Formulation and Evaluation of Herbal Cream

Dr Rajshri Chavan[1], Mr Nilesh Bhosle[2], Ms Ashvini D Nagare[3], Ms Shruti P Panchal[4], Ms Pratiksha S Suryawanshi[5], Ms Aishwarya B Kashid[6], Ms Kashmira S Kale[7]
[1,2,3,4,5,6,7]*PDEA Seth Govind Raghunath Sable Collage of Pharmacy, Saswad*

***Abstract*—The therapeutic qualities of natural substances are used in the formulation and assessment of a herbal anti-inflammatory and analgesic cream. These components have a reputation for having anti-inflammatory, antibacterial, and analgesic actions. In contrast to synthetic alternatives, the goal of this research is to create a herbal cream that reduces pain and inflammation while maintaining safety and minimizing adverse effects. To improve the cream's durability and effectiveness, the formulation process necessitates meticulous ingredient concentration selection and optimization. A number of physicochemical and microbiological tests are conducted during the evaluation phase to ascertain the cream's stability, anti-inflammatory, and analgesic properties. It is anticipated that the polyherbal cream will have notable therapeutic benefits, offering a safe and efficient way to treat pain and inflammation. The components' natural source.**

***Index Terms*—Herbal cream, Herbal formulation, herbal plant, topical Drug Delivery.**

I. INTRODUCTION

Cream is a sort of semisolid emulsion that is designed for external application and can be either water in oil (w/o) or oil in water (o/w). It is applied to the skin's outside or superficial layer, and its primary function is to stay there for a longer amount of time (1). Because they contain a variety of phytochemical elements that heal a wide range of illnesses, medicinal plants are thought to have therapeutic value. Numerous investigations of traditional folklore have demonstrated the possible advantages of herbs. Redness, warmth, and swelling at the location are some of the main indicators of inflammation, a general mechanism by which the body responds to any injury, infection, or irritation (3)

Each type of pathogen is thought to have a particular mechanism. The medications now used to treat inflammation have recognized adverse effects and hazardous side effects. Plant-based purified natural chemicals can be used as a model to create novel anti-inflammatory medications with reduced toxicity and increased therapeutic benefit. Plant medicines for topical use are offered as liniments or creams. An ayurvedic combination of potent essential oils, herbal cream provides rapid pain relief (11).

Organic essential oils, organic beeswax, and other desired herbal ingredients make up the herbal cream composition, which contains therapeutic topical preparations for human skin application. Creams are topical medicines that are applied to the skin to reduce stiffness and pain. When applied topically to the skin, it works wonders. Among the many medicinal advantages of herbal cream are its hepatoprotective, anti-inflammatory, exfoliating, and antioxidant properties. oil-based lotion and to assess how well it reduces inflammation. The formulation of herbal creams, also known as products, uses a variety of approved pharmaceutical chemicals to create a basis upon which one or more natural substances are added to provide specific benefits. A herbal cream's purpose is to shield the skin from damage, infection, or irritation, which can cause inflammation, redness, warmth, and swelling (3).

II. TYPES OF HERBAL CREAMS

A. Oil-in-water (O/W) Creams:

Oil-in-water (O/W) creams are defined as creams that are composed of tiny oil droplets dispersed over a continuous phase. On the other hand, an oil-in-water (O/W) emulsion is one that has oil droplets scattered throughout the aqueous phase.

B. Water-in-oil (W/O) Creams:

Water-in-oil (W/O) creams are defined as creams that contain water and oil in a continuous phase. When the dispersion medium is oil and the dispersed phase is water, the emulsion is referred to as water-in-oil (W/O) type. (2)

III. IDEAL CHARACTERISTICS

1.Good penetration ability, which enables the cream's drug to enter the skin and produce the desired result.
2.To avoid unwanted skin reactions like itching, rashes, or redness and inflammation, it shouldn't be toxic.
3.When applied, it ought to distribute evenly over the skin.
4.It should melt or liquefy at body temperature when applied to the skin.
5. Avoid irritating the skin and causing irritation (2).

A. Benefits of Herbal Cream

- Treats inflammation injury, infection, or irritation [2]
- overcome the side effects ([4])
- Makes the skin milder and smoother.[4]
- Rapid pain alleviation and inflammation reduction[4]

