



EFFECTIVE TRADITIONAL MEDICATION FOR SNAKEBITE AND SKIN DISEASES *ACHYRANTHES* ASPERA

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Abstract

Achyranthes aspera a herb, is used medicinally. Since the Vedic era until the present, various diseases have been treated with this herb. Numerous experimental trials today demonstrate the value of several medicines in treating a variety of disorders. According to the literature, *Achyranthes aspera* is a very significant plant because of its numerous medical benefits. As a result, *Achyranthes aspera* has been shown to be a versatile pharmaceutical compound. In Marathi *Achyranthes aspera* known as Aaghada, in Sanskrit Apamarg and in Hindi it is known as Chilchita or Latjira. AAGHADA is also known as Ganesh patri. Due to their diverse therapeutic applications in healthcare, there are 21 ganesh patri that are incorporated in (pooja) worship of god throughout various festivals. Any form of cough, a typical cold, and viral infections can benefit greatly from aaghada. It is also used to those with urinary issues.

The leaves of *Achyranthes aspera* work well as antivenom for all snakebites. It is also particularly helpful for bites from dogs, rats, or scorpions. Crushed fresh leaves are commonly used to the biting region. To treat the bitten area, freshly crushed leaves are frequently employed. Until the poison is released by vomiting, crushed leaves are given to snake bite sufferers. To get rid of any poison in the blood, vomiting will be done. On the occasion of the Nagpanchami celebration in Maharashtra's savan (Marathi month), an *Achyranthes aspera*'s garland is placed on the idol of Nagdevta. So that everyone is familiar with snake identification and snakebite treatment from an early age. Nature has provided the solution to the problem. In rainy season water is induced in anthills, whole of snakes and they comes out as well as wild grass is grown everywhere hidden snake are not spotted so increasing the risk of snake bites while working in the fields. Therefore, *Achyranthes aspera* is a fairly efficient snake bite remedy employed in rural areas of our nation. After being applied to the bite and taken internally, *Achyranthes aspera* can provide relief in 3 to 5 minutes. *Achyranthes aspera* contains Nonreducing sugar, Proteins, Alkaloids, Cardiac Glycosides, Flavonoids, and Tannins by phytochemical analysis of acetone, ethanol and water extract

Keywords: Herbal skin care, Snakebite remedies, Chilchita, Apamarg, Aaghada

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1. Introduction

On the occasion of the Nagpanchami celebration, an *Achyranthes aspera* garland is placed on the idol of Nagdevta in Maharashtra during the month of Savan (the Marathi month). So that everyone grows up knowing what a snake looks like and how to treat a snakebite. It is possible to get bitten by a snake when working on a farm during the rainy season since water causes all snakes to come out and snakes hide in the abundantly growing wild grass everywhere. As it takes 3 to 10 hours to go from a tribal region to a hospital for treatment of a snakebite, the cause of death is 99% certain and there is no chance the victim would survive. Therefore, in such cases *Achyranthes aspera* is a fairly efficient snake bite remedy employed in rural areas of our nation. After being applied to the bite and taken internally, *Achyranthes aspera* can provide relief in 3 to 5 minutes. Wherever natural issues arise, nature also provides solutions. This is also used at the Ganesh-Gauri festival and Jivantikapoojan. also haritalika poojan. Women are made to use fresh Aaghada stems to brush their teeth on the occasion of Hrushipanchami. This is a component of locals' traditional knowledge and way of life.

Scientific classification-

Kingdom-Plantae
Subkingdom-Tracheobionta
Unranked-Angiosperms
Super Division-Spermatophyta
Order-Caryophyllales
Division-Mangoliopsida
Class-Mangoliopsida
Subclass-Caryophyllidae
Order-Caryophyllales
Family -Amaranthaceae
Genus-Achyranthes
Species -Aspera
Binomial name -*Achyranthus aspera* (Sharma, A. K. (2013).

2. Methodology

It is very beneficial for urinary problems and is known as "Mutral" in the local language. To make it, burn the entire plant, including the leaf, stem, flower, and root. Then, mix the ash with water and let it sit, for a few hours. The leftover salt, known as kshar in Ayurveda, is separated from the supernatant liquid and evaporated. This salt is used to treat a number of cough and urinary issues. It is administered in the form of salt in urine choke ups or abstracals, or another approach is to administer 5 gram of leaf juice and 5 gm of mishri (khadisakhar). Urinary obstruction clears up. On any type of cough, 250 mg of the mentioned salt, 10 drops of ginger juice, and honey should be taken (Vaidhirth Aapashatri Sathe).

The leaves and root of the aaghda plant are subjected to phytochemical analysis. In acetone, ethanol, and water, leaves are extracted. Next other tests were run to find components that were present in it. Preliminary phytochemical tests are performed. The results are shown below and are confirmed by numerous author investigations.

3. Result and Discussion

Physicochemical factors like ash values, extractive values, and loss on drying fluorescence analyses are being determined by investigations. Extraction of the leaves by soxhlate in order to successively petroleum ether, ethyl acetate, alcohol, and water were used. The resulting extracts were examined for preliminary phytochemical analysis to identify the presence of several chemical components such as alkaloids, glycosides, steroids, tannins, saponins, fats and oils, flavonoids, etc. (Warke et al)

To create, assess, and determine whether a freshly created polyherbal compound has any wound-healing properties (ointment). The herbal ointment, which contains hydrochloric extracts of the plants *Psoralea corylifolia* and *Achyranthes aspera*. The hydro alcoholic extract was made using the maceration process. The following characteristics of these formulations were tested: pH, Spreadability, Grittiness, Skin Irritation Study, and Stability. The rate of wound contraction, the time of the epithelization process, and the skin-breaking strength are used to measure wound healing activity. (Kolhe, S. S. 2018). For more than 200 years, cardiac glycosides have been utilized as stimulants in the event of heart failure. The plant *Achyranthes aspera* Linn contained the flavonoids. Terpenoids are said to have antibacterial, antiviral, antimalarial, anti-inflammatory, and cholesterol synthesis-inhibiting properties. *Achyranthes aspera* Linn was shown to have cardiac glycosides. (Kulkarni and et al 2019) used as a snake bite remedy. Daily use of paste and water Antifertility (Sharma, V., & Chaudhary, U. 2015) The Amaranthaceae family includes the upright herb, *Achyranthes aspera*. Its names in Telugu include Antisha, Apamargamu, and Uttaraene. Purgative, pungent, and digestive, it is indicated in "Nighantas" as a treatment for internal organ inflammation, piles, itch, belly enlargements, and swollen cervical glands. All of tropical Asia, Africa, Australia, and America contain it. The two main alkaloids found throughout the entire plant are betaine and achyranthine. The entire plant has therapeutic properties that are mostly used to treat gastrointestinal, dermatological, and urinary diseases. (Sharma & et al 2009) Thin layer chromatography is used to detect the presence of alkaloids in methanolic preparations of *Achyranthes aspera* (seed) (TLC). TLC results showed that alkaloids were present, hence HPLC was used to

further purify the total alkaloids. Two major peaks and one minor peak with corresponding retention durations of 5.194 min, 5.567 min, and 6.447 min, as well as concentrations of 33.475 g/ml, 29.963 g/ml, and 14.888 g/ml, were visible in the *Achyranthes aspera* sample's HPLC profile. The use of botanicals that have been traditionally used to treat specific illnesses and metabolic disorders may now have a scientific justification according to this research. (Talreja Tamanna & et al 2016). The compound L-rhamnopyranosyl (1→4)-(β-D-glucopyranosuluronic acid) is present in the seed of Apamarg. (1→3)-Oleanolic acid, L-rhamnopyranosyl (1→4)-(β-D-glucopyranosuluronic acid) and 28-O-D-glucopyranoside-(1→3) oleanolic acid-28-O-D-glucopyranoside-1-(1-glucopyranoside- D Dayal R. and Rashmi (2003). The novel aliphatic acid, n-hexacthe volatile oil'sos-14-enoic acid, was discovered in ethanol extracts of *Achyranthes aspera* linn. Roots (Sharma, V. 2015). This chemical was isolated and named as strigmasta-5,2-dien-3-ol, trans-13-docasenoic acid, n-hexacosanyl n-decaniate and n-hexacos-17-enoic acid. This compound was reported for the first time from any natural or synthetic source, researcher separated the volatile oil's chemical constituents from the leaves of *Achyranthes aspera* (Rameswar R D 2007).

Pharmacological studies

Aspera is a weed that is frequently discovered in India at waste locations and by the sides of roads. As an antidote to snake bite, for dropsy, piles, skin eruptions, colic, as a diuretic, astringent, and purgative, for fractured bones, whooping cough, respiratory issues, for asthma, as a laxative, and for leucoderma, the plant is also utilized. Alkaloids, flavonoids, saponins, steroids, and terpenoids are said to be present. The presence of a diverse spectrum of chemical components suggests that plants could act as a "lead" for the future creation of innovative drugs that are effective against a variety of clinical conditions. One example of the "lead" made from the synthetic versions of the naturally occurring furanochromone khellin (visammin), which is found in *Ami visnaga*, is sodium chromoglycate. We will therefore have the foundation for developing such leads from our exploration of the chemical components of the plants and our pharmacological screening. Less information, however, is known about the chemical components of this plant. There aren't enough studies on the plant's phytochemistry and phytoanalysis. With the availability of source data, more research can be done, including phyto-pharmacology of various extracts, extract standardization, active principle identification and isolation, and pharmacological examinations of isolated compounds. These might be followed by the

creation of lead molecules, as well as they could be used to make a specific extract for usage in specific herbal formulation (Goyal & et al 2007)

India is home to the significant medicinal plant *Achyranthes aspera* (Amaranthaceae). Although practically all of its parts are employed in traditional medical systems, the most significant portions that are used medicinally are seeds, roots, and shoots. Potash is a substance found in aaghada. (Godbole 2018)

Photochemistry

The *Achyranthes aspera* plant includes triterpenoid saponins having oleanolic acid as an aglycone, with the primary chemical components A, B, C, and D Vitamin C, ecdysterone, long chain alcohols containing 27-cyclohexyl heptaheptaosan-7-ol, 36, 47-dihydroxy hen-pentacontan-4one, 16-hydroxyl 26-methyl heptacosan-2one, and 17-penta triacontanol are also present in the *Achyranthes aspera* plant. Additionally, it contains N-methyl pyrrolidine-3 carboxylic acid, water-soluble base, betaine, achyranthine, and inokosterone ecdysterone in callus and tissue culture. Additionally, the seeds of the *Achyranthes aspera* plant contain iron, calcium, phosphorus, protein, and oleanic acid. (Dwivedi & et al 2008)

Real documenting of medicinal plants is crucial, as is understanding their potential to promote health and hygiene through an environmentally friendly approach. It has been determined after studying academic studies that Apamarga species have great therapeutic benefit. Solvent extraction of powder plant extract contains alkaloids, saponins, glycosides, flavonoids, amino acids, and proteins. According to a review, the herb chirchira is used to cure a number of diseases. The development of its many formulations, which could ultimately be advantageous for both humans and animals, requires research to be done. (Nazir & et al 2018)

Histochemical analysis

The stem indicated the presence of calcium oxalate crystals, starch grains, and cellulose after reacting with the regularly used stains. Physicochemical parameters -Total ash, acid soluble ash, moisture content, extractive values, macro elements (N, P, K, S, Ca, Mg, Na), micro elements (Fe, Zn, Cu, Mn), and nutritive values are used to depict the results of physicochemical analysis reducing, nonreducing sugars, total carbohydrates, starch, and protein. For phytochemical testing -In water and ethanol extracts, triterpenoids, alkaloids, glycosides, steroids, and saponins were detected. Analysis using high-performance thin layer chromatography -The triterpenoids could be promptly screened using chloroform: methanol (9:1 v/v), and the separation was found to be superior. The densitogram, HPTLC picture, and peak values were shown as the

densitogram contained a total of 12 peaks. Of the 12 peaks, peaks 3, 8, and 10 showed an area under curve more than 15%. Peak 10 had the biggest percent area (27.73%) and a height at Rf (max) of 0.57. The ground root is administered along with water for snake bites until the victim vomits and regains consciousness. As a toothbrush, a fresh piece of root is utilized. If administered within 21 days following the bite, seven leaves, crushed, eaten in a single dose twice weekly on Tuesday and Sunday, can effectively treat a dog bite. The plants are used as remedies for a variety of illnesses, including piles, colic, boils, etc. It is astringent, diuretic, pungent, and purgative (Tembhurne, R. R., & Nanir, S. P. 2012). Instrumental neutron activation analysis (INAA) and atomic absorption spectroscopy (AAS) techniques were used to analysis specific parts (fruits and leaves) of plants commonly used in the Indian Ayurvedic system for 18 elements (K, Mn, Na, Fe, Zn, Cu, Co, Br, Sm, Cl, La, Al, Cr, Ca Cd, Ni, Pb and Hg). The leaves of Aghada are abundant in K and Na (15.62 and 10.10 mg/g, respectively) and were exposed to thermal neutron radiation in a nuclear reactor. The induced activities were counted by γ -ray spectrometry using an efficiency calibrated high resolution high purity germanium (HPGe)

4. Conclusion

A remarkably effective snake bite treatment used in rural areas of our country is *Achyranthes aspera*. All forms of snakebites respond effectively to *Achyranthes aspera* as antivenom. Rat, dog, and scorpion bites can all benefit greatly from it. To treat the biting area, fresh leaves are typically crushed and applied. The root of this plant is helpful for treating black spots on skin, rashes, pimples, eczema, and other skin conditions. This plant provides relief from all types of skin illnesses brought on by the humid environment. It has an ability to eliminate toxins that have stored in the body. It is occasionally used as a wild vegetable in diet of ruler area. Fresh stem of *Achyranthes aspera* use as toothbrush to destroy the bacteria deposited on enamel of teeth.

5. References

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detector (Lokhande, R. S. et al 2011). Tribal members, neighborhood vaidus, and drug stores were consulted for information on the medicinal herbs that the Washim district's native inhabitants utilize to treat wounds. The majority of the data was related to plant parts used, along with their quantities and common names. (Aaghda leaves were utilized) (Wadankar, G. D 2011).

Chemical components: The phytochemicals in the *Achyranthes aspera* plant include oleanolic acid, steroid types such as ecdysterone, ecdysone, and beta-sitosterol, as well as saponins such as saponins A, B, C, and D Chemical components of different sections include Oleanolic acid and Ecdysterone 2,4 are found in roots. Stem Ecdystrone Ecdysteone and ecdysone, 3-acetoxy-6-benzoyloxyapangamide, 2, 4.

Leaves Ecdysteone, Ecdysone. Shoots contain 36, 47-dihydroxyhenpentacosan-4-one, Triacontanol; 27-cyclohexylheptacosan-7-ol, 16-hydroxy-26-methylheptacosan-2-one, 4- methylheptatriacont-1-en-10-ol tetracontanol-2, betasitosterol, 9, 11, 12. Saponin C and saponin D2 are found in fruits. Seeds include oleanolic acid, saponin A, and saponin B. (Fegade & Kolhe 2015)

Achyranthes aspera prevent tooth decay, it prevent decay progression in dentin and root. And bad breath, bad taste, gum diseases, mouth pain or toothache, can be prevent cavity formation in teeth.

Achyranthes aspera contains Nonreducing sugar, Proteins, Alkaloids, Cardiac Glycosides, Flavonoids, and Tannins by phytochemical analysis of acetone, ethanol and water extract. Carbohydrates detected by Non-reducing (Benedict), Protein by Lead acetate Alkaloids confirm Dragendorff's reagent, Wagner's reagent, Marme's reagent Kraut's reagent. Cardiac Glycosides detected by Baljet reagent, Flavonoids Lead acetate Alkali test. Tannins by Ferric chloride (5%), Dilute Iodine test Dilute HNO₃ test, Potassium dichromate test Fatty oil by Sudan red III test.

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