



ACHYRANTHUS ASPERA - MEDICINAL PLANT: A REVIEW

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ABSTRACT

Achyranthes aspera (Amaranthaceae) is an important medicinal herb found as a weed throughout India. Though almost all of its parts are used in traditional systems of medicines, seeds, roots and shoots are the most important parts which are used medicinally. The present article gives an account of updated information on its phytochemical and pharmacological properties.

KEY WORDS: *Achyranthes aspera*, Medicinal herb, pharmacological properties pharmacological activities.



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INTRODUCTION

Achyranthes aspera (Amaranthaceae) (Fig.1) is an important medicinal herb which is found as a weed throughout India. Though it has been used all the parts in traditional systems of medicines. Seeds, roots and shoots are the most important parts which are used medicinally. The present article gives an account of updated information on its phytochemical and pharmacological properties. The review reveals that wide numbers of phytochemical constituents have been isolated from the plant which possesses activities like antiperiodic, diuretic, purgative, laxative, antiasthmatic,

hepatoprotective, anti-allergic and various other important medicinal properties. The crushed plant is used in pneumonia and infusion of the root is used as mild astringent in bowel complaints. Decoction of powdered leaves with honey or sugar candy is useful in early stages of diarrhoea and dysentery. For the last few decades or so, extensive research work has been done to prove its biological activities and pharmacology of its extracts. Saponins, oleonic acid, dihydroxy ketones, alkaloids, long chain compounds and many other chemical constituents have been isolated.

VERNACULAR NAMES

Latin	<i>Achyranthes aspera</i>
Sanskrit	Aghata
Hindi	Latjira, Chirchira
Gujarati	Safad Aghedo
Tamil	Shiru-kadaladi
Telugu	Uttaraene
Malayalam	Kadaladi
Punjabi	Kutri
Unani	Chirchitaa
Ayurvedic	Apaamaarga, Chirchitaa, Shikhari, Shaikharika
Persian	Khare-vazhun
Arabian	Atkumah
French	Achyranth a feuilles rudes, collant, gendarme
Spanish	Mosotillo, rabo de gato, rabo de chango, rabo de raton

TAXONOMICAL CLASSIFICATION

Kingdom	Plantae
Subkingdom	Tracheobinota
Super Division	Spermatophyta
Division	Mangoliophyta
Class	Mangoliopsida
Subclass	Caryophyllidae
Order	Caryophyllales
Family	Amaranthaceae
Genus	<i>Achyranthes</i>
Species	<i>Aspera</i>

BOTANICAL DESCRIPTION

Description: Leaves simple, elliptic-lanceolate. Flowers, in terminal spikes; bracts persistent; bracteoles ovate with spine. Perianth whitish; segments 5. Fruit 1- seeded utricle.



Figure 1.
***Achyranthus aspera* tender part with inflorescence**

MEDICINAL USES

Decoction prepared from the whole plant is given for inflammatory conditions of the body. Root decoction is helpful to cure abdominal disorders. The dried leaf powder (2-5gms) is taken with honey for diarrhoea. The dried root and *Justicia adhatoda* leaf powder are recommended for cough. Leaf juice is useful remedy for skin diseases like pruritis and scabies. Leaf paste is applied externally for toxic bites. Whole plant ash is a good remedy for bleeding piles and abdominal problems. Root is used as tooth brush to clean the mouth and to cure halitosis. Infusion of the twig is also used as a wash for toothache. Root extract is used as an eye drop at bed time for night blindness.

PHYTOCHEMICAL STUDIES

Preliminary chemical examination of the seeds of *Achyranthes aspera* which were identified as α -L-rhamnopyranosyl-(1 \rightarrow 4)-(β -D-glucopyranosyluronic acid)-(1 \rightarrow 3)-oleanolic acid, α -L rhamnopyranosyl-(1 \rightarrow 4)-(β -D-glucopyranosyluronic acid)-(1 \rightarrow 3)-oleanolic acid-28-O- β -D- glucopyranoside and α -Lrhamnopyranosyl-(1 \rightarrow 4)-(β -D-

glucopyranosyluronic acid)-(1 \rightarrow 3)-oleanolic acid-28-O- β -D-glucopyranosyl-(1 \rightarrow 4)- β -D-glucopyranoside¹. From the ethanolic extracts of the roots of *Achyranthes aspera* isolated a new aliphatic acid has been isolated and it has been identified as n-hexacos-14-enoic acid². This compound is reported for the first time from any natural and synthetic source. Certain other compounds were also isolated and identified as strigmasta-5, 22-dien-3- β -ol, trans-13-docosenoic acid, n-hexacosanyl n-decanate, n-hexacos-17-enoic acid and n-hexacos-11-enoic acid. Rameswar³ isolated chemical compounds of the volatile oil from *Achyranthes aspera* leaves.

