

## A Review on Potential of Achyranthes Aspera Linn.

Isha Talhar<sup>1</sup>, Vaibhav Panchabhudhe, and Bhavana P. Raut<sup>1</sup>

<sup>1</sup>School of Pharmacy, G H Raisoni University, Saikheda, Teh- Saunsar, Dist.-Pandhurna, Madhya Pradesh, India-480337.

Corresponding Author: Bhavana Raut

School of Pharmacy, G H Raisoni University, Saikheda, Dist.-Pandhurna, Madhya Pradesh, India-480337.

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## **ABSTRACT:**

Achyranthes aspera linn. is a Ayurvedic medicinal Plant. It is also known as Apamarg, Aghada. It contains prickly chaff flower of Achyranthes aspera belonging to the family Amaranthaceae. This medicinal plant found in various part of indigenous area like India, China, Myanmar, Indonesia, etc. Root, shoot, leaves, seed this part of plant are used as a medicinally. The main phytochemical constituents are Flavonoids, Tannins, Terpenoids, Saponins, Phytosterols, Phenolic compounds, Alkaloids, Steroids, Oleanolic acid, Glycoside, Protein, Carbohydrates and Lignin present in plant. It has various pharmacological activities like antiinflammatory activity, wound healing, antimicrobial activity, antihistaminic activity, antihyperlipidemic activity, antidiabetic activity, anthelmintic activity, analgesic activity, antidandruff activity, antivenomous activity. urinarv disorder. The Methanolic/ Ethanolic/ Aqueous extract of leaves of Achyranthes aspera linn. is significantly used in treatment of wound healing and inflammation. In previous study, different researches had been done in in-vivo and in-vitro for pharmacological activity. By the histological evaluation it showed well organized epithelial layer. Concentration of phenolic acid in plant extract quantified by UHPLC-MS/MS. Phenolic compound is responsible for tissue regeneration in superficial wound and burns. It improves damage tissue and protects wound. It has high affinity of protein binding; it must be enough to penetrate in intra-fibrillar region<sup>[1]</sup>.

**KEYWORDS:** *Achyranthes aspera linn,* Wound healing, Phenolic compounds.

## I. INTRODUCTION

Achyranthes aspera it is a traditional medicinal plant, also known as Apamarg and Aghada in Sanskrit. This medicinal plant found in various indigenous area like India, China, Myanmar, Indonesia, etc. It contains pricky chaff Flower belongs to family Amaranthaceae. It has many phytochemical constituents alkaloids, phenolic compound, saponin, flavonoids, tannin, coumarin, resin, that has anti-inflammatory, antioxidant, antibacterial. antimicrobial.antivenomous.wound healing properties. In ancient period Apamarg was used in wound healing repairs and regenerate the epithelial layer of skin, it has ability to treat inflammation and wounds mentioned in Ayurveda. In Ayurveda it was used just a paste of leaves and applied on topical and it penetrate into the skin. There are manyformulations availablefor the treatment wound healing and inflammation eg. Ceram, Lotion, Oil, Ointment, etc., but nanotechnology can improve the efficacy of the drug, nano particles easily penetrate through the skin and avoid first pass metabolism. The combination of herbal and nanotechnology improve efficacy, safety and quality of formulation. It gives sustained and controlled release of the drug that are help to reduce side effect.

Inflammation is anacute or chronic disease caused by the cell damage and accumulation of the fluids in the body that produce the pain(dolor), redness (rudor), swelling (tumor), heat (calor) in the body<sup>[2]</sup>.



FIG.ACHYRANTHES ASPERA LINN<sup>[3]</sup>

Country wise synonyms of Apamarg.

1) **English:** Chaff-flower, Hawai chaff flower, prickly chaff flower.



- **2) French:** Achyranth a feuilles rudes, Collant, gendarme.
- **3) Spanish:** Mosotillo, rabo de gato, rabo de chango, rabo de raton.
- 4) Arabian: na'eem, no'eim, mahoot, wazer (Yemen).
- 5) **Philippines (Tagalog):** Hangod. Lamchichra, latjira<sup>[4]</sup>.

