IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 3, June 2025
Impact Factor: 7.67

Formulation and Evaluation of Herbal Cream For Rheumatoid Arthritis

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Abstract: *Osteoarthritis, also known as degenerative joint disease is the most common from of Arthritis. The most common types are astearthies & rheumatoid arthritis both osteoarthritis. A is bio- mechanical and inflammatory disease influenced several factors such as mechanical &by oxidative stress injury, age, obesity, and metabolic disease OA is characterized by joint cartilage degeneration, changes in the underlying bone, and novitiates, pro-inflammatory and pro-carbolic mediators are found localized in Synovial fluid and such as matrix metalloproteinases, are associated with cartilage degeneration. The use of herbal medicine in the treatment of RA is as old as humanity and civilization..*

Keywords: Rheumatology osteoarthritis, cartilage degeneration.pro-carbolic mediators, humanity

OBJECTIVE;-
Rheumatoid arthritis (RA) is a chronic autoimmune disease that causes pain, swelling, and stiffness in the joints. The primary objectives of managing RA include[1 2]:
- Reducing Joint Pain and Swelling: To minimize discomfort and maintain joint function.
- Slowing Disease Progression: To prevent or delay joint damage and deformities.
- Improving Quality of Life: To enable individuals with RA to lead active and fulfilling lives.

I. INTRODUCTION

Arthritis is common health issue that affects millions of people in the united State patients suffering from Arthritis. struggle with several joint pain & nearly half of all adults with arthritis experience persistent pain more than 100 types of arthritis have been identified Two of the most common types are astearthies & rheumatoid arthritis both osteoarthritis. and rheumatoid arthritis impair joint Structure and function but differ in symptoms. pathophysiology and treatment.

Pathophysiology of Rheumatoid Arthritis:

Chronic inflammatory disorder of autoimmune origin principally attacks the joints, producing a non-suppurative proliferative and inflammatory synovitis articular lesions distribution of the articular cartilage and in some causes ankylosis of the joints, Extraarticular lesions may occurs in the skin, heart, blood vessels, and lungs causes symmetrical polyarthritis affects several joints in pairs on both sides of your body.

• Epidermiology
• Etiology
• Morphology

DOI: 10.48175/568

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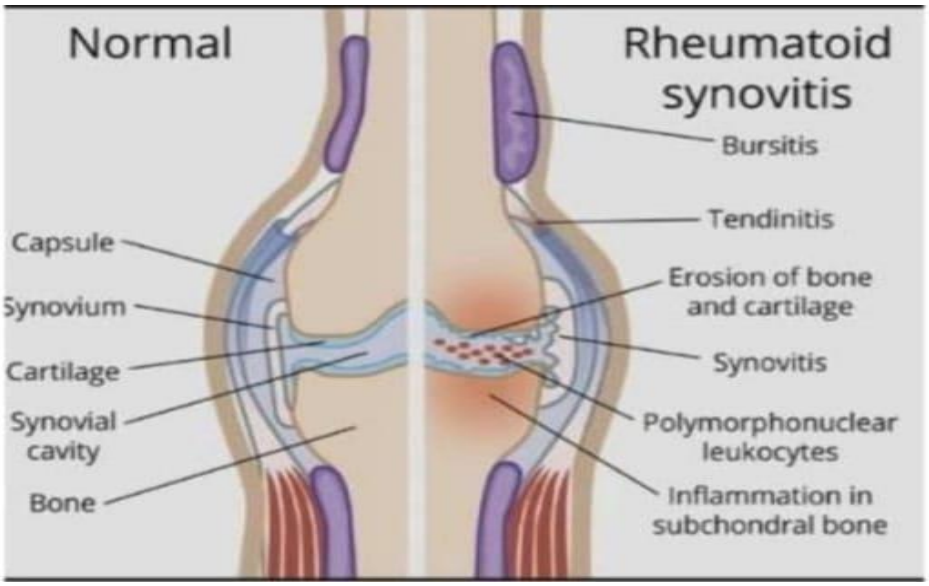

Fig. Pathophysiology of Rheumatoid Arthritis

Features Include:

1) Synovial cell hyperplasia and proliferation.
2) Dense inflammatory infiltrates of CD4 + helper T cells, B cells, plasma cells, dendritic cells, and macrophages.
3) Increased vascularity resulting from anti- agenesis.
4) Neutrophilis and aggregates of organizing fibrin on the synovial and joint surfaces.
5) Osteoclastic activity in underlying bone, allowing the home synovium to penetrate into the causing periarticular erosions and subchondral cysts.

Herbs used in Rheumatoid Arthritis:

1) Nirgundi:

Synonym: Chaste tree, man ching, Negundo, lengund.. Family:- Lamiaceae.

Biological Source: It is obtained from the leaves of plant Vitex Negunda.

