Review on *Achyranthes Aspera*

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**ABSTRACT**

*Achyranthes aspera* Linn (Amaranthaceae), commonly known as apamarga, is a commonly available plant in India. It is traditionally known as Latjira, and Prickly chaff. Different constituents are found in different parts of the *Achyranthes aspera* (e.g., Saponins A and B, amino acids, hentriacontane, hormones ecdysterone and petrol extract of shoot 17-pentatriacontanol). Some alkaloids and fatty acids are also indicated, therefore its use in the treatment of different types of acute and chronic disease. Whole plants of *Achyranthes aspera* have pharmacological activity. The claims were gathered by interviewing traditional healers, especially women.

**Keywords:** Immunomodulators, fatty acids, Biological control, Nephrotoxicity, Wound healing *Achyranthes aspera*/Latjira/Prickly chaff.

**INTRODUCTION**

A perennial stiff erect herb, 2.0 m high is growing up to 1000 m height. Stems are square, leaves elliptic ovate or broadly rhombate, 5-22 cm long, 2.5 cm broad, and adpressed pubescent. The inflorescences are 8-30 cm long, with many single, white or red flowers, 3-7 mm wide. Flowering time is in summer. The plant is widespread in the world as a weed, in Baluchistan, Ceylon, Tropical Asia, Africa, Australia and America. In the northern part of India it is known as a medicinal plant in different systems of folk medicine[1]. *Achyranthes aspera*, a stiff erect herb, has been reported to posses medicinal properties [2,3].

*Achyranthes aspera* (Amaranthaceae)

**English:** Chaff-flower, Hawai chaff flower, devil’s horse whip, prickly chaff flower.

**French:** Achyranth a feuilles rudes, collant, gendarme.

**Spanish:** Mosotillo, rabo de gato, rabo de chango, rabo de raton.

**Arabian:** na’em, no’em, mahoot, wazer (Yemen).

**Philippines (Tagalog):** Hangod. Larchichra, latjira, sonpur

**African vernacular names:** Hindi (different dialects):

Swahili: Turura Sotho: Bohomane, bohome-bo-bole, mo-tsowaragano.

Belgian Congo: Denge,gneega, kalambata, lenge, lenamo

**Plant parts used:** The whole plant, the root, the seeds[4].

**Chemical Constituents:**

We have isolated two new compounds, 27-cyclohexylhepta-cos-7-01[5] and 16-hydroxy-26-methylheptacosan-2-one[6]. Compounds in the seeds of *A. aspera* are the saponins A and B. They are glycosides of oleanolic acid. The carbohydrate components are the sugars D-glucose, L-rhamnose, D-glucuronic acid (Saponin A). Saponin B is the β-D-galactopyranosyl ester of Saponin A[7]. The content of free oleanolic acid in *A. aspera* roots is 0.54% [8,9]. Ecdysterone, a phytoecdysone, was yielded and characterized by its colour and special chemical reactions. Contents (g/kg) were: 0.25 (seeds), 0.09 (roots), 0.04 (stem, leaves)[10]. The pronounced insect molting hormonal activity of this extract from the roots has been found due to the presence of ecdysterone[11]. In an investigation for alkaloids only one indication was found in *A. aspera* stems. But this was assessed only by color reactions and not with modern techniques. Therefore this result can be neglected. It is in contradiction to the general characteristics of the family Amaranthaceae to which *A. aspera* belongs[12]. Principal Constituents Betaine[13] and Achyranthine[14] are the principal alkaloids, identified from the whole plant.

**Pharmacological activity:**

**Blood pressure:**


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Cardiovascular activity: Saponins have phosphorylate activity in heart[17].

Anti-amoebic and Anti-fertility activity:

The juice of plant is used to treat ophthalmic and dysentery, Root paste is taken internally with buttermilk as an antifertility drug. The decoction fresh root is introduced in to the vagina to terminal pregnancy.[18] The ethanol extract of the roots possesses spermicidal activity[19].