#### Taxonomy

Kingdom: Plantae Phylum: Tracheophyta Class: Magnoliopsida Order: Caryophyllales Family: Amaranthaceae Genus: Achyranthes Species: Achyranthes aspera<sup>[5]</sup>.

## HISTORY

Achyranthes aspera is also known as Apamarg in Sanskrit, Aghada in Hindi, Chirchita in Unani. In Ancient era it is used as a medicinal plant mentioned in Ayurveda and Unani medicinal system. It shows the pharmacological activities. Achyranthes is a Greek word compose of two words 'Achyro' (Chaff) and 'anthus' (flower) and aspera is also comes from Greek word is rough, stem and leaves are rough that's why it is called as aspera. In Ayurveda Apamarg is used as a Snake bite, Scorpion bite, dog bite, used as antivenomous. It shows the pharmacological activity like analgesic, antiinflammatory. wound healing. antioxidant. antimicrobial, etc

Apamarga (Achyranthes aspera Linn.) is an important plant in Ayurvedic medicine, widely used in various formulations for its therapeutic benefits. Recent studies have explored its preparation methods, physicochemical evaluations, and applications in medicinal formulations<sup>[6]</sup>.

In ancient period it was used as a paste of leaves of Apamarg then it forms in formulation like cream, oil, Ointment.

Plants have been the foundation of traditional medicine for thousands of years, forming the basis of healing systems like Ayurveda, Traditional Chinese Medicine (TCM), and Unani medicine. *Achyranthes aspera*, commonly referred to as Apamarg in Sanskrit, has a rich history of medicinal use in India and other parts of the world. The plant is known for its diverse therapeutic applications, with mentions in ancient texts like the **Atharvaveda, Charaka Samhita, and Sushruta Samhita**.

This review explores the historical significance of Apamarg in various traditional medical systems and its role in ancient and modern herbal practices.

#### APAMARG IN ANCIENT INDIAN MEDICINE Vedic and Ayurvedic References

• Apamarg is one of the herbs mentioned in the **Atharvaveda** (one of the oldest Hindu scriptures), where it was used in rituals and as a medicinal plant for treating diseases and warding off evil spirits.

• In **Ayurveda**, it is classified under the **Shodhana** (**purification**) **and Krimighna** (**anthelmintic**) **categories**, indicating its use in detoxification and parasitic infections.

• Charaka Samhita (2nd century BCE): Describes Apamarg as beneficial for treating digestive disorders, urinary diseases, and skin conditions.

• Sushruta Samhita (4th century CE): Highlights its role in wound healing, pain relief, and as a blood purifier. It was commonly used for treating ulcers, boils, and external injuries.

#### Siddha and Unani Medicine

• In **Siddha medicine**, Apamarg is known as *Naayuruvi* and is used in formulations for treating piles, joint pain, and snake bites.

• **Unani medicine** recognizes it as *Khar-e-Khasak* and uses it for inflammatory diseases, kidney stones, and respiratory issues.

## **BOTANICAL DESCRIPTION**

Achyranthes aspera is found worldwide, including in Asia, Africa, America, Europe, and Australia. It thrives in open areas and grows in sandy loam soil. \nAchyranthes aspera is an annual herb belonging to the family 'Amaranthaceae.' It has been used for thousands of years for medicinal purposes and exists in 8-15 species. This small, branched, perennial herb grows between 0.2-2.0 meters tall. Its leaves are densely clustered, branching toward the tips, measuring  $40-50 \times 25-30$ mm. The leaves are broadly ovate, ovate, orbicular, or elliptic, with an apex that is blunt to sub-acute, very shortly apiculate, and fleshy, featuring purple veins. The petiole measures 1-3 cm in length. The plant has a pink, fleshy, velutinous basal abscission zone. The peduncle is fleshy and white, extending 15 mm long. \nThe bisexual flowers are arranged in spikes of 180-200, with ovate-lanceolate petals measuring  $3-3.5 \times 0.5-1$  mm. The apex is pale white and acute, with a small size of 0.1-0.2 mm. The style



measures 0.6-1 mm and ranges in color from pink to pale orange. The fleshy papillate style base has a diameter of 0.8 mm. The stigma is brown, while the seeds measure  $1.2-1.8 \times 0.9-1.2$  mm. The calyx extends up to 4 cm, and the ovary is superior. The optimum temperature for germination is 20°C, while the plant grows best within a temperature range of  $10-30^{\circ}C^{[7]}$ .

