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Comprehensive Study of Anacyclus Pyrethrum

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ABSTRACT:-
Anacyclus pyrethrum(A.Pyrethrum) is used in traditional medicines. The herb know as akarkara (Anacyclus pyrethrum) is used in conventional medicines and has a wealth of phytochemicals such as phenols and flavonoids. Akarkara is common brand name for supplements made from Anacyclus pyrethrum, but other name like pellitory roots are also used. Shodhal Nighantuhas described firstly Akarkara as one of the potent drug. Here an attempt is made to review that Anacyclus pyrethrum shows Anti-inflamatory activity in Rheumatoid Arthritics.

Key Words:- Anacyclus pyrethrum; phytochemicals; Anti-inflamatory; Anti-arthritic; activities.

I. INTRODUCTION:-

- Plant profile
- Botanical name :- Anacyclus pyrethrum,
- Synonyms :- Akarkara
- Kingdom :-plantae,
- Division :- spermatophyta,
- Sub-Division :-Angiosperms
- Class:- Dicotyledons,
- Sub-class :- Metachlamydae,
- Order:- Companulatae,
- Family :- Asteraceae,
- Genus :- Anacyclus,
- Species :- Pyrethrum

Anacyclus pyrethrum, a significant medicinal plant in the Asteraceae family, is also referred to as pellitory in English and Akarkara in Hindi. In Marathi, it is also known as Akkiramkaram. According to the traditional medical system, the plant's roots offer good therapeutic effect. Another name for it is the African pyrethrum. North Africa, the Himalayas, North India, and other Mediterranean nations should all have it. Kenya is the world's top producer of pyrethrum extract, accounting for around 70% of global consumption. Tasmania, Tanzania, and Rwanda are other major pyrethrum-producing countries. The root of A. pyrethrum has chemical compounds that have been recommended for the treatment of toothaches, angina, lethargy, anti-inflammatory, and limb and tongue paralysis.

Fig. a) Anacyclus pyrethrum flowers

Fig. b) Anacyclus pyrethrum root

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- **Herbal drug :-**

Herbal drugs are derived from plants or their parts by converting them into pharmaceutical through simple process like harvesting, drying, and storage. Herbal medicine has been used for thousands of years. It is herbal drugs are derived from plants or their parts by converting them into pharmaceutical through simple process like harvesting, drying, and storage.

Herbal medicine has been used for thousands of years. It is estimated that 80% of world population rely on traditional herbal medicine for primary health care. In recent years, herbal remedies have been considered as dietary supplement for disease prevention and as alternative/complementary medicine. A wide variety of herbal medicines are readily available in the market all over the world. With the rising utilisation of herbal products, safety and efficacy of herbal medicine have become a public health concern. Adverse health effects associated with herbal products could be attributed to both inherent toxic effects of herbal medicine and toxicities induced by adulterants/contaminants.

Increasing evidence, regarding side effects of herbal medicine, has highlighted the demand and necessity of toxicological studies for herbal products. Toxicology constitutes an essential role in the development of herbal medicines.Estimated that 80% of world population rely on traditional herbal medicine for primary health care. In recent years, herbal remedies have been considered as dietary supplement for disease prevention and as alternative/complementary medicine.

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- **Present Interest in Herbal Drugs :-**

Herbal medicine is considered by many to offer an alternative treatment for various diseases, particularly lifestyle diseases that require lifelong pharmaceutical medication and thus raises safety concerns. It is also believed by traditional medical practitioners that the phytoconstituents present in herbal medicine have better compatibility with the human system. Phytochemicals present in herbs are being actively investigated for direct use as therapeutic agents and as prototype lead compounds for the development of new synthetic or semisynthetic drugs.

The availability of high-throughput screening for target-based drug discovery, libraries containing a large number of highly pure phytochemicals, laboratory animal models simulating human diseases, profiling kits for drug toxicity studies, and bioinformatics database for long-term safety prediction have renewed research interest in herbal medicine globally towards the discovery of new drugs. Importance of herbal drugs and current status: The earliest evidence of human's use of plant for healing dates back to the Neanderthal period (Winslow and Kroll,1998). Herbal medicinal is now being used by an increasing 3 number of patients who typically do not report to their clinicians concomitant use (Miller, 1998).