Anti-tumor activity:

The total methanol extract of the leaves of A.aspera has antitumor activity[20].

Miscellaneous pharmacological activity of A. aspera:

Numerous aliphatic compounds have been reported from the seeds and the shoots of A.aspera[21,22]. Asia, South America and Africa and is commonly used by traditional healers for the treatment of fever, especially malarial fever, dysentery, asthma, hypertension and diabetes[23]. The dried herb is used to treat children for colic and also as an astringent in gonorrhea treatment[24]. Leaf extracts are reported to posses hypoglycemic thyroid stimulating and antiperioxidative properties[25].

A Saponin isolated from the seeds of the plant was observed by us to cause increase in force of contraction of isolated and intact hypodynamic heart[26], the saponins in general are known to cause diuresis on intravenous administration it was of interest to investigatethe effect of the Saponin of A. aspera on urinary secretion in normal animals on intramuscular and oral administration[27]. Several studies on medicinal plants, foods and beverages rich in phenolic compounds, flavonoids and triterpenoids with antioxidant activity have been described[38,39]. Present communication, dealing with medicobotanical uses of A. aspera in treatment of gynaecological disorders, is part of an extensive study conducted in five districts of western Uttar Pradesh viz., Aligarh, Badaun, Bulandshahar, Farrukhabad and Hatharas,[40,41,42,43]. In indigenous system of medicine, whole plant exploited for the treatment of renal dropsy, bronchial affections and leprosy [44].

Application of A. aspera:

A. aspera used for Biological control. The present study describes the potential of a mealy bug species in controlling the two wasteland weeds viz. A. aspera and X. strumarium under natural field conditions.

Mealy bug on Achyranthes aspera [53]. In the present study an attempt has been made to utilize the methanolic extract of prickly chaff (Achyranthes aspera) leaves to develop microbial resistant cotton fabric which can be utilized for making healthcare textiles[54]. Mosquitoes are the most important single group of insects well-known for their public health importance, as they act as vector for many tropical and subtropical diseases such as dengue fever, yellow fever, malaria, filariasis and encephalitis of different types including Japanese encephalitis[55].

RESULT:

Detail survey of Achyranthes aspera (Prickly chaff) have found a lot of pharmacological activity. It show 100% Post-coital antifertility activity. No toxic effects were observed. Oral administration of the ethanol extract at 200 mg/kg body weight caused a significant increase in uterine weight in immature rat. It appears that the ethanol extract has significant estrogenic activity when given alone. However, the ethanol extract did not show any anti-estrogenic activity when given along with ethanol estradiol at the tested dose. Mobile phases of different composition were tested for HPTLC analysis of Achyranthes aspera samples and oleanolic acid in high resolution and reproducible results. The desired objective was achieved by use of toluene: ethyl acetate: formic acid (4.5:0.5:0.1 v/v) as mobile phase, which gave a peak at RF 0.20 for oleanolic acid. Fig. 1(a,b) shows the HPTLC profiles obtained from the methanol extracts of Achyranthes aspera roots and leaves. The present study reveals that this species alone has the potential to be used as a biocontrol agent against X. strumarium.

DISCUSSION:

In the study of Achyranthes aspera ethanolic extract of root, leaves, stem gives different biological activity and also isolate chemical constituents like Betaine and Achyranthine. These chemical constituents are used in treatment of gallbladder stone, asthma, high and low B. P. The loss of implantation caused by ethanol extract may be due to antizygotic, blastocytotoxic or anti-implantation activity as described by Hafez (1970). It is well known that for implantation exact equilibrium of estrogen and progesterone is essential and any disturbance in the level of these hormones may cause infertility (Psychoyos,1966). Surendra et al isolate the new aliphatic acid root of Achyranthes aspera. Abdul et al proposed treatment of gynecological disorder. Study of achyranthes aspera find most effective for gynecological disorder for women. In the present study, the root of Achyranthes aspera was tested for its anti-implantation and estrogenic properties.

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