## CHEMISTRY

Achyranthes aspera is an aromatic plant with chaff flowers that emit an irritating smell. Its color, taste, and phenotype characteristics define its uniqueness. The distinct fragrance and aroma of the flower are due to the presence of essential oils in both the leaves and flowers. Chaff flowers contain oleanolic acid and linalool, which vary depending on the species. Methyl chavicol contributes to a sweet aroma, while linalool gives a floral fragrance. The bitter taste of Achyranthes aspera is attributed to the presence of eugenol<sup>[8]</sup>.

## CHEMICAL COMPOSITION

Achyranthes aspera has a low fat and calorie content while being rich in vitamin C and minerals. The flowers of Achyranthes aspera (Prickly Chaff) contain essential minerals such as sodium, potassium, chloride, magnesium, and phosphorus. These components contribute to various pharmacological activities and help regulate or maintain the body's electrolyte balance.

#### PHYTOCHEMISTRY

Achyranthes aspera contains volatile oil in the form of oleanolic acid and various chemical constituents such as saponins, terpenoids, alkaloids, flavonoids, cardiac glycosides, sugars, steroids, lignin, and sterols present in the plant extract. Essential compounds found in the chaff flower include 3acetoxy-6-benzoyloxyapangamide,  $\beta$ -sitosterol, trans-13-docosenoic acid, n-hexacos-14-enoic acid, hexatriacontane, 10-octacosanone, saponin A, and saponin B<sup>[9]</sup>.

Achyranthes aspera (Prickly Chaff Flower) contains a high range of bioactive compounds, consists of alkaloids, flavonoids, saponins, glycosides, tannins, and essential oils. These phytochemicals contribute to its medicinal properties.

## 1. Alkaloids

- Achyranthine (primary alkaloid with cardioprotective effects)
- Betaine
- Oleanolic acid

• Ephedrine-like compounds (mild stimulant

#### effect) 2. Saponins

- Oleanolic acid saponins
- Achyranthosides (Achyranthoside A & B)
- Ursolic acid
- Hederagenin

#### 3. Flavonoids

- Quercetin
- Rutin
- Kaempferol
- Luteolin

#### 4. Glycosides

- Cardiac glycosides
- Phenolic glycosides

## 5. Tannins

- Gallic acid
- Ellagic acid

#### 6. Steroids & Terpenoids

- β-Sitosterol
- Stigmasterol
- Campesterol
- Ecdysterone

#### 7. Essential Oils

- Eudesmol
- Limonene
- Caryophyllene

#### 8. Other Compounds

• Polysaccharides (immune-modulating effects)

• Proteins & Amino acids (nutritional benefits)

• Fatty acids (linoleic, oleic, and palmitic acid)

Alkaloids: These nitrogenous compounds possess analgesic and anti-inflammatory properties. Apamarg is a rich source of alkaloids, which may help reduce inflammation and pain

Flavonoids: These are a large group of phenolic compounds found in Apamarg, including quercetin, rutin, kaempferol, and apigenin. Flavonoids exhibit antioxidant and anti-inflammatory properties and aid in wound healing.

Quercetin: Possesses strong antioxidant, antiinflammatory, and antimicrobial properties.



Kaempferol: Known for its anticancer and cardioprotective effects.

Rutin: Strengthens blood vessels and has neuroprotective activity.

Terpenoids: Achyranthes aspera is a rich source of terpenoids, which exhibit anti-inflammatory and antioxidant properties derived from plant extraction. Lignin: A major chemical constituent in Achyranthes aspera extracts, lignin plays various pharmacological and therapeutic roles, differing across species and geographical sources.