There are multiple reasons for patients turning to herbal therapies. Often cited is a "sense of control, a mental comfort from taking action, which helps explain why many people taking herbs have diseases that are chronic or incurable viz. diabetes, Cancer, arthritis or AIDS. In such situations, they often believe that conventional medicine has failed them.

When patients use home remedies for acute, often self-limiting conditions, such as cold, sore throat, or bee siting, it is often because professional care is not immediately available, too inconvenient, costly or time-consuming.

- **Benefits of Ayurvedic herbs :-**

1.Balance your dosha's and provide complete relief from an existing illness.
2. They are treating as a whole individual, so this type of treatment can give you a side advantage to cure other health problems with the main disease.
3. It is a natural line of treatment with no or fewer benefits.
4. It improves vitality and provides strength.
5. They boost your immunity and increase your natural power of healing

- **Chemical constituents :-**

The Anacyclus pyrethrum variation contains phytochemicals such as flavonoids, coumarins, alkaloids, and tannins. Sterols,

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unsaturated amides, and free fatty acids are all present in the root extract. Sesamin, pyrethrins, inulin, phenylethylamine, anacyclin, pellitorin, and polyacetylenic amides. Akarkara's phytochemical screening reveals the presence of proteins, amino acids, and carbs.

- **Botanical Aspects :-**

1.1Morphological Aspects :-

A. pyrethrum is a 40–60 cm tall perennial plant that belongs to the Asteraceae family. Numerous simple or small branched steams that emerge from the ground and bear delicate, hairy leaves with a final cut are indicative of this plant. Its yellow-hearted bloom features purple petals on the surface and white ray blossoms inside. The long, thick, fibrous roots are dark on the outside and white inside.

1. 2 Taxonomy and the geographical distribution :-

Algeria and Morocco are home to the endemic species A. Pyrethrum, which belongs to the Asteraceae family. It is native to Algeria, Morocco, and India, according to certain writers. The Mediterranean region, India, and North Africa are the most common locations for A. Pyrethrum. Another account claims that the species is widespread in China's Xinjiang province, North Africa, and central Asia.

- **Traditional Use : -**

A. Pyrethrum is used to treat a variety of illnesses, including rheumatism, gastrointestinal, dental, respiratory, genitourinary, and skin conditions.

Table 1:- Several traditional uses of the A. Pyrethrum

Part used	Preparationmode	Medicinal Uses
Stem	Powder	tumors of the reproductive system
Root	Decoction	Diseases of the stomach
Root	Powder	Skin, genitourinary, respiratory, gastrointestinal, dental, rheumatic, and dermatitis conditions
Root	Decoction/powder	Colic, intestinal pain, tooth pain, and articular rheumatism
Root	Decoction/infusion	Teethaches, sore throats, and skin renewal
Root	Decoction/powder	respiratory conditions, stomatitis, urinary and genital organ irritation, and osteoarthritis

- **Pharmacognostical study of Akarkara root :-**

Kumar K (2016) was conducted a study on Pharmacognostical studies in which he told that Aqarqarha is a perennial herb. The root of Aqarqarha is brown in color, cylindrical in shape, aromatic in odtast and pungent in taste. The stems are numerous, branched, run prostrate, upper part more hairy then lower and arise from the root crown. The taper vertical root is about 7-15 cm long with few hairy rootlets and surface rough, brown, wrinkled and about 3 mm thick bark.

The author was also mentioned the physiochemical properties of Aqarqarha root . Munna K., et al (2016) was mentioned a Pharmacognostical studies in which he told that mature root has cork composed of tubular cells and rosette crystals of calcium oxalate found in inner cork cells. Secondary cortex made up by iso-diametric, elongated and thin wallparenchymatous cells with few scattered cell of sclerenchyma.

Secondary phloem consist of 2 -5 layers of cambium while secondary xylem consist of vessels, tracheids and parenchyma. Numerous medullary run straight from primary xylem to secondary cortex, the secondary cortex cell, secondary phloem cell and medullary rays' posses Inulin with scattered resinous schizogenous glands.

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Rosette form of calcium oxalate crystals found in secondary cortex cell, secondary phloem cell, secondary xylem and medullary rays cells.

Extraction Method :--

Method 1

1) The roots were isolated from the plant's aerial portions and allowed to dry in a shaded area.
2) A grinder machine was used to grind them into a fine powder.
3) 20 ml of distilled water was combined with 1 gram of root powder and left at room temperature for 24 Hrs.
4) For 15 minutes, the aqueous macerate was centrifuged at 1200 rpm.
5) Before being used in the experiment, the supernatant was frozen at 20°C after being lyophilized (yield=20% w/w).

