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# REVIEW ON INDIAN MEDICINAL PLANT *ANACYCLUS PYRETHRUM* AS LOCAL ANAESTHETIC AND OTHER MEDICINAL VALUE

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## ABSTRACT

*Anacyclus pyrethrum* holds significant value as a medicinal herb that belongs to family *Asteraceae*. Plant root of *Anacyclus pyrethrum* known for its anaesthetic and pain relief activity. Root possesses brown acrid compound known for its local anaesthetic activity. This review gives renovated evidence about pharmacological, medicinal and phytochemical effects of anacyclus pyrethrum. Plant root is a abundant source of phytoconstituent like N alkyl amides, Pellitorine, Pyrethrins, essential oil and some other compounds. The present review gives information about phytochemical screening, methods of extraction, historical back ground and medicinal effect of the plant. Because of present of number of phytochemicals plant shows many pharmacological effects such as antimicrobial, anti-inflammatory, local anaesthetic, aphrodisiac activities, it also possesses antioxidant, immune stimulatory and different other valuable medicinal properties. In future all parts of *Anacyclus pyrethrum* can be studied for different medicinal properties. Local Anaesthetic action of the plant can be helpful in developing varieties of herbal formulation.

**Keywords: *Anacyclus pyrethrum*, local anesthesia, medicinal plants, phytochemicals**

## INTRODUCTION:

### Local Anaesthetic:

The term is used for loss of sense about external stimuli. The important feature of local anaesthetic is to produce loss of sensation without loss of consciousness **[1]**. Local anaesthetics achieve their effects by preventing the influx of sodium ions through sodium channels in neuronal membranes. This causes an interruption in neural conduction which finally results in loss of sensation **[2]**.

### *Anacyclus pyrethrum:*

In the present scenario use of herbal medicines is appreciated in healthcare systems due to the abundant therapeutic and biological activity of secondary metabolites **[3]**. About 70% population of the world uses plant-based medicines for treating different ailments or diseases **[4]**. The plant *Anacyclus pyrethrum* is generally known as 'Akarkara' as an Indian trademark name, it belongs to the family *Asteraceae.* The plant vernacular place of Arabia, North Africa, India, and Spain **[5]**. **Figure 1** shows the dried roots of the Akarkra.

**Figure 1: Akarkra Root**

Himalaya, Jammu Kashmir, and Bengal are the leading producer in India **[6]**. *Anacyclus pyrethrum* has vernacular names in a different language as pellitory (English), Akkirakaram (Marathi), Akallaka Assaamese (Sanskrit), Akalkara (Hindi), Aqaraqarh (Urdu) **[7]**.

Aqer Qerha (Arabic) **[8]** Forsoon, Forusoon, Qoos, Qoobrun (Greek), Kalu, kakra, kalua, Bheekhe Tarkhoon (Persian) **[9]** Anacyclus pyrethrum is a prime medicinal plant which is used in Both Ayurveda and Unani as alternative medicine **[10]**.

### Unani formulation of Akarkara:

There are many formulations of *Anacyclus pyrethrum* used in Unani medicine e.g. *Roghane Qust, Majun Abi Muslim, Ancardia, Habbe Ayariji, Habbi muqawi bah, Majoon Khoozi, arastoon sagheer,*

*Arastoon Kabeer, Mukhirije Ratoobat, Jawarish Fandadiqoon* **[11, 12]**.

**Historical background:**

The unani physician used this drug for thousands of years, Dioscorides (1st century), Ibn Sina, Ishaque bin Imran, Jalinus (131-210 AD), and Marwan bin Zohar, referred to akarkara in their books **[13]**.

**Cultivation:**

*Anacyclus pyrethrum* is cultivated in tropical altitudes from 1500 -3500 meters. Plants required dry to little soft sandy soil, rainfall 800-1300 mm, 15-25$C^0$ temperature, and sunny periods with rainfall for their cultivation **[14]**.

