to July

GEOGRAPHICAL SOURCES

It present in Andaman Islands, Australia, America and Baluchistan. [5] It also present in Tropical Asia, Africa and India. It present in the waste area of roadside in Tamilnadu, Kerala, Karnataka and Maharashtra. [21]

NUTRITION CONSTITUENTS

Achyranthes aspera consist of some nutrition constituents like Ascorbic acid, Minerals, Sodium, Potassium, Calcium, Magnesium, Chloride and Phosphorous. [6]

Table.2 BIOLOGICAL ACTIVITY OF ACHYRANTHES ASPERA

Antimicrobial activity	Larvicidal	Antifertility activity
Anticancer	Immune stimulant	Ant diabetic
Decrease level of Lipid	Antipyretic and analgesics	Anti-inflammatory
Anti-oxidants	Antiseptic	Activity against Cardiac disease
Nephropathy	Increase urination	Parasitocidal activity
Antidepressant	Activity against Obesity	Activity against Hepatic disease
Activity against HIV	Spermicidal	Anti-Dandruff

Activity against microbes, Bacteria and Fungi

Achyranthes aspera seeds are responsible for kill the bacteria, Leaf and stem produced activity against fungi. Both activities are found in the leaves of plant of *Achyranthes aspera*. Bactericidal activity obtained by phenolic complex form compound, foam producing agent, polyphenols and nitrogen containing

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compound. *Achyranthes aspera* shows activity against various bacteria e.g. E.coli, Pseudomonas aeruginosa, Bacillus subtilis and Micrococcus. [5]

Activity against Larva

The extract material from leaf and stem which is produced activity against *Aedes aegypti* and *Culex quinquefasciatus*. [5]

Activity against Fertility

The *Achyranthes aspera* stem bark contain benzene its causes abortion in female rats. Ethyl alcoholic extract of root is harmful for reproduction. In male rats it causes inhibit the activity of sperm under Laboratory condition. [5]

Activity against cancer

The plant has activity against polyp and carcinoma. Methanolic contain compound is active against pancreas carcinoma and other types of carcinoma which is obtain from the leaf. [5]

Immune system stimulant

The *Achyranthes aspera* seeds extract are very useful to increase immune response by increase the activity of antibody. [5]

Activity against Diabetes

Achyranthes aspera contain Methanolic group compound which is very essential for diabetes treatment. They treat the diabetes in albino wistar rats. [5][15]

Decrease the activity of Lipids

Achyranthes aspera is decreases the Cholesterol level in Blood serum. So it helps in decrease activity of serum cholesterol. [5]

Antipyretic and analgesics activity

Achyranthes aspera leaves extract shows antipyretic activity and extract obtained from leaves and seeds shows analgesics activity in which leaf extract maximum effect. [5]

Anti-Inflammatory activity

Achyranthes aspera contain Alcoholic extract of leaves and seeds of *Achyranthes aspera* are responsible for activity against inflammation in wistar rat. [5]

Anti-oxidants Activity

Methanol contains extract of *Achyranthes aspera* from leaf and root part shows antioxidants activity. [5,14,18]

Against injury

Hydroalcoholic extract of leaves of *Achyranthes aspera* shows activity against Injury. [5,18]

Activity against cardiac disease

Foam producing agents obtained from *Achyranthes aspera* is act as cardiac depressant and increases the cardiac rate, water soluble alkali decreases blood pressure, Cardiac rate and Increase the blood pressure. [5,19]

Nephropathy

Methanol containing extracts of *Achyranthes aspera* protect poisonous activity of nephron in rats. Calcium containing compound of *Achyranthes aspera* pant extract causes deposition in the kidney .The deposition of calcium containing compound in form of gravestone is inhibit by *Achyranthes aspera*. Alcoholic extract gives negative effect in deposition of calcium containing gravestone. This procedure is identified in laboratory condition. [5]

Increase urination

Foam producing agent of *Achyranthes aspera* which is causes increase urinary output in male albino wistar rat [5].

Parasitocidal activity

The ethyl alcohol containing extract of whole Plant of *Achyranthes aspera* are found to be Parasitocidal activity. It Produced the Parasitocidal activity in nightwalker (Parasite) at the concentration 25, 50, 75 and 100 mg/ml dose. [7]

Activity against the sperm

The *Achyranthes aspera* Contain Chloroform and n-hexane which causes the inhibit the activity of sperm. [5]

Activity against Dandruff

Methanol extracts of leaves of pant *Achyranthes aspera*, which is act as herbal oil. It shows the activity against the dandruff. The *Achyranthes aspera* contain

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coumarin it causes the negative effect against development of pityrosorum ovale and causes negative effect against the dandruff in monitoring. [5]

Activity against depression

The methanol containing extract of *Achyranthes aspera* is active against the depression. The methanol containing tincture 600mg/kg are effective by oral dose. [5]

Activity against Obesity

The seed of *Achyranthes aspera* consist ethanol which is shows the activity against obesity in body and laboratory condition in swiss albino mice. [16]

Activity against hepatic disease

Saponins which obtained from *Achyranthes aspera* plant shows activity against liver disease. [17]

Activity against HIV

Achyranthes aspera is shows activity against HIV. It produced anti-HIV activity against SARS-coV-2 in molecular docking study. [20]

CHEMICAL ENTITIES [14, 8]

- Phenol and flavone elements
- **Metabolomics:** *Achyranthes aspera* forms many metabolomics like azelaic acid, Lauric acid, linolenic acid, salicylic acid, protocatechuic acid, Caffeic acid, quinic acid and ferulic acid etc.
- **Fatty acid:** Some saturated and monounsaturated fatty acid is present in *Achyranthes aspera*.
- **Alcoholic entities:** Ethyl alcohol and Methyl alcohol are the alcoholic entities obtained from *Achyranthes aspera* Medicinal plant.
- Foam producing agent (Saponins)
- Chloroform containing entities
- Saponins
- Tannins
- Cardiac glycosides

PHARMACOKINETIC ACTIVITY

Achyranthes aspera decreases the activity of α -amylase enzyme, Urease and α -Glycosidase. [9,10,15]

CONCLUSION

Achyranthes aspera is a full of merits herbal remedy. *Achyranthes aspera* consist of large number of biological property and Chemical entities. It is the solution of various biological alterations. More studies are performed and find out the various biological activity and uses of *Achyranthes aspera*. It is auspicious endemic remedy for many diseases. *Achyranthes aspera* contain larger amount of chemical entities. It shows activity against asthma, allergy, bacteria, virus, cancer, hepatic disease, HIV, diabetes, fertility, dandruff, obesity, parasite, nephron, cardiac disease, injury etc. It has been seen in previous literatures, Now more clinical trials will have to be promoted in upcoming time. *Achyranthes aspera* can be used by us as an effective and promising medicinal plant for treatment of various disorder and disease.

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