Method 2

1) In order to prepare the methanol extract, 400 g of APR powder was thoroughly extracted using methanol in a soxhlet equipment.
2) Using a vacuum, the methanol extract was dried out. Before being used in the experiment, the residual (21.8% w/w) was kept for many months at 20°C.

- **Phytochemical screening of APR Extracts :-**

The following chemical tests are used to qualitatively assess the content of flavonoids, alkaloids, terpenoids, tannins, and saponins in the aqueous and methanol extracts of APR.

Test:-

1) Test for Alkaloids:-

For 15 minutes, 50 ml of sulfuric acid (0.1N) was mixed with 50 mg of APR extract. A 5 ml concentrated ammonia solution was added to the solution following filtering. 50 ml of dichloromethane were then used to extract the alkaloids. The residue was dissolved in one ml of methanol following the organic layer's evaporation under vacuum. When a few drops of Dragendorff reagent were added to the solution, the precipitate that formed was interpreted as a sign that alkaloids were present.

2) Test for flavonoids:-

After evaporating 2ml of APR extract, the residue was absorbed in 5 ml of 50% alcohol and 1 ml of strong hydrochloric acid. The presence of flavonoids was indicated by the red color that developed after a few magnesium chips were added.

3) Test for terpenoids:-

1 ml of APR extract was mixed in a few drops of acetic acid in 3 ml of the combination (sulfuric acid 50:1v/v acetic anhydride).The green hue that formed indicated the presence of terpenoids.

4) Test for tannins:-

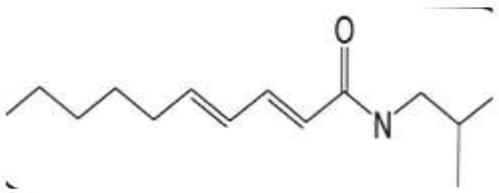
5 ml of APR extract were dissolved in 20 ml of distilled water and heated to a boil on a hot plate. A green tint appeared when a few drops of a ferric chloride (9%) aqueous solution were added, indicating the presence of tannins.

5) Test for saponins:-

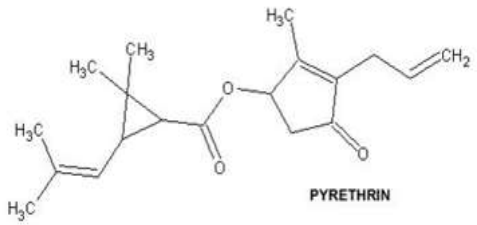
In a test tube, 50 mg of APR extract was dissolved in 10 ml of distilled water. After 15 seconds of vigorous shaking, the tube was left to stand for another 15 minutes. The existence of saponins is indicated by the presence of stable foam.

Structures :-

1) Pellitorin :-



2) Pyrethrine :-



- **Benefits of Akarkara in Rheumatoid arthritis Ayurvedic view**

Akarkara could be helpful in the treatment of arthritis. Akarkara helps to improve blood circulation and is high in antioxidants. Consequently, it aids in the management of arthritic pain and inflammation.

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- **Isolation of major compounds:-**

The primary active components of the MCF were separated and their distinct biological potentials evaluated by means of stringent chromatographic fractionation and purification. These were later validated through thorough ADME testing. Four chemicals (A1–A4) were isolated and identified using physiochemical characteristics, NMR spectroscopy, and comparison with previous research. A1: 9-cis-octadecenamide (oleamide); A2: stigmasterol; A4: isobutyl-amide of deca-2E, 4E dienoic acid (pellitorin); and 3-phenylethyl amide of 2E, 4E-deca-2, 4 dienoic acid.

- **Anti-inflamatory activities of isolated compounds (A1 - A4)**

The in vitro inhibitory effects of the separated substances on the inflammatory enzymes COX-2 and 5-LOX were evaluated. The isolated compounds showed remarkable COX-2 inhibitory effects ranging from 5.11±0.12 to 10.79± 0.15 um when compared to the standard Celecoxib. The isolated compounds also showed high 5-LOX inhibitory potentials, ranging from 7.280±0.27 to 12.18±0.12 um, when compared to the standard zileuton.