**Pharmacognostical Information:**

**Macroscopic description**:

The roots are stiff, cylindrical, 7 to 15 cm long, narrowing slightly at the upper and lower ends, with some hairy structures that may be called rootlets. On the top of the roots, there are remnants of leaves. The outer surface is brown, rough, and shriveled, and the outer bark is about 3 mm thick and difficult to separate. The roots also have a faint odour. *Anacyclus pyrethrum* (L.) - Plant and roots aromatic, taste, typically astringent and pungent, induces excessive salivation and tingling in the tongue and lips when chewed **[15]**.

**Microscopic description**:

The outer layer of a mature root consists of tabular-like cells, some of which have changed into sclerenchyma; in this part of the root there are Calcium oxalate crystals; the second layer is made up of thesaurus-walled parenchymatous cells which are tangentially elongated in shape; and some Sclerenchymatous cells are also scatted throughout the secondary cortex of the root; secondary phloem with cambium that is 2–5 layers thick and contains the regular elements **[16]**.

**Medicinal uses of part of anacyclus pyrethrum:**

**Table 1** summarises the different parts of the plants and their therapeutic uses.

**Identification, purity, and strengths [16]**:

**Table 2** summarises the ash value, foreign matter and extractive values

**Table 1: Medicinal uses of the *anacyclus pyrethrum***

| Plant part used | Mode of digestion | Therapeutic use | Reference |
|---|---|---|---|
| Root | Decoction | Dental pain, bellyache | 17 |
| Root | Infusion | Sore throats, skin revitalization | 18 |
| Root | Powder /Decoction | Respiratory diseases, inflammation of urinary and genital organs | 19, 20 |
| Root | fine powder | GIT oral disease, rheumatics, genitourinary, respiratory, and dermatitis disease | 21, 22 |
| Stem | Powder | Cyst in the reproductive system | 23 |
| Root | Decoction | Stomatitis and stomach disease | 24 |

**Table 2: Ash value, extractive value and foreign matter**

| | |
|---|---|
| **Total Ash** | **Less than 10%.** |
| **Acidic insoluble Ash** | **Less than 2 %** |
| **Foreign matter** | **Less than 2 %** |
| **Alcohol soluble extractive value** | **Less than 8 %** |
| **Water soluble extractive value** | **Less than 22 %** |

**Botanical classification: (Taxonomy)**

Kingdom: Plantae
Subdivision: Angiosperms
Division: Spermatophyta
Sub Class: Metachlamydae
Class: Dicotyledons
Order: Campanulate
Family: Asteraceae
Genus: *Anacyclus*
Species: *pyrethrum* **[25]**

**Important medicinal uses:**

The remarkable properties of anacyclus pyrethrum are marked as under

**Anaesthetic**:

The plant root extract act as a local anaesthetic **[26-28]**

**Sex stimulant**:

Akarkara extract expands the sex drive and stops ejaculation, **[29-31]**

**Analgesic:**

It acts as a pain killer and causes numbness **[28]**

**In arthritic and rheumatic conditions:**

Increasing circulation gives relief in rheumatic arthritis **[32]**

**bacterial killing and antiviral**:

Extract of the plant shows antiviral and antibacterial action, and because of that it keeps you safe from air and water-produced bacterial and viral infection **[33, 34]**

**Antimicrobial**:

It acts as an antimicrobial, by inhibiting microbial or biotic growth **[35]**.

**Diuretic:**

Akarkara root has diuretic properties because it increases the frequency and quantity of urination **[25, 36]**.

**Carmino**:

Akarkara root removes gases from the intestines.

**Anti-catarrhal**:

It throughout old catarrh **[25]**

**Absorption and digestive**:

The root of Anacyclus pyrethrum aids in promoting the production of saliva and various digestive enzyme it helps in proper digestion. It enhances saliva production, thereby assisting in the digestive process **[37, 38]**.

**Menstruation stimulant**:

It helps to overcome irregular, hold-up, and obstructed menstruation **[25]**.

**Nervous:**

The plant root is popular for nervousness and neurotic.