IV. ADVANTAGES

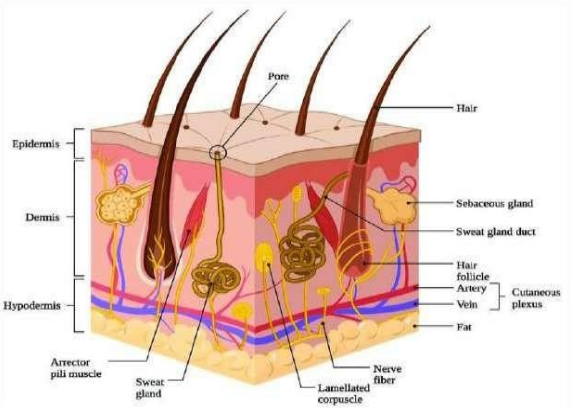
1. Avoidance of first pass metabolism.
2. convenient and simple to use.
3. the capacity to more precisely administer a medication to a certain location.
4. Enhancing the pharmacological and physiological response [2]
6. enabling the use of medications with brief biological half-lives.
7. Make self-medication appropriate.
8. Continuous drug input allows for the achievement of efficacy with a lower total daily dosage of medication.
9.Prevent medication level fluctuations both within and across patents. [3]

V. DISADVANTAGES

1. The medication and/or excipients may cause skin irritation or contact dermatitis.
2. Poor permeability of some drug through the skin.
3. potential for an allergic response.
4. can only be applied to medications whose actions depend on extremely low plasma concentrations.
5. Larger-particle drugs are more difficult to absorb via the skin.

VI. MECHANISM: OF CREAM FORMULATION FOR TOPICAL DRUG DELIVERY

NSAIDs (Nonsteroidal Anti-Inflammatory Drugs) and local anesthetics are common active components in creams used for inflammation and pain relief. These creams address inflammation at the application site by permeating the skin when applied topically. prevent the synthesis of prostaglandins, which are mediators of inflammation. NSAID Cream help reduce



inflammation and pain by lowering prostaglandin levels locally. lowering the perception of pain by obstructing nerve signals in the applied area. Furthermore, certain creams might have components that enhance blood flow to the afflicted area, accelerating healing and further lowering pain and inflammation. Because creams can carry drugs directly to the problematic area, they are frequently chosen to reduce inflammatory diseases. Creams offer localized care, which can lead to more rapid and focused relief. [19]

VII. GENERAL METHOD FOR PREPARATION OF HERBAL CREAM:

A. Fusion method

Materials& Method (O/W, W/O)

Add the necessary amount of the ingredient to enough base and water, then heat the mixture on a water bath to create a solution

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Add the necessary amount of herbal extract to the solution above.

↓

Add Solution drop wise into Solution. When both the phases get mixed properly, add methyl paraben as preservative.

↓

For stability and analytical testing, the prepared herbal cream was left out for approximately an hour in a cool,

dry location away from the sun until it had set. It was then utilized 48 hours later at room temperature.

↓

Packed in container and store in cool place. (3)

VIII. IDEAL PROPERTIES OF HERBAL CREAM

1. It shouldn't have any harmful effects when used.
2. They ought to be the ideal size of particles. (6)
3. They should produce emollient effect.
4. thicker than a lotion yet keeping its form, like a 50/50 oil and water emulsion.
5.They should spread uniformly on the skin surface. (5)
6. Preservative is needed to increase shelf life.

IX. EVALUATION PARAMETER OF HERBAL CREAM

A. Physical Properties (2)

1. Color: Visual inspection is used to determine the color of the cream.
2. Odor: The cream's odor is mostly distinctive.
3. Consistency: The cream has a silky consistency**.**
4. State: The cream needs to be semisolid.

PH [(2)]

A digital PH meter was used to measure the PH after 0.5 g of cream had been dissolved in 50 ml of distilled water.

B. Irritancy Test [(2)]

Time was recorded as the cream was administered to the designated area. At regular intervals up to 24 hours, irritability, erythema, and edema were assessed and reported if present.

C. Spreadability

The cream was placed between two glass slides and compressed for five minutes with a 100g load to achieve a consistent thickness. The skillet was given a weight. As a percentage of Spredability, the time required to isolate the two slides—for instance, the time required for the top slide to pass over the lower slide was calculated. [(14)]

D. Viscosity: The Brookfield viscometer can be used to measure the viscosity of herbal cream formulations at 25°C using Spindle No. 63 at rpm. [(11)]

E. Homogeneity: Touch and visual appearance were used to test the preparation's homogeneity

F. After feel: After applying a predetermined quantity of cream, the amount of residue, emolliency, and slipperiness were assessed.

G. Ease of removal: By using tap water to wash the area where the cream was applied, the cream's ease of removal was assessed.

H. Dye test: The cream was combined with the fiery crimson dye. A coverslip was used to cover a drop of cream that had been put on a microscopic slide. This was inspected under a microscope. The o/w type formulation is indicated by the dispersed globules' colorless appearance on the crimson ground.