Interesting. After A3 and A1, A2 showed the largest inhibitory effects on COX-2 and 5-LOX, but A4 had the least effect on the enzymes being evaluated.

Our findings are corroborated by several studies that show the anti-inflammatory qualities of oleamide, stigmasterol, and alkylamides. This study looks at the compounds' anti-inflammatory qualities and comes to the conclusion that they could be able to combat inflammation, which makes AD worse.

- **Anacyclus pyrethrum in rheumatoid arthritis treatment :**

The anti-inflammatory qualities of Anacyclus pyrethrum can help reduce rheumatoid arthritis-related joint pain, stiffness, and edema. Alkamides and flavonoids, two of the plant's bioactive constituents, are thought to have anti-inflammatory properties by changing the inflammatory pathway and lowering the body's synthesis of pro-inflammatory molecules.

Additionally, it has been demonstrated that Anacyclus pyrethrum possesses analgesic qualities, which may aid in easing the pain that comes with rheumatoid arthritis.

The plant may lessen joint pain by interacting with pain receptors and preventing pain impulses. Additionally, the immunomodulatory properties of Anacyclus pyrethrum may help those with rheumatoid arthritis.

Plant components have the ability to modulate the immune response, including the reduction of cytokines and immune cells, which reduces inflammation in rheumatoid arthritis.

Although Anacyclus pyrethrum may be used as a natural remedy for rheumatoid arthritis, it should not be utilized in place of conventional medical treatment.

Under a doctor's supervision, it can be taken in addition to traditional therapy. To validate the safety, effectiveness, and ideal dosage of Anacyclus pyrethrum in the treatment of rheumatoid arthritis, more investigation is required, including carefully considered clinical trials.

- **Interactions with drug**

Information about how Akarkara interacts with other medications is lacking. Paritisients are therefore Information about how Akarkara interacts with other medications is lacking. Patients are therefore advised to discuss its uses with their doctors if they are taking any other drugs or supplyments.

- **Precautions to Take with Akarkara**

Its use in pregnant and nursing women has not been the subject of any safety investigations. Thus, it should only be used under a doctor's supervision and advice. No safety research has been done on its use in youngsters.

Use Akarkara to enhance the health of your digestive system. In order to improve digestive health, akarkara root may assist increase and stimulate the release of saliva and other digestive liquids. Additionally, because of their carminative properties, they may make gas flatulence easier.

- **Allergy**

According to contemporary science, individuals who are allergic to chrysanthemums, marigolds, daisies, and other plants in the same family may also be allergic to akarkara. Therefore, if you have an allergy to any of the Asteraceae, it is best to speak with your doctor before taking Akarkara.

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1.2 RHEUMATOID ARTHRITIS :-

The history of clinical description of rheumatoid arthritis :-

The 1800 dissertation of Augustin Jacob Landré-Beauvais contains the first description of RA recognized by contemporary medicine. When Landré-Beauvais first noticed the symptoms of what is now known as RA, he was just 28 years old and a resident physician at the Saltpêtrière facility in France.A few patients who experienced excruciating joint pain that could not be attributed to other then-known conditions (such "rheumatism" or osteoarthritis) were examined and treated by him.

In contrast to gout, this disease mostly affected the poor, disproportionately impacted women, and was previously ignored by other medical professionals who preferred to treat more affluent patients since they were more concerned with being recognized and compensated for their work.

He named the ailment Goutte Asthénique Primitive, or "Primary Asthenic Gout," since he thought these people had an unidentified illness. Even though Landré-Beauvais was incorrect to categorize RA as a gout-related condition, his dissertation inspired other scholars to examine this matter further.

In the research of RA.3–5, Alfred Garrod, an English physician from the middle to late 19th century, was the next important player. Alfred Garrod made the initial distinction between gout and other arthritic conditions.

He discovered that people with gout had higher blood levels of uric acid than people with other types of arthritis.3, 5 These findings are covered in depth in Alfred Garrod's 1859 Treatise on the Nature of Gout and Rheumatic Gout. In this book, he distinguished between gout and arthritis, classifying RA as a separate illness that he called "Rheumatic Gout."

Alfred laid the groundwork for research on the causes of RA (rheumatic gout) when he showed that gout patients had greater blood uric acid levels than those with other forms of arthritis.3, 5 Alfred Garrod's 1859 Treatise on the Nature of Gout and Rheumatic Gout goes into detail about these findings. He made a distinction between gout and arthritis in this publication, and he categorized RA as a distinct condition that he named "Rheumatic Gout."