**Endocrine function**:

*Anacyclus pyrethrum* root with ether extract increased the level of testosterone in sexual behaviour in male rats.

**Aphrodisiac:**

The sperm count increased by about 55 to 57 % in all experimental groups **[31]**

**Toothache:**

The plant root powder with camphor helps with toothache **[7]**.

**Phytochemistry and chemical composition:**

The process of screening and identifying bioactive compounds with medicinal properties in plants involves the detection of various substances like alkaloids, tannins, flavonoids, and reducing compounds. In the case of the root of *Anacyclus pyrethrum*, significant medicinal compounds include pellitorine **(Figure 2)**, anacyclin, sesamine, phenylethylamine, polyacetylenic amides I-IV, and inulin **(Figure 3)**.

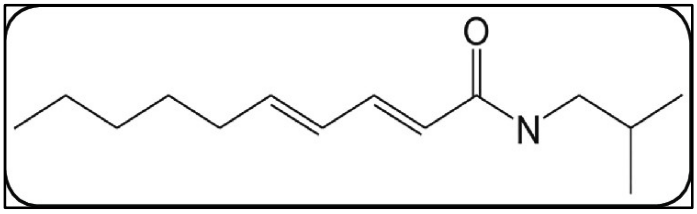


**Figure 2: Structure of pellitorine**

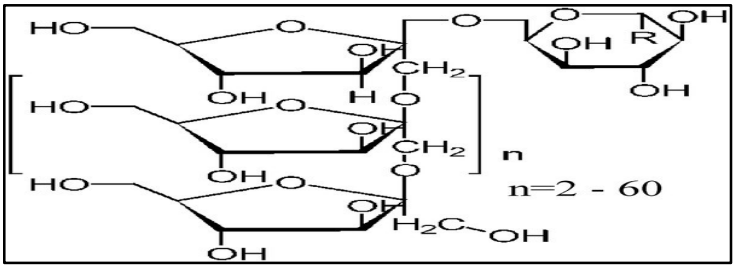


**Figure 3: Structure of inulin**

**Volatile oil present in anacyclus pyrethrum**:

The major volatile compounds are caryophyllene oxide (13.20%), 8(15)-diene 5α-ol (7.30 %), Spathulenol **(Figure 4)** (20.47 %), germacrene-D (16.48%), 4-(14)-salvial1one (8.27%), and caryophyllene-4 **[14]**.