Saponins: These glycosides act as foaming agents and exhibit antimicrobial, anti-inflammatory, and analgesic activities. Oleanolic acid glycosides: Possess anti-inflammatory, immunomodulatory, and wound-healing effects.

Hederagenin: Known for its antimicrobial and antidiabetic properties.

Tannins: Polyphenolic compounds in the plant contribute to antimicrobial and astringent properties. Gallic acid: Exhibits antioxidant and anticancer activities.

Ellagic acid: Known for its hepatoprotective and anti-inflammatory effects.

Steroids and Triterpenoids:  $\beta$ -Sitosterol: A plant sterol with cholesterol-lowering and anti-inflammatory properties.

Stigmasterol: Exhibits antioxidant, antiinflammatory, and neuroprotective properties.

Glycosides Achyranthosides A & B: Reported to have anti-inflammatory and hepatoprotective effects.

Saponin glycosides: Contribute to antimicrobial and immune-modulatory properties.

#### PATHOPHYSIOLOGY OF INFLAMMATION

Phenolic Compounds (-OH): Phenolic acids in Achyranthes aspera possess antioxidant properties, promoting cell and tissue regeneration while protecting against oxidation. These phenolic compounds are naturally found in the plant's roots, leaves, shoots, and flowers<sup>[10]</sup>.







7-O-Methylaloeresin A

### FIG: STRUCTURE OF 7-O-METHYLALOERESIN A<sup>[11]</sup>





## PHYTOCHEMICAL TEST

#### Test for Alkaloids:

Hager's test: It is used for detecting alkaloids. The test solution is treated with 2 to 3 drops of Hager's reagent, forming a yellow precipitate, which confirms the presence of alkaloids.

Test for Flavonoids: The lead acetate solution test is used for flavonoid detection. A few drops of 10% lead acetate solution are added to the test sample, forming a yellow precipitate, indicating the presence of flavonoids.

Test for Terpenoids: The Salkowski test determines the presence of terpenoids. Five milliliters of leaf extract are mixed with 2 mL of chloroform and 3 mL of concentrated H2SO4. A reddish-brown layer at the interface indicates the presence of terpenoids.

Test for Saponin: The foam test is used to detect saponins. One to two grams of the sample are dissolved in 20 mL of water. Then it will form foam confirms the presence of saponins.

Test for Tannin: Tannins are detected by adding a few drops of ferric chloride solution to the extract solution. The appearance of a blue color indicates the presence of tannins.

Test for Glycosides

Baljet's test: Glycosides are determined by treating the plant extract with sodium picrate, forming a yellow to orange color.

Keller Killiani test: To detect glycosides, the plant extract is treated with glacial acetic acid, 5% FeCl3, and 1 mL of concentrated H2SO4. A reddish-brown color at the upper layer that transitions to bluish-green confirms the presence of glycosides<sup>[11]</sup>.

## • PHYTOCHEMICAL EVALUATION STUDIES

## 1. Determination of Ash value:

Accurately weighed 2 g of sample in a silica crucible at 450-500.C temperature until it was completely ignited, then cool in desicator and weighed. Then calculate the percentages of total ash. 2. Determination of Acid insoluble ash value:

The total ash obtained boiled for 5 minutes with 25 ml of dilute HCL, the insoluble residue obtained from in filter paper, then wash with hot water and ignited until constant weight.

#### **3.** Determination of Water-soluble ash:

Water-soluble ash is determined by the ash obtained from the total ash was boiled for 5 min with 25 ml of water. The insoluble extract was collected on filter paper and wash with hot water. Insoluble ash transferred into a silica crucible and ignited for 15 min at 450-500.C temperature. Weighed insoluble matter was subtracted from the weight of the total ash. Difference in weight was considered as a water-soluble ash.