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Chemical constituents:
Carbohydrates, sterols, C-glycosides, Flavonoids, Polyphenolic compounds, terpenoids, glycosidiaridoids & alkaloids, Casticin, Essential oil, Benzoic acids, vitamin-C, Flavones; 3P- Acetoryoleon-12-en-27-oic acid,2α,3α-diacetoxyyolean-5,12-dien-28-oic acid; 2β, 3α dihydroxyleara-5,12-dien-12-28-oic acid & 2α,3β-diacetoxy-18-hydroxyolean-5,12-dien-28-oic acid isolated from seeds.It is a hardy plant, flourishing mainly in the Indian region. It has analgesic, anti-bacterial and anti-inflammatory properties. It is useful in the treatment of fever, arthritis, headaches, swelling, digestion problems and mouth related problems. The Sub-effective dose of Nirgundi potentiated.

2) Gokhru Churna:
Synonym: Bada Gokhru (Big Gokhru) and Chota Gokhru (Small Gokhru), Brihat gokshur (Sanskrit), Bada goshur (Hindi) Yenugu palleru (Telegu), Puncture vine, Devil's weed, Large caltrops.
Family:- Tribulus terrestris or Zygophyllaceae.
Biological Source: The smaller or Chhota Gokhru is the dried ripe seeds of Tribulus terrestris Linn.

Chemical constituents:
Alkaloids 3.5%–5%, stable oil, aromatic oil, resins, glycosides, carbohydrates, saponins and triterpenoids. Stem: Saponins, herman, phytosterols, tannins and carbohydrates. Root: Reducing sugars, phenolic compounds, saponins, xanthoproteins, alkaloids, triterpenoids and flavonoids.

3) Liquorice:
Synonyms :- Sweet Liquorice, Radix alycyrrhizae. Family: - fabaceae.
Biological Source :-Liquorice consists of subterranean peeled and unpeeled tolons Roots and stems of glycyethica glabra Linn and other species of glycytthiza.Belonging to family Leguminosae

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Chemical constituent :-

Glycyrrhizaglabra (liquorice) is a herb belonging to the pea and bean family, liquorice is cultivatedfor its underground stems that are used to flavour confectionery; it is also valued for its medicinal qualities. In the traditional system of medicine, the roots and rhizomes of Glycyrrhizaglabra (Family: Leguminosae) have been employed clinically for centuries for their anti–inflammatory, antiulcer, expectorant, antimicrobial and anxiolytic activities. In modern medicine, liquorice extract has been used for peptic ulcer and as an alternative to bismuth that has a protective role against acid and pepsin secretions by covering the site of lesion and promoting the mucous secretion. There are many useful compound in liquorice root such as, glycyrrhizin and its aglycone, glycyrrhetinic acid wich are clinically used for hyperlipidemia. Liquorice flavonoid constituents mainly include flavones, flavonals, iso-flavones, chalcones, bihydro flavones and bihydro chalcones. A pharmacological investigation indicates that they have antioxidant, antibacterial and anti–inflammatory activities.

LITERATURE SURVEY:

1) Pravinkumar Kamble, Satish Kankarne, Akshay Katrajkar, Suraj Kedar, Prof. Ankita Bankhele, Dr. Rajesh Oswal. (2022) arthritis (RA) is auto immune mediated inflammatory disease(IMID). Rheumatoid arthritis occurs when our immune system attacks the tissues near joints, this is due to release of certain chemicals and enzymes that begin to eat away the cartilage and bones . It affects all the joints in the body, some forms of arthritis can also affect the body‟s internal organs . The symptoms of RA include inflammation, pain, swelling and stiffness of the joints, it can also lead to deformity and disability of the joint in severe cases . There are several causes for RA from which some are unknown but some include genetic factor, family history, age, environmental factors, hormones, smoking etc.

2) Gautam, K. Roy, Gayatri Thapa, Disha Arora, Smriti Parashar, Bhumika Gurung,(2020) Rheumatoid Arthritis is a systemic autoimmune disease characterized by chronic, inflammatory condition. The adverse effects of long-term use of presently available anti-arthritic or non-steroidal anti-inflammatory drugs are gastrointestinal symptoms, cardiovascular complications, renal impairment, myelosuppression etc. and this requires continuous monitoring and eventually increasing the cost of treatment.

3) Quazi Bilal Ansar, Sushilkumar A.Shinde, Ravindra H.Kale, Kailash R.Biyani (2021) Rheumatoid arthritis (RA) is a systemic inflammatory disorder which mainly affects the diarthrodial joint. It is very common auto immune inflammatory disease causing disability in old as well as young age group. Various drugs are useful in RA but longer term use of these drugs produce adverse effects. Because of the limitations and risks of conventional therapy, people are exploring alternative measures to treat the disease. Herbal medicine provides a foundation for various traditional medicine systems worldwide.

4) Basant Khare , Tarkeshwar Prasad Shukla (2022) Rheumatoid arthritis (RA) is a progressive, chronic, debilitating autoimmune disease manifested clinically by polyarthralgia associated with joint dysfunction triggering the antibodies targeting against the self-neoepitopes determined by autoimmune responses associated with chronic arthritic attacks. Arthritis is not an inherited disease but caused by stimulation of some hidden arthritis susceptible genes lowering the quality of life throughout the world, particularly in developing countries. RA generally affects the joints like wrists, elbows, knees and ankles. Usually women are more affected by RA than men due to the prevalence of hormonal changes. Age is also an important factor that contributes for the development

PLAN OF WORK

1) Literature Survey
2) Selection of Herbal drug
3) Determine Active Constituent of Herbal drug
4) Selection of Excipients
5) Selection of Material and Equipments
6) Preparation of Formulation

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MATERIAL AND METHOD

Plant materials:

i) Vitexnegum (Nirgundi)

ii) Xanthium (Gokhru)

iii) Liquorice

Preparation of extract:-

Air dried and coarsely powdered of Nirgundi , Gokshur churn and liquorice in the thimble made up of filter paper and it place inside the Soxhlet apparatus. The apparatus is fitted to the round bottomed flask containing the solvent and to a reflux condenser. The solvent in the RB flask is boiled the vapour passes through the side tube condensed by the condenser and fall into the thimble containing the material or herbal drug. In RB flask , the extract is collected with high amount of alcohol to remove the alcohol quantity boiled it. Due to this alcohol get separated and herbal extract are remaining in the flask.

Fig. Schematic of a Soxhlet extraction apparatus indicating the vapor and liquid extractant .

. paths. The sample under extraction is cushioned by loosely packed ceramic fibers.

Cream Formulation:

1) first weigh the accurate quantity of chemical, as given in the formula.

2) The vitexnegum. (Nirgundi), Xanthium (Gokhru) and liquorice are taken in first beaker.

3) Then heat on waterbath for uniform mixing, After few minutes oil phase was formed.

4) Distilled water, white soft parrafin borax, methyl Paraben, and propyl paraben in second beaker Mixing all ingredients by Heating on water bath.

5) The aqueous phase was formed oil phase was added into aqueous Phase.

6) continuous stirring was done untill Semisolid mass was formed.

7) Smooth consistancy of cream is maintained by rubbing spatula.

8) The formed cream is ready for evaluation.

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Table: Formula for cream Formulation

Sr. No.	Ingredients	Formulation 1	Formulation 2
1	Vitexnegum	1gm	1gm
2	Xanthium	1gm	1gm
3	Liquorice	1ml	1ml
4	Bees wax	3.2gm	4gm
5	White soft paraffin	12ml	13ml
6	Borax	0.03gm	0.04gm
7	Methyl paraben	0.03gm	0.04gm
8	Propyl paraben	0.02gm	0.04gm
9	Distilled water	Q.S	Q.S
10	Menthol	Q.S	Q.S

Evaluation test:

Formulated herbal cream was further evaluated by using the following physical parameter Colour, odour, consistency State of the formulation

a) Colour :. The colour of the cream was observed by visual examination. The cream is in green colour.

b) Odour: The to be odour of cream was found to be Characteristics.

c) State: The state of Cream was examinated visually. The cream was solid in state.

d) Consistency: The formulation was examines by rubbing cream on hand manually. The cream having smooth consistency.

e) Ph: Ph of prepared herbal cream was measured by using digital ph meter. The solution of cream was prepared by using 100 ml of Distilled water and set aside 2h. Ph was determined in three times for solution and the average value was calculated.

f) Spredability: spread ability of formulate cream was measured by placing sample in between two slides then compressed to uniform thickness by placing a definite weight for defined time. The specified time required to separate the two slides was measured as Spredability. Lesser the time taken for sepration of two slides results showed better Spredability. Spredability was calculated by the following formula Spreadability(S) = Weight tide to upper slide(W) × Length of glass slide(L) Time taken to separate slide(T)

g) Viscosity measurements. The viscosity (in eps) of the products was measured using a Brookfield Viscometer (Brookfield, MA) The spindle was spun at a speed of 2.5 revolutions per minute. Before the analyses, the cream specimens were permitted to stay for 30 minutes at the specified temperature (25+1^{\circ}C).

h) Stability analysis: Temperatures of 10°C, 30°C, and 45°C were used to keep the composition. For four weeks, the viscosity ,pH, and ☑appearance of the specimens were monitored.

i) Toxicity test: The toxicological tests were carried out for a total of 28 days.

j) Skin irritation test: Herbal creams A with varying concentrations of herbal preparation were applied to the epidermis. The sample cream and the swab carrying it has adhered to the treated area with adhesive strips. Then any erythema was detected and assessed according to the application site's state. Severe erythema, Moderate erythema, Slight erythema , Or No imitation.

k) Washability: formulation was applied on the skin and then ease extends of washing with water was checked.

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RESULT:

Results for rheumatoid arthritis cream:

Sr. no	Parameter	Result
1	Colour	Green
2	Odour	Chacteristics
3	State	Semisolid
4	Consistency	Smooth
5	Spredability	7.2 g.cm/cm
6	Washability	Easy Washable
7	Skin irritation test	Non toxic
8	Toxicity test	Non irritant
9	Stability test	Stable
10	Ph	6.6

II. CONCLUSION:

Rhematoid Arthritis is a chronic disease that requires interventions to modify disease progression. While initial presentations are related to joint inflammation, long-term sequelae can include extra-skeletal manifestations. The most recent RA guidelines are from ACR 2015 and EULAR 2016. There are specific differences between the guidelines, based on the respective region/population studied. A future update of the ACR guidelines may contain commentary regarding the roles of baricitinib and sarilumab, as well as other promising therapies.

REFERENCES

1. Pravinkumar Kamble1, Satish Kankarne, Akshay Katrajkar, Suraj Kedar, Prof. Ankita Bankhele, Dr. Rajesh Oswal –(2022) Overview on Formulation consideration of herbal ointment for rheumatoid arthritis.volume no-7,Pg.No- 1659-1670

2. R. K. Gautam, K. Roy1, Gayatri Thapa1, Disha Arora2, Smriti Parashar3, Bhumika Gurung4, L. Deb,(2020) Perspective of Plant Medicine in Therapy of Rheumatoid. Pg.No- 741-765

3. Quazi Bilal Ansar, Sushilkumar A.Shinde, Ravindra H.Kale, Kailash R.Biyani (2021) Overview Of Herbals Used In Rheumatoid Arthritis.Volume no-7, Pg.No 7-16

4. Basant Khare, Tarkeshwar Prasad Shukla (2022) A Review On Polyherbal Formulation Used In The Treatment Of Rheumatoid Arthritis.Volume no-13,Pg no-31-42

5. Brandt KD, Dieppe P, Radin EL. (2008) Etiopathogenesis of osteoarthritis. Rheum Dis Clin North Am pg no. 531-559.

6. Reginster JY, Bruyere O, Fraikin G, Henrotin Y. (2005) Current concepts in the therapeutic management of osteoarthritis with glucosamine. Bull Hosp Jt Dis pg no.31-36.

7. Dwivedi S, Shriwas S, and Dubey R .(2006) Formulation and evaluation of herbal oil for the treatment of arthritis. J Develop Drugs Res,pg no.65-68.

8. Fishman P and Bar-Yehuda S.(2007) Rheumatoid Arthritis History Molecular Mechanisms and Therapeutic Applications. P.A. Bore(ed.), A 291 3 Adenosine Receptors from Cell Biology to Pharmacology and Therapeutics, DOI pg no.12-20

9. Soeken K. L., Miller S. A., Ernst E. (2003) Herbal medicines for the treatment of rheumatoid arthritis: a systemaire review. Rheumatologyp pg no. 652-659

10. Jurca T, et al., (2021) Formulation of Topical Dosage Form Containing Synthetic and Natural Anti-Inflammatory Agents for the Treatment of Rheumatoid Arthritis Molecules pg no.26: 24

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11. Thirumalai, T. Therasa SV. Elumalai EK and David E, 2011 Hypolipidemic and antioxidant effect of Enicostemma littorale Blume. Asian Pac. J Trop Biomed., pg no.1:381-385.
12. Niyogi P. Raju NJ, Reddy PG, Rao BG 2012 Formulation and evaluation of antiinflammatory activity of Solanum pubescens Wild extracts gel on albino Wistar rats. Int.J. Pharm. Pg no. 484-49
13. Goyal S., Sharma P. Ramchandani V, Shrivastava S.K, Dubey P.K. 2012Novel anti- inflammatory topical herbal gels containing Withaniasomnifera and Boswellia serrata IJPBA. Pg no. 1087-1094.
14. Puvabanditsin P. Vongtongsri R. 2005 Efficacy of Aloe vera cream in prevention and treatment of sunburn and suntan. J Med Assoc Thai pg no.173-6.
15. Lu et al., Lu QY, Zhang Y, Wang Y, Wang D, Lee RP, Gao K, Byrns R, Heber D. California Hass avocado 2009: profiling of carotenoids, tocopherol, fatty acid, and fat content during maturation and from different growing areas. J Agric Food Chem. Pg no.3.5