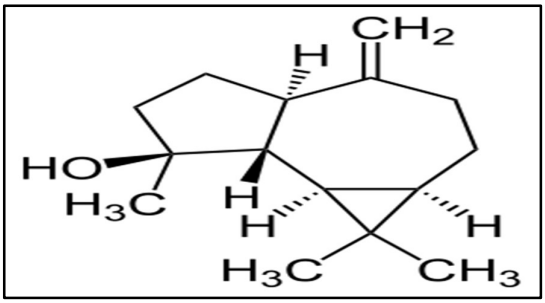


**Figure 4: Structure of Spathulenol**

**Non-volatile oil present in akarkara**:

Anacyclus pyrethrum contains important chemical constituents like catechins, coumarins, gallic acid, triterpenes, tannins, sterols, and holocides **[40-43]**. The flowers of *Anacyclus pyrethrum* contain higher amounts of flavonoids and polyphenols compared to its leaves and roots. Additionally, trace minerals such as iron (Fe), cadmium (Cd), nickel (Ni), zinc (Zn), chromium (Cr), lead (Pb), and copper (Cu) have also been identified in the plant **[43]**. Roots are reached in alkaloids and the most valuable compound observed are the bioactive compounds n-alkyl amides brown acrid resin, anacycline, phenylethylamine, trace tannic acidic, inulin, gum, polyacetylenic amides, sesamin and lignin **[25, 42]**. The authors found a combination of isobutyl amides of unsaturated acids on the crystalline parts of the roots, with decadine playing a significant role. In a similar vein, acid hydrolysis, and hydrogenation, reverse phase chromatography can be used to separate the decanoic, dodecanoic, and tetradecanoic acids that are fabricated by the radicals **[43]**. Naturally occurring six chemically related esters, including three chrysanthemum acid esters those are Jasmolin I, Spyrethrin I, and Cinerin I, and three pyrethrins those are jasmolin II, pyrethrin II, and Ciner II) present in the roots in the study, alcohol fractions such as pyrethrelone, cinerolone, and jasmolone were identified in pyrethrins 1 and 2, cinerin 1 and 2, and jasmolin 1 and 2, respectively **[44]**. These compounds were found to be present in the samples examined. Pillitorin, alkaloids, tannins, flavonoids, triterpenes, steroids, oils, saponins, anthraquinones, amino acids, and reducing sugars have been identified in the ethanolic extracts obtained from the roots, stems, and leaves **[45]**. The analysis encompassed various extracts, including aqueous and methanolic extracts **[42]**, ethanolic and aqueous extracts **[21]**, and aqueous and methanolic extracts derived from exposed roots **[46]**. Utilizing HPLC in conjunction with UV identification and electrostatic spray ionization tandem mass spectrometry (HPLC/UV/ESI-MS), the ethanolic extract of dried roots, which contained n-alkylamides, underwent examination, leading to the discovery of 13 chemicals **[37, 47]**. Within this group, six compounds are considered to be novel: Tetradeca-2E,4E, XE/Z-trienoic acid tyramide, Tetradeca-2E,4E, diene-8,10-diynoic acid tyramide, tetradeca-2E,4E, XE/Z, YE/Ztetraenoic isobutyl amide, and deca-2E,4E-dienoic acid-n-methyl isobutyl amide **[47]**. Pyrethrine is a compound obtained from the root of anacyclus pyrethrum, it has a molecular formula and molecular weight $C_{43}H_{56}O_8$ and 328.4 g/mol. Pyrethrine belongs to species in the family Compositae and is used with the potential to treat various

types of multiple drug resistance bacterial infection as well as fungal infection. It also inhibits the acetylcholine esterase enzyme **[48]**.

The alcoholic extract obtained from the roots underwent analysis using high-performance thin-layer chromatography (HPTLC), enabling the identification of various components, including picric acid, HNO3, CH3COOH, H2SO4, HCl, ferric chloride, aqueous KOH, alcoholic KOH, ammonia solution, and iodine solution. Furthermore, gas chromatography-mass spectrometry (GC-MS) was employed to identify additional compounds in the ethanolic extract from the same plant part. These compounds encompassed palmitic acid, 9,12-octadecadienoic acid (Z, Z)-, naphthalene, decahydro-1,1-dimethyl-, 7-tetradecenal (Z)-, n-isobutyl-tetradeca-2,4-dynamite, benzofuran 2-carboxaldehyde, and gamma-sitosterol **[49]**.

The roots of *A. pyrethrum* contain seven distinct alkamides that were identified using mass spectrometry (MS) and nuclear magnetic resonance (NMR) techniques **[50, 51]**. These alkamides comprise deca-2E,4E-dienoic acid and deca-2E,4E,9-trienoic acid isobutylamide, commonly known as pellitorine, deca-2E,4E-dienoic acid 2-phenylethylamide, tetradeca-2E,4E-diene-8,10-dienoic acid isobutylamide (anacycline), undeca-2E,4E-diene-8,10-diynoic acid isopentylamine, dodeca-2E,4E-diene-4-hydroxy-2-phenylethyl amideacid, and tetradeca-2E,4E,12Z-triene-8,10-dienoic acid isobutylamide **[50, 51]**. Additionally, through the application of column chromatography and HPLC techniques, a combination with two alkamides was identified: Deca-2E,4E-dienoic acid 4-hydroxy-2-phenylethylamide, and unDeca-2E,4E-dien-8,10-dienoic acid 2-phenylethylamide **[51]**.