## 4. Determination of hydro-alcoholic extractive value:

Hydro alcoholic extract of air dried 100 g powder of sample extracted with methanol: distilled water (50:50), 450 ml, with continuous heating with Soxhlet apparatus and filtered. Dry the extract and cool in desiccator and calculated the percentage of hydro alcoholic extract

## 5. **Determination of loss on drying**:

10 g of sample weighed and placed in loss on drying bottles and petri dish. Dried in oven at 105 C for 5 hours, weighed after cooling <sup>[12]</sup>.

### Ethnopharmacological significance:

Ethnopharmacological significance of Achyranthes aspera (Apamarg) lies in compressive traditional uses in various culture, countries and worldwide. There are many pharmacological uses of Apamarg are anti-inflammatory, wound healing, gastric disorder, antimicrobial activity, antipyretic activity, analgesic activity etc.

**Anti-inflammatory:** - Apamarg is used as a pain healer mentioned in ayurveda, in ancient era it was used paste of leaves and apply on the place of pain or wounds. Mostly Apamarg is used for the arthritis, joint pain and anti-inflammatory disease.

Antimicrobial activity: - Apamarg is a natural remedy for the treatment of infectious disease caused by bacteria, fungi.

**Wound healing:** - Apamarg mostly used for wounds, cuts, burns, etc. its helps in regeneration of tissue or cell <sup>[13]</sup>.

#### EXTRACTION OF ACHYRANTHES ASPERA 1. Methanolic Extraction:

The plant material was collected in a clean polyethylene bag, washed with distilled water, and surface sterilized with 10% sodium hypochlorite to prevent microbial contamination. The sample was then shade-dried at room temperature until all moisture had evaporated. A total of 100 g of coarsely powdered material was extracted in a Soxhlet apparatus for 72 hours using methanol. The extract was then filtered and evaporated using a rotary evaporator<sup>[14]</sup>.

## 2. Ethanolic Extraction:

A shade-dried, coarsely powdered sample weighing approximately 500 g was defatted with petroleum ether (60-80°C) for 72 hours. After defatting, the sample was extracted with ethanol and purified water for 72 hours <sup>[15]</sup>.

3. Aqueous and methanol Extraction:



Fresh leaves of Achyranthes aspera were collected from the local area. The leaves were shade-dried under adequate temperature conditions and ground using a 2 mm diameter mesh. The coarsely powdered sample was extracted with methanol and water using the percolation method for 48 hours at room temperature. Then, theproduce extract was filtered using filter paper no. 1, and the solvent was removed using a condenser to concentrate the extract <sup>[16]</sup>.

## 4. Aqueous Extraction:

The plant material was collected from the local area, and the plant or leaves were pulverized using an electrical grinder. The material was then extracted with distilled water at 100°C for 4-5 hours and centrifuged for 15 minutes. The produced extract was filtered using Whatman filter paper no. 1, and the filtrate was obtained through vacuum evaporation <sup>[17]</sup>.

## EVALUATION PARAMETER FOR WOUND HEALING ACTIVITY

#### 1. Circular Excision Wound Model:

Rats were anesthetized using diethyl ether before conducting the experiment. The hair on the dorsal thoracic area was shaved, and 70% ethanol was applied to the region before creating the wound. A circular excision of 450 mm<sup>2</sup> was made on the thoracic area of the rat.

### 2. Linear Incision Wound Model:

The linear incision wound model was used to evaluate physical injuries such as ruptured tissues and epithelial tissue damage. Rats were anesthetized with diethyl ether, and the hair on the vertebral column was shaved at a distance of 1 cm from the midline. The parted skin was brought together and stitched using surgical thread and a curved needle at 1 cm intervals. The extracts and other formulations were applied topically for 9 days. On the 9th day, all stitches were removed, and on the 10th day, the breaking strength was measured using the continuous water flow technique.

#### 3. Total DNA Content:

The formulation was applied topically to the excision wound area once daily for 3 days, and a sample was taken on the 4th day. The tissues were processed and extracted using the chloroform-isoamyl alcohol method. This evaluation was conducted to determine the total amount of DNA in each sample using UV-Vis spectroscopy at a wavelength of 280 nm <sup>[18]</sup>.