PHARMACOLOGICAL STUDIES

The methanolic extracts of leaves of *Achyranthes aspera* has shown different activities against 22 microorganism (bacteria and fungal)⁴. *Achyranthes aspera* shows antiviral activity against Papaya viruses⁵. In addition to these *Achyranthes aspera* shows various biological activities and it is tabulated in table 1.

Table 1
Biological activities of *Achyranthes aspera*

Biological activity	Part/Extract	Reference
Spermicidal	Root	Paul <i>et al.</i> , 2010 ⁶
Post coital antifertility	Root	Vasudeva & Sharma, 2006 ⁷
Antifertility	Leaf	Shibeshi <i>et al.</i> , 2006 ⁸
Abortifacient	Whole plant	Pakrashi & Bhattacharya, 1977 ⁹
Antiparasitic	Dried leaf, flower and seed extract	Zahir <i>et al.</i> , 2009 ¹⁰
Mosquito larvicidal	Leaf	Bagavan <i>et al.</i> , 2008 ¹¹
Hypoglyceamic	Powdered whole plant	Akhtar & Iqbal, 1991 ¹²
Cancer chemo preventive	Leaf	Chakraborty <i>et al.</i> , 2002 ¹³
Hepatoprotective	Aerial parts	Bafna & Mishra, 2004 ¹⁴
Analgesic and antipyretic	Leaf	Sutar <i>et al.</i> , 2008 ¹⁵
Antipyretic	Leaves and seeds	Mehta <i>et al.</i> , 2009 ¹⁶
Anti-inflammatory and anti-arthritic	Roots	Vijayakumar <i>et al.</i> , 2009 ¹⁷
Antimicrobial	Seeds	Khan <i>et al.</i> , 2010 ¹⁸
Antibacterial and antifungal	Leaf	Saravanan <i>et al.</i> , 2008 ¹⁹
Bacteria associated with diabetic patients		Kavishankar <i>et al.</i> , 2011 ²⁰
Antibacterial activity against various pathogenic strains such as <i>Escherichia coli</i> , <i>Pseudomonas aeruginosa</i> , <i>Citrobacter</i> species, <i>Bacillus subtilis</i> and <i>Micrococcus</i> species	Whole plant	Manjula <i>et al.</i> , 2009 ²¹
Anti-oxidant	Leaf	Tahiliani & Kar, 2000 ²²
	Seeds	Malarvili & Gomathi, 2009 ²³
Free radical scavenging	Whole plant	Edwin <i>et al.</i> , 2008 ²⁴
Nephroprotective	Whole plant	Jayakumar <i>et al.</i> , 2009 ²⁵
Anti-depressant	Leaf	Barua <i>et al.</i> , 2009 ²⁶
Diuretic	Seeds	Gupta <i>et al.</i> , 1972 ²⁷
Bronchoprotective	Whole plant	Goyal <i>et al.</i> , 2007 ²⁸
Cardiovascular	Seeds	Gupta <i>et al.</i> , 1972 ²⁷
Anti-allergic	Whole plant	Datir <i>et al.</i> , 2009 ²⁹
Wound healing	Leaves	Edwin <i>et al.</i> , 2008 ³⁰
Immunomodulatory	Whole plant	Chakrabarti & Vasudeva, 2006 ³¹
Hypolipidemic	Whole plant	Khanna <i>et al.</i> , 1992 ³²

CONCLUSION

From this study, it is clear that *Achyranthes aspera* is an important source of many therapeutically and pharmacologically active constituents. The plant has been widely studied for its pharmacological activities and finds its position as a versatile plant having a wide spectrum of medicinal activities.

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