It must have a unique cause if it can be distinguished from gout and other types of arthritis. Alfred Garrod's fourth son, Archibald Garrod, also studied RA. He penned the lengthy Treatise on Rheumatism and Rheumatoid Arthritis in 1890.

In this paper, he created the name "rheumatoid arthritis" to describe the condition that Landré-Beauvais initially identified and that his father later called "rheumatic gout". In the nine decades since its discovery, the same illness has been referred to by over a dozen names.

The term "rheumatoid arthritis" was chosen by Archibald Garrod because it more accurately described the disease's effects on the body. They also looked over his treatise. Archibald Garrod's history of RA.6 states.

He is making reference to the remains of prehistoric skeletons discovered all across the planet. He claims that bones from ancient Egypt, skeletons from a Pomeranian cemetery (close to the Polish-German border), bones from the Pompeii ruins, and even the remains of a Norse Viking discovered inside his warship all had skeletal degradation suggestive of RA.6.

Unfortunately, Archibald Garrod's paper simply mentions these statements without going into detail about the precise proof. According to Archibald Garrod's paleopathological assertions, RA was not a modern illness but rather a problem for our ancestors. The Ancient Origin school of view about the origins of RA is based on his research.

In the 20th century, American physician Charles Short attempted to refute Archibald Garrod's Ancient Origin theory and contested Garrod's statements about paleopathology.

Short examined the original paleontological works referenced in Archibald Garrod's Treatise and discovered that the skeletal samples supported the diagnosis of gout, osteoarthritis, and ankylosing spondylitis.

However, he was only able to locate unexplained allegations of RA rather than a conclusive diagnosis. Short argued that RA was a modern disease and that Archibald Garrod's beliefs were absurd because there was no evidence to the contrary .

7 Short's study is most frequently attributed with creating the Recent Origins theory of RA, even though other people had previously investigated related ideas. Both sides of the Ancient Origins vs. Recent Origins controversy continue to provide evidence to back up their positions.

- **Introduction to Rheumatoid arthritis :-**

Synovitis is the primary sign of rheumatoid arthritis, an autoimmune inflammatory

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illness. It is prevalent among women in their 30s to 50s, with a frequency of 1 in 150.

Joint pain, stiffness, oedema, and multi-organ diseases are associated with it.Once joint degeneration starts, it advances quickly, leading to the afflicted joints' irreversible physical dysfunction and deformity.

As a result, early in the illness's course, accurate diagnosis and therapy are necessary.

The Greek word for "rheumatism," which dates back 2,500 years, means "flowing current," which describes how the affected joints travel throughout the body.

There has long been a cure for this disease, which has afflicted humanity for a very long time. A 2,500-year-old document states that consuming an infusion of European white willow bark lessens discomfort.

In the second part of the 20th century, rheumatoid arthritis was recognized as an inflammatory condition that mostly showed up as polyarthritis.

Immunosuppressive drugs were then employed to decrease, restore, and regulate disease activity.