## WORK DONE ON ACHYRANTHES ASPERA

Achyranthes aspera is used in cancer therapy in Ayurveda in India, but there is no validation of these studies regarding its medicinal properties. No systematic studies have been conducted in research. In this study, cytotoxicity was assessed in human pancreatic cells. The research validates the in vivo antitumor properties of Achyranthes aspera using leaf extracts. The extract was tested through intraperitoneal injections in athymic mice, with toxicity monitored by recording changes in behavior, histology, hematology, and weight parameters in the mice<sup>[19]</sup>.

Achyranthes aspera has traditionally been used to treat various diseases. The ethanolic and aqueous root extracts also aid in inducing apoptosis and maintaining cellular mechanisms. These root extracts contribute to the treatment of cytotoxicity, apoptosis, and clonogenicity. To prepare a 10% solution, 10–20 g of dried Achyranthes aspera root is ground into a coarse powder using a grinder and mixed with 100 mL of water at room temperature overnight. The supernatant is then separated and filtered using Whatman filter paper No. 2, and the powder is stored at -20°C.

Ethanolic and aqueous extracts of Achyranthes aspera have the ability to inhibit cell mobility by inducing apoptosis<sup>[20]</sup>.

Achyranthes species, particularly *Achyranthes aspera*, have been studied for their antiparasitic properties. The plant is rich in bioactive compounds such as alkaloids, flavonoids, tannins, and saponins,

which contribute to its medicinal effects. Here are some key findings on its effect on parasitic diseases

# 1. Anthelmintic Activity (Against Parasitic Worms)

• Achyranthes aspera has been shown to exhibit significant anthelmintic activity, particularly against nematodes like Haemonchus contortus and Pheretima posthuma.

• The plant extracts cause paralysis and death of worms, likely due to disruption of their neuromuscular system and inhibition of enzyme activity.

• Saponins and alkaloids present in the plant might be responsible for these effects.

### 2. Antiprotozoal Activity

• Some studies suggest that *Achyranthes aspera* extracts can inhibit the growth of protozoan parasites such as *Plasmodium* (which causes malaria) and *Leishmania* (which causes leishmaniasis).



• The anti-inflammatory and immunemodulating effects of the plant may also contribute to its protective role in protozoal infections.

## 3. Antifilarial Activity

• There is evidence that *Achyranthes aspera* may have an effect against filarial worms like *Brugia malayi* and *Wuchereria bancrofti*, which cause lymphatic filariasis.

• The plant extracts interfere with the metabolism and reproductive cycles of these parasites.

## 4. Antischistosomal and Antitrypanosomal Effects

• Preliminary studies suggest that Achyranthes extracts may help in reducing schistosomiasis (caused by *Schistosoma* spp.) and trypanosomiasis (caused by *Trypanosoma* spp.).

• The mode of action is believed to be related to oxidative stress induction in the parasites, leading to their death.

## **Mechanisms of Action**

Methanol

Achyranthes

Leaf

Extract

aspera

of

L

• **Disruption of parasite cell membranes**: Saponins and tannins can break down the protective outer layers of parasites.

• **Enzyme inhibition**: Active compounds interfere with key metabolic enzymes in parasites, affecting their survival.

• **Immune modulation**: The plant's bioactive compounds enhance the host's immune response against parasites <sup>[21]</sup>.

Achyranthes aspera (Prickly Chaff Flower) is a medicinal plant with various bioactive compounds such as alkaloids, flavonoids, saponins, and tannins. It has antibacterial, antifungal, and antiparasitic properties, making it a potential candidate for aquaculture applications. Oreochromis niloticus (Nile tilapia) is a widely cultured freshwater fish, and assessing the toxicity of plant extracts is crucial for its safe use in aquaculture.

Phytochemical Analysis of Achyranthes aspera Leaf Extract Extraction Methods: Solvent extraction (ethanol, methanol, or aqueous extracts).

Phytochemical Screening: Identification of alkaloids, flavonoids, tannins, saponins, glycosides, and phenolics.

Quantitative Analysis: Total phenolic content (TPC), total flavonoid content (TFC), and antioxidant activity using DPPH or FRAP assays.

Acute Toxicity Study on Oreochromis niloticus Objective: Determine the lethal concentration (LC<sub>50</sub>) of Achyranthes aspera leaf extract in Nile tilapia<sup>[22]</sup>.

Sr. No.	Tittle	Author	Findings	Year
1.	Formulation and Evaluation of Turmeric- and Neem-Based Topical Nanoemulgel against Microbial Infection.	Sumon Giri et al.	preparation nanoemulgel to enhance therapeutic effect and reduce toxicity and irritation.	2024
2.	Review on phytochemical aspect of Apamarg (Achyranthes aspera Linn.).	Akriti Pal et al.	Reviewed on Phytochemical aspects of Achyranthes aspera, it includes information and benefits of herbal drug in our ancient literature of Ayurveda and Unani medicines.	2023
3.	A comphrensive review of achyranthes aspera Ethnopharmacology phytochemical and therapeutic potential.	Shreya Talreja et al.	It is one of the medicinal plant that used as anti- inflammatory and wound healing promote the healing of burn and cuts.	2023
4.	Investigation of Wound Healing and Anti Inflammatory Activities of Solvent Fractions of 80%	Teklie Mengie et al.	In invitro study found that the 80% methanolic extract of <i>Achyranthes aspera</i> leaves	2021

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	(Amaranthaceae) in Rats			
5.	Effect of aq. Extract of <i>achyranthes aspera linn.</i> on experimental animal model for inflammation.	Uma A. Bhosale et al.	performed in vitro study by using experimental animals i.e. Swiss albino mice (25- 30g), fasted overnight and administered aq. Extract of <i>Achyranthes aspera</i> with dose 2000mg /kg compare the diclofenac in different concentration.	2021
6.	Systematic review of Ethiopian plants used for their anti inflammatory and wound healing activities.	Dereje Nigussie et al.	Demonstrate the wound healing and anti inflammatory activity of <i>Achyranthes</i> <i>aspera</i> using <i>in vivo</i> and <i>in</i> <i>vitro</i> study.	2021
7.	Contribution to the anti inflammatary activity of <i>Achyranthes aspera</i> ethanolic extract.	Jeong- Oog Lee et al.	It performed HPLC analysis, mRNA analysis by semi- quantitative and quantitative PCR.	2017
8.	Evaluation of in vivo wound healing activity of <i>Achyranthes</i> <i>aspera Linn</i> .	Abraham Fikru et al.	Formulate ointment in different concentration checked the anti- inflammatory activity.	2012

## TABLE NO. 1 :- RESEARCH WORK ON ACHYRANTHES ASPERA

## II. CONCLUSION

Achyranthes aspera or Apamarg is a medicinal plant that have pharmacological properties such as wound healing, antiinflammatory, antimicrobial, antioxidant, antibacterial, antivenomous. It proven that this is medicinal plant and having scientific evidence according to review and research <sup>[23]</sup>.

Achyranthes aspera have the potential to treat many diseases. It is also known as traditional healer in India. Various extracts of Achyranthes aspera having many phytochemical constituents like Phenolic compound, Alkaloids (27-cyclohexyhepta cosan-7-ol, 16-hydroxy-26 methylheptacosan-2-one, 17-pentatriacontanol,  $\beta$ - sitosterol and spinasterol, saponin, Oleanic acid (triterpene acid). Scientific studies have validated many of these traditional claims, highlighting its bioactive compounds, such as alkaloids, saponins, flavonoids, and tannins, which contribute to its therapeutic potential. However, further clinical studies and toxicological assessments are necessary to establish standardized dosages, mechanisms of action, and long-term safety. Scientific studies have validated many of these traditional claims, highlighting its bioactive compounds, such as alkaloids, saponins, flavonoids, and tannins, which contribute to its therapeutic potential. However, further clinical studies and toxicological assessments are necessary to establish

standardized dosages, mechanisms of action, and long-term safety <sup>[24]</sup>.

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