**Extraction methods for Anacyclus pyrethrum include the following:**

**1. Infusion:**

10 grams of akarkara powder is mixed with 100 ML of boiling distilled water. The obtained solution is then allowed to steep for 15 minutes and filtered using Whatman paper No 1. The filtrate is then left at a temperature of 40°C **[33]**.

**2. Maceration:**

10 grams of powder are continuously stirred with 100 ml of distilled water at 150 rpm and at room temperature for 48 hours. The mixture is then filtered using Whatman paper, and the resulting extract is evaporated at 40°C **[33]**. **Figure 5** shows the extract obtained by maceration and Soxhlet extraction process.

**3. Ethanol extraction:**

100 grams of powdered akarkra (roots, seeds, capitula, and leaves) are macerated in 1000 ml of 70% ethanol for 48 hours at room temperature. The mixture is then filtered, and the solvent is evaporated at 40°C. The

resulting residue is stored at 4°C for further use **[45]**.


**Figure 5: Extraction by Maceration and Soxhlet extraction**

**4. Decoction:**

10 grams of hot akarkara powder are mixed with 100 ml of distilled water and boiled for 15 minutes. After allowing it to stand for 5 minutes, the extract is filtered, and the filtrate is left at a temperature of 40°C **[33]**.

**5. Using Soxhlet Apparatus:**

The dry root, stem, and leaf parts of akarkra are finely powdered using pulverization. These fine powders are successively extracted by using ethanol (80 $C^0$) as a solvent in the Soxhlet apparatus **(Figure 6)**. The solvent was evaporated by using vaccum distillation in a rotatory evaporator at a temperature of 60 $C^0$. The obtained extract was filtered by Whtatman No 1 and concentrated in a water bath to make a syrupy mass. The final substance is dissolved in appropriate solvents and stored in the refrigerator for next further use.

**Figure 6: Extraction by Soxhlet apparatus**

**Lyophilization Technique:**

The dried powder was used for cold maceration methanol as a solvent for 72 h in the shaker. The solvent was then evaporated by a rotatory evaporator to separate methanol to produce plant extract. The plant extract act is volatile.it is subjected to freeze dryer Lypolyser at 50 °C, which helps to produce a more solid form of the extract **[26]**.

**Toxicological parameter:**

Due to the presence of pyrethrin and anacycline, high doses cause nausea, discomfort, and cramps. isobutyl amide act as a sodium channel blocker and act as a nerve toxin. Hydroethanolic extract of different parts of akarkra is not toxic at low concentrations **[52]**.

**Phytochemical parameter and screening [33]:**

The obtained extract was subjected to phytochemical investigation to confirm the presence of the following phytochemicals Harborn 1998, Ade

**Detection of Alkaloids:**

**The Mayer Test:**

Add one or two drops of Mayer's reagent to the test tube's side after adding 5 ml of extract. The test is positive when a white, creamy precipitate forms.

**Dragendorff's Test:**

To perform Dragendorff's Test, 5 ml of the extract is combined with 1 or 2 ml of Dragendorff's reagent. If a visible yellow or orange precipitate forms, it indicates a positive result, indicating the success of the test.

**Detect saponins:**

To detect the presence of saponins in the AP plant extract, the extract was vigorously shaken with 8 ml of distilled water in a test tube for 30 seconds. The tube was then set aside without further disturbance for 20 minutes. If persistent foam forms during this time, it indicates the presence of saponins.

**Tannin detection:**

A yellow precipitate appeared when 3 ml of *Anacyclus pyrethrum* extract was mixed with 1% lead acetate, demonstrating the presence of tannins. Condensed tannins were present when 3 ml of extract was similarly treated with 3 ml of FeCl3, which caused a green tint to develop.

**Analysing anthocyanins:**

To identify the presence of anthocyanins, the anthocyanin-containing extract (3 ml) was mixed with 3 ml of 2N HCl and NH3. This resulted in the development of a pinkish-red color, which gradually transformed into a blue-violet shade. This color change confirms the presence of anthocyanins in the extract.