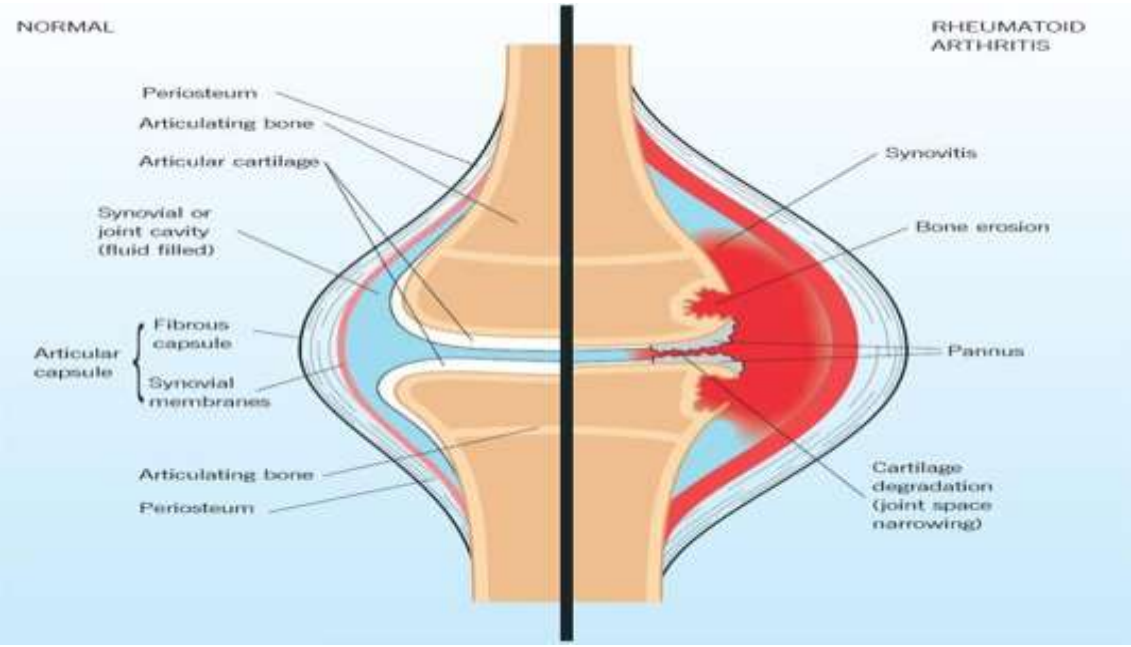

Fig :- Rheumatoid arthritis bone

- **Pathophysiology :-**

A genome-wide investigation of single nucleotide polymorphisms in RA patients revealed that the human leukocyte antigen D-related B1 gene (HLA-DRB1) is the most important gene that is prone to RA. Apparently, other genes were linked to the illness. The genes for C-C motif chemokine ligand 21 (CCL 21), cytotoxic T-lymphocyte antigen-4 (CTLA4), peptidyl arginine deiminase 4 (PADI4), TNF alpha induced protein 3 (TNFAIP3), signal transducers and activator of transcription 4 (STAT4), and protein tyrosine phosphatase non-receptor type 22 (PTPN22) are among them.

Japanese people have two haplotypes of the PADI4 gene: those who are susceptible to the illness and those who are not. It is believed that the messenger RNA generated by the disease-sensitive gene is stable.

Because anticyclic citrullinated peptide (anti-CCP) antibodies are highly disease specific, their presence increases the risk of bone or cartilage degeneration in patients.

However, smoking, gingivitis, and gut bacterial flora are examples of common environmental variables that can alter the epigenome and demethylate DNA and histones, which can result in the release of proinflammatory cytokines. However, no specific autoantigen has been connected to rheumatoid arthritis.

Epigenetic alterations that decrease immunological tolerance to antigens are known to be caused by a confluence of genetic and environmental variables, as well as the citrullination of extracellular matrix components including fibrinogen and filaggrin.

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- **Symptoms of Rheumatoid arthritis :-**

The similar symptoms include joint pain and swelling, joint stiffness, insomnia, exhaustion, weight loss, and flu-like symptoms. An individual with rheumatoid arthritis has abnormal IgG antibodies in their blood. They respond to antigens by forming an antigen-antibody complex, which causes the synovial membrane to become inflamed and painful.

- **Self management of Rheumatoid arthritis :-**

Self-management techniques for chronic illnesses have grown in significance during the last 20 years. Programs for teaching self-management place a strong emphasis on the value of patient education in therapeutic and preventative health care initiatives.

They frequently incorporate organized educational opportunities that support individuals in embracing health-promoting habits. A range of disease-related skills, including problem-solving, decision-making, and communication with medical professionals, are commonly included in self-management therapy.

The goal of person-centred self-management therapies is to promote persons' active involvement in order to manage their symptoms and improve their overall well-being.

Three primary subjects are covered in self-management training programs: psychosocial counseling, behavioral change (skills development), and information exchange. The diagnosis and symptoms of the illness are explained, and self-management skills training is given to help control the symptoms.

It is anticipated that the participants will actively engage in these trainings. In educational groups, self-management skills are taught through roleplaying and observation. People receive training on joint protection, fatigue management, exercise, pain-related issues, and sleep adjustment, all of which are tailored to their unique needs. Psychosocial counseling can help people cope with arthritis and feel more confident in their ability to function, allowing them to lead a socially active and useful lifestyle. The self-management program must be evaluated as the initial step.

- **Risks factors of rheumatoid arthritis :-**

A variety of diseases, such as cardiovascular, pulmonary, and many types of cancer, have been connected to cigarette smoking. The strongest environmental risk factor for the development of RA is also believed to be this one. For the first time, Vessel et al. (1987) found that smoking was a substantial risk factor in the pathophysiology of RA. After this initial study, several populations' associations between smoking and RA were examined and validated.

According to research, heavy smokers were more likely to acquire RA than either non-smokers or lighter smokers (Karlson et al., 1993; Heliovaara et al., 1993; Uhlig et al., 1999; Criswell et al., 2002; Padyukov et al., 2004; Karlson et al., 2010; Symmons et al., 1997).

The risk of RA was 18%, according to the Iowa Women's Health Study (IWHS), a large study on Caucasian smokers. Therefore, stopping smoking can prevent one in six new cases of RA, which can be caused by smoking (Criswell et al., 2002). Additionally, studies have shown that long-term cigarette smoking increases the incidence of RA (Stolte et al., 2003).

Smoking and the prevalence of RA were found to be closely related in the Nurse's Health investigation (NHS), another large prospective investigation. According to this study, heavy smokers with over 40 years of smoking history had a twofold higher risk of developing RA compared to controls who do not smoke (Costenbader et al., 2006).

It was also looked into how smoking, genetic factors, and RA risk were related.

1) Alcohol :-

It has been proposed that moderate alcohol use can postpone the onset of RA, according on research on the association between alcohol use and RA risk. Alcohol use has been found to be negatively correlated with the risk of rheumatoid arthritis (Hazes et al., 1990; Maxwell et al., 2010). Alcohol use reduces the chance of developing ACPA-positive RA, according to a Danish study (Pedersen et al., 2006).

In two different case-control populations—a Danish CACORA (a case-control study on RA) and a Swedish EIRA (an epidemiological study of rheumatoid arthritis)—alcohol usage was found to have a dose-dependent effect on RA risk reduction.

They discovered that control individuals drank alcohol at a higher rate than victims. People who drink the most (≥drinks or 80g ethanol per week) had a 40% to 50% lower risk of developing RA than people who drink less or not at all (<0.5g ethanol per week) (Kallberg et al., 2009).

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2) Smoking :-

A variety of diseases, such as cardiovascular, pulmonary, and many types of cancer, have been connected to cigarette smoking. The strongest environmental risk factor for the development of RA is also believed to be this one. Vessey et al. (1987) reported smoking as a major risk factor in the pathophysiology of RA for the first time**.**

The link between smoking and RA was examined and validated In multiple groups after the initial publication. (Karlson et al., 1993; Heliovaara et al., 1993; Symmons et al., 1997; Criswell et al., 2002; Padyukov et al., 2004; Karlson et al., 2010; Uhlig et al., 1999) Heavy smokers were found to have a higher risk of having RA than either non-smokers or heavy smokers.

In a large study of Caucasian smokers, the Iowa Women's Health Study (IWHS) found that the risk of having RA was 18%. According to Criswell et al. (2002), smoking can be the cause of one out of every six new cases of RA, which can be prevented by giving up smoking.

Additionally, studies have shown that smoking cigarettes for longer periods of time increases the likelihood of developing RA (Stolte et al., 2003). The Nurse's Health trial (NHS), another prospective trial, discovered a comparable linear association between smoking and the prevalence of rheumatoid arthritis.

- **Clinical Manifestation :**

1) Swelling
2) Stiffness
3) Pain in joints
4) Loss of mobility
5) Inflammation

II. CONCLUSION :-

This study was suggested that Anacyclus pyrethrum decreased activity of cyclogenase and 5 lipoxygenase pathways through isolated alkamides and showed anti inflammatory action . Studies have shown that Anacyclus pyrethrum may be useful in treating pain and inflammatory disorders in humans. Studies have shown that extracts of Anacyclus pyrethrum can inhibit pro-inflammatory markers like cytokines and enzymes by up to 98%.

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This study was suggested that Anacyclus pyrethrum decreased activity of cyclogenase and 5 lipoxygenase pathways through isolated alkamides and showed anti inflammatory action . Studies have shown that Anacyclus pyrethrum may be useful in treating pain and inflammatory disorders in humans. Studies have shown that extracts of Anacyclus pyrethrum can inhibit pro-inflammatory markers like cytokines and enzymes by up to 98%.