I. Type of smear: The kind of film or smear that developed on the skin following cream application was examined [(11)]

J. Acid value

After precisely weighing and dissolving 10 grams of the material in 50 milliliters of an equal volume mixture of alcohol and solvent ether, the flask is to be connected to a reflux condenser and heated gradually until the sample is completely dissolved. 1 ml of phenolphthalein should be then added, and the mixture is titrated with 0.1N NaOH until a faint pink color appeared after 30 seconds of shaking. Acid value = n x 5.61/w [(14)]

K. Saponification value

After adding approximately 2 grams of the material to 25 milliliters of 0.5 N alcoholic KOH and refluxing it for 30 minutes, 1 milliliter of phenolphthalein should be added and titrated right away with 0.5 N HCL. Saponification value = (b-a) x 28.05/w [(14)]

X. CONCLUSION

The potential of plant extracts for cream applications is the main focus of this investigation. medicinal qualities and is both safe and efficient when applied topically to the skin. A herbal analgesic and anti-inflammatory cream that has been carefully formulated and evaluated. Because this cream composition was an o/w type of emulsion, it was simple to wash with plane water after use. There was good spreadability in the produced mixture. The cream's PH and viscosity were both good. Herbal creams have the potential to be innovative anti-inflammatory drugs, and more research and development in this area is encouraged in order to optimize formulations, improve efficacy, and safety profiles. [(3)]

REFERENCES

[1] Pachpor A. G1, Atkad A.M1, Bajad. Formulation and Evaluation of Anti Inflammatory Polyherbal Cream 21-03-2024.

[2] Jayita Roy1, Arna Pal1, Sudipta Chakraborty Herbal Creams: An Overview International Journal of Health Sciences and Research Volume 14; Issue: 7; July 2024

[3] Rajendra Gurjar*1, Dr. Hariom Sharma A REVIEW ON HERBAL CREAM AND SOME PLANT USING FOR HERBAL CREAM FORMULATIO IJCRT | Volume 11, Issue 5 May 2023

[4] Sakshi Nivrutti Tile*1, Prof. Manisha Kale MULTIPURPOSE HERBAL CREAM International Research Journal of Modernization in Engineering Technology and Science

[5] Keshav Deepak Ghadigaonkar1, Vivek Bhaskar Garje Formulation and Evaluation of Polyherbal Anti-inflammatory and Analgesic cream International Journal of Research Publication and Reviews, Vol 5, no 5, pp 10717-10739 May 2024

[6] Chauhan Lalita *, Gupta Shalini Creams: A Review on Classification, Preparation Methods, Evaluation and its Applications Journal of Drug Delivery & Therapeutics. 2020; 10(5-s):281-289

[7] Mahesh S, Paschapur P, Patil MB, Ravi K, Sachi D. Evaluation of anti-inflammatory activity of Ethanolic extract of Borassus flabellifer L. male flowers in experimental animals. J Med Plants Res 2009; 3:49-4.

[8] Anil KM. Ethanomedicinal plants as anti-inflammatory and analgesic agents. Ethanomedicine 2010; 10:267-3.

[9] Miss. Ashwini Vithal Dubule, Mr. Patil Ravikumar R. A review on the formulation and evaluation of Multipurpose Herbal cream; International Journal of Research Publication and Reviews; March 2023; Volume 4; Issue 3: 1947-1952.

[10] Pal A, Soni M, Patidar K, "Formulation and evaluation of polyherbal cream" International Journal Pharmaceutical and Biological Archives, 2014; 5:67-71.

[11] Vidyadhara Suryadevara, Sandeep Doppalapudi, Formulation and Evaluation of Anti-Inflammatory Cream by Using Moringa oleifera Seed Oil Pharmacogn. Res.

[12] P. Geetha Devi, S. Yamuna *, Sk. Nourin1, K. FORMULATION OF NATURAL MIRACLE BALM BY USING HERBAL PLANTS AND EVALUATION ON TOPICAL REGIONS| ISSN: 0044-0477

[13] Pratiksha Salunke, Shital Markad, Formulation and Evaluation of Herbal Pain Relief Balm 2024 IJCRT | Volume 12, Issue 5 May 2024 | ISSN: 2320-2882.

[14] Abdi Ahmed Ebrahim1 * and Dr. Vishvesh Kanabar, FORMULATION DEVELOPMENT AND EVALUATION OF HERBAL OINTMENT CONTAINING NIGELLA SATIVA AND ALTHAEA OFFICINALIS EXTRACTS FOR WOUND HEALING World Journal of Pharmaceutical Research Volume 13, Issue 19, 920-938.

[15] Brekhman II, Dardymov IV. New substances of plant origin which increase nonspecific resistance. Annu Rev Pharmacol 1969; 9:419-30

[16] Anil KM. Ethanomedicinal plants as anti-inflammatory and analgesic agents. Ethanomedicine 2010; 10:267-3

[17] Grant NH, Alburn HE, Kryzanauskas C. Stabilization of serum albumin by anti-inflammatory drugs. Biochem Pharmacol 1970; 19:715-22.

[18] Somnath S. Davkhar, Arti S. Bhandari, Sanjivani A. Akolkar, Formulation and Evaluation of Multipurpose