**Detection of Steroids:**

To detect steroids in the sample, 0.5 ml of the extract was mixed with 5 ml of chloroform in a test tube. Concentrated sulphuric acid was then added to the mixture from the side of the test tube. The formation

of a red and acidic layer at the surface of the upper layer indicated the presence of steroids, which was further confirmed by the appearance of a yellow color with green fluorescence.

**Detection of Flavonoids:**

A reagent test was performed for detecting the flavonoids, alkaline. 10% of NaOH solution was added to the extract which results in the formation of deep yellow colour. That is a positive test for the presence of flavonoids.

**Quantitative analysis of Extract:**

Folin-Ciocalteu method is applied in which 200 µI of 2 ml of distilled water and aqueous extract were combined following the addition of 1 mL of the Folin reagent (10 times diluted). The mixture was incubated for 4 minutes before the addition of 0.8 mL of sodium carbonate (7.5%), After 2 hours of the procedure, quantitative estimation of polyphenols was done, and the absorbance was observed at max = 765 nm. And the results were expressed in milligrams of gallic acidic equal to per gram of extract **[33]**.

**Phytochemical constituent of Ethanolic extract A. pyrethrum:**

Various phytoconstituents present in A. pyrethrum are presented in **Table 3**.

**Table 3: phytoconstituents present in A. pyrethrum**

| Phyto compound | Root extract | Stem extract | Leaves extract |
|---|---|---|---|
| Steroids | Validated test | Validated test | Validated test |
| Triterpenes | validated test | Absent | Validated test |
| Reducing sugars | Validated test | None | None |
| Sugars | validated test | Validated test | Validated test |
| Alkaloids | Validated test | Validated test | Validated test |
| Flavonoids | Validated test | Validated test | Validated test |
| Anthraquinones | Validated test | Validated test | Validated test |
| Amino acids | Validated test | Absent | Validated test |
| Saponins | Validated test | Validated test | Validated test |
| Tannins | Validated test | Validated test | Validated test |

**Pharmacological effect of Akarkra:**

It is a highly renowned medicinal plant, that has undergone extensive research to explore its diverse biological and pharmacological properties.

**Local Anaesthetic Activity of *Anacyclus pyrethrum***

Arvind Mohit *et al* in their study, 30 children were selected for the anaesthetic effect of plant root extract as compared to 2 % lignocaine gel. In the results, Akarkra extract showed effective and safe in reducing pain because of local Anaesthetic action **[53]**.

Kameshwaran and Ayyappadassan, the plant extract was used freeze dryer with methanol as solvent. A live fish model (Cyprinus caprio) was used for the local anaesthetic activity in six groups. The fish were given immersion anesthesia and showed result increases the recovery time increases dose extract. In group I with a

minimum dose of 150 mg/l extract concentration the recovery time was 1 minute, it increases 4 min with a maximum dose of 400 mg/l **[54]**.

Muralikrishnan *et al* 2017: In the study sample involved 30 guinea pigs with 1% and 2% ethanol extract shows significant local anaesthetic activity. Petroleum ether extract of the plant 1% and 2% shows an equal number of negative responses. 2% of aqueous extract showed a list number while 1% showed no loss of sensation. Results show 2% ethanol extract is more effective in the local anaesthetic activity of the plant as compared to other extracts. Analysis of histopathological examination showed no adverse inflammatory change as compared to normal tissue **[26]**.

Bhatt *et al* 2010: Conducted A experimental study on the frog, guinea pigs, and rabbits with an aqueous alcoholic extract of 2 % of akarkra roots. The results showed local Anaesthetic activity has a longer duration as compared to xylocaine. This was the initial exploration of the plant root extract's local Anaesthetic activity **[27]**.

V.K Patel *et al* 1992, Reported the local Anaesthetic activity in 200 dental patients in the alcoholic extract of the anacyclus pyrethrum root (2% alcoholic extract) with xylocaine. The extract was useful and safe at a low concentration of 2% and showed no side effects and act as long Anaesthetic activity as compared to xylocain **[28]**.

**Antidiabetic Activity:**

Shahraki *et al* 2019, performed a study on the plant root and observed that administration of the A pyrethrum root ethanol extract (96%) improved diabetic conditions in diabetic rats **[50, 55-57]**.

**Antioxidative Activity:**

The ethanolic extract of the plant shows antioxidant activity. Because of the presence of phytochemicals such as phenol, flavonoids alkaloids, and tannin according to Sujjith *et al*, 2011. In 2021 Suraj Gholap *et al* studied free radical scavenging ability by using DPPH (1-1 Diphenyl 2-picryl Hydroxyl) method. In 2017 Manouze *et al.,* checked the antioxidant activity of hydromethanolic and aqueous extract of the plant **[46, 58, 59]**.

**Antidepressant Activity:**

In 2010, S.R. Badhe *et al*., conducted an experimental animal investigation on antidepressants using various methodologies, including the tail suspension test, force swim test, locomotor activity, and haloperidol-induced catalepsy. By interacting with dopamine and adrenergic receptors, the Akarkara root produced an antidepressant effect, which led to a rise in noradrenaline and dopamine levels in the brains of experimental mice **[60]**.

**Activity Antimicrobial**:

The plant's roots have antibacterial action. By using the disc diffusion method, the bacteriostatic effect. The AP plant was examined in Conflict with 17 bacteria and 1 fungus. The results showed that, except for *E. faecalis* and *S. typhimurium*, plant roots have antibacterial action against all examined microbial species **[61, 62]**.

**Anti-inflammatory, Analgesic, and Healing with wound activity:**

*Anacyclus pyrethrum* plant shows Anti-inflammatory activity because of the presence of phytochemical flavonoids pellitorine and alkyl amides. In 2020 Jawhari Fatema *et al.,* performed an analgesic activity test using acetic acid and formaldehyde method. Healing activity performed in a rat model **[37, 63]**.

**Anticonvulsant Activity:**

The plant exhibits anticonvulsant properties, as demonstrated by various studies. Recent research indicates that both aqueous and alcoholic extracts of the plant, administered at a dose of 500 mg/kg, effectively delayed the onset of seizures in the experimental group compared to the control group. Additionally, the petroleum ether extract of the plant has demonstrated significant protective effects against seizures induced by pentylenetetrazole. In 2019, scientists employed a mouse model of epilepsy induced by pilocarpine to showcase the plant's efficacy in preventing convulsions **[64]**.

**Aphrodisiac Activity:**

The root of the plant exhibits aphrodisiac activity, as evidenced by multiple studies **[30, 31, 65]**. In an experimental study, it was observed that the aqueous extract of the plant root increased body weight enhanced reproductive organ development, and reduced abnormal sperm count in rats **[29]**. Another study conducted by Sharma *et al* . revealed that the aqueous extract from the plant root elevated fructose levels and sperm count in rats, thereby improving the sexual health of male rats **[30]**.

**Additional Ventures**: Various studies have reported that extracts derived from the plant root exhibit a range of pharmacological activities, including memory-enhancing effects, hormone interactions, anticancer properties, hepatoprotective activity, neuropharmacological effects, immunostimulant and immunomodulatory actions, antibacterial properties, effects on COX and LOX enzymes, as well as insecticidal activity **[24, 39, 65-67]**.

**CONCLUSION:**

The present review literature explores the botany, history, important medicinal use, pharmacological activities, phytochemistry, and toxicity of one of the most important plants used in medicine *Anacyclus pyrethrum* of the *Asteraceae* family was studied. Some important Therapeutic activities like antidiabetic, Oxidative damage protector, anti-inflammatory

remedies, aphrodisiacs, anti-depressive agents, anticonvulsants, and local Anaesthetic. The review also gives methods of extraction, microscopical macroscopical observation, and strength and purity of the plant, which will be helpful for the identification and standardization of Anacyclus pyrethrum. The present review focus on the local anaesthetic action of the root of Anacyclin pyrethrum, thus it may be helpful for further dosage form development for its local anaesthetic activities.

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