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Ethno Medicinal Uses and Chemical Constituents of Indian Flora: *Achyranthesaspera* (Latjeera)

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Abstract: ***Achyranthesasperais known as Chirchita (Hindi), Apamarga (Sanskrit), Aghedi (Gujarati), Apang (Bengali), Nayurivi (Tamil), Kalalat (Malyalam) and Agadha (Marathi) in our country. It possesses valuable medicinal properties and used in treatment of cough, bronchitis and rheumatism, malarial fever, dysentery, asthma, hypertension and diabetes in Indian folklore. Achyranthesaspera L. in by traditional healers in treatmentof cold, boils, debility, snake bite, colic, dropsy, bleeding, leucoderma and skin diseases. Achyranthesasperais a weed belong to family (Amaranthaceae) commonly found throughout India is famous for itsvast medicinal property. The medicinal plants are used for treatment of various diseases because of their safety andeffectiveness. The present review describes some of the important medicinal properties, chemical constituents anduses.***

Keywords - Achyranthesaspera, chemical constituents, effectiveness, Medicinal properties

1. Introduction

Herbal medicines are widely used since time immemorial indicating that herbs are a growing part of modern, high-tech medicine. India has an ancient heritage of traditional herbal medicine. The medicinal plants are used for treatment of various diseases because of their safety and effectiveness.Knowledge of herbs has been handed down from generation to generation for thousands of years [1]. Herbal medicines have a strong traditional or conceptual base and the potential to be useful as drugs in terms of safety and effectiveness leads for treating different diseases. World Health Organization has made an attempt to identify all medicinal plants used globally and listed more than 20,000 species [2]. According to the WHO more than 80 % of the world's population relies on traditional herbal medicine for their primary health care [3]. Plants have an extraordinary ability to synthesize aromatic substances which are usually phenols or their oxygen-substituted derivatives.

The medicinally active plant compounds are usually their secondary metabolites like terpenoids, quinones, flavonoids, tannins etc that are responsible for protecting the plants from microorganisms, insects and other natural pests. Achyranthesaspera Linn. is a well-known plant drug in Ayurvedic, Unani-Tibbi, Siddha, Allopathic, Homeopathic, Naturopathic & Home Remedies [4]. It is an annual shrub found distributed throughout the tropical and subtropical regions. The plant is used in indigenous system of medicine as emenagogue, antiarthritic, antifertility, laxative, ecbolic, abentifacient, anti-helminthic, aphrodisiac, antiviral, anti-plasmodic, antihypertensive, anticoagulant, diuretic and anti-tumor[5,6]. It is also useful to treat cough, renal dropsy, fistula, scrofula, skin rash, nasal, infection, chronic malaria, impotence, fever, asthma, piles and snake bites [7]. The juice of the plant is used in the treatment of boils, diarrhea, dysentery, hemorrhoids, rheumatic pains, itches and skin eruptions [8]. It is reported to contain alkaloids, flavonoids, saponins, steroids and terpenoids. Flavonoids have shown to prevent or slows the development of some cancers [9] and mostly act as an anti-oxidant and anti-inflammatory agents.

2. Taxonomic Classification

Kingdom – Plantae
Subkingdom - Tracheobinota
Super Division - Spermatophyta
Division - Mangoliophyta
Class - Mangoliophsida
Subclass - Caryophyllidae
Order - Caryophyllales
Family - Amaranthaceae
Genus - Achyranthes
Species – Aspera

Figure1: Inflorescence ***Achyranthesaspera***

Figure 2: Shoot with leafs

3. Geographical Source

The plant is widespread in the world as a weed, in Baluchistan, Ceylon, Tropical Asia, Africa, Australia and America. It is found on road sides, field boundaries and waste places as a weed throughout India up to an altitude of 2100 m and in South Andaman Islands [10,11]. In the northern part of India it is known as a medicinal plant in different systems of folk medicine.

4. Chemical constituents of A*chyranthesaspera* plant

*Achyranthesaspera*contains Oleanolic acid glycosides, ecdysterone, ecdyson, betaine, tritriacontanone, etracontanol, pentatriacontane, palmiti,stearic, oleic,linoleic, arachidic, myristic and behenic acid[12]. Alkaloids, flavonoids, saponins, tanninsand phenolic compound are found in the leaves. The seeds show the presence oftriterpenoid Saponins A and B4, 5 .The seed also containChemical constituents like10- tricosanone,10 - octacosanone& 4 tritriaontanone [13].

5. Medicinal Uses

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 [14].

6. Traditional uses

*Achyranthesaspera*L. (Family Amaranthaceae) is a common plant of the study area abundantly found in wastelands. It is known as “Prickly chaff flower” in English and “Chirchita”, “Onga”, “Latjeera” or “Apamarga” in local language and dialects.

1) The plant is used in dropsy, plies, skin eruptions, colic, as diuretic, astringent and purgative 8,9, as an antidoteto snake bite[15] in fractured bones , whooping cough,respiratory troubles, in asthma laxative and inleucoderma . The inflorescence is used in cough andin hydrophobia. The crushed leaves are used for curingstrained back [2]. Decoction of powdered leaves withhoney or sugar candy is useful in early stages of diarrhea and dysentery [3]. The leaves are used inwounds, injuries, in intermittent fever, as anantiasthmatic, for urination, dog bite, and in typhoid.
2) The root is used in whooping cough, tonsillitis, Hemorrhage, cough and hydrophobia, as andiaphoretic, antiasthmatic, diuretic and antisyphilitic[6].
3) The flowering spikes or seeds, ground and made intoa paste with water, are used as external application for bites of poisonous snakes and reptiles, used in nightblindness and cutaneous diseases [16].The seeds are employed as an emetic, cathartic and purgative, ingonorrhea, for insect bite and in hydrophobia, cough including whooping cough, as an anti-asthmatic.
4) The plant is used in treatment of asthma, cold, coughcolic, boils bronchitis, debility, dropsy, dog bite, dysentery, leucoderma, ear complications, headache, bleeding, in facilitating delivery, scorpion bite, snakebite and skin diseases. Crushed plant is boiled in water and is used in pneumonia.
5) Aqueous methanolic extract of the whole plant have been shown to possess hypoglycaemic activity by [17].
6) Alcoholic extract of the roots of *Achyranthesaspera*, was found to exhibit anti-inflammatory activity in Wistar rats using carrageenan-induced paw edema method and cotton pellet granuloma test, as studied by [3].[11]also reported antioxidant activity on leaves and roots.
7) Methanolic extract [18] of the leaves of *Achyranthesaspera* shows anti-depressant effect in mice and rats using forced swimming test in mice and rats and tail suspension test in rats.
8) Extracts from roots of *Achyranthesaspera* have been reported to possess spermicidal activity in human and rat sperm, as studied by [19].
9) Ethyl acetate extracts of *Achyranthesaspera* have been proved to contain anti parasitic activity by [20].
10) Achyranthine, a water-soluble alkaloid isolated from *Achyranthesaspera*, decreased blood pressure and heart rate, dilated blood vessels, and increased the rate and amplitude of respiration in dogs and frogs.

6. Conclusion

In the study of *Achyranthesaspera*Linn.(Latjeera) the part of the plant root, leaves, stem givedifferent biological activity and chemical constituents. Thesechemical constituents are used in treatment of gallbladderstone, asthma, high B.P. This plant is very importantmedicinal herb. It is used in treatment of many diseaseslike, cough, boils, colic debility, dropsy, cold, bronchitis,headache, dysentery, ear complications. It is seen from the literature that *Achyranthesaspera* is a very important plant for its large number of medicinal properties. Thus, *Achyranthesaspera* is proved to be a multipurpose medicinal agent, thus instrumental in curing large number of ailments. Its study paves the way for further attention and research to identify the active compounds responsible for the plant biological activity. Therefore, morestudies are needed to refine the use and improvement ofthe efficacy of this valuable medicinal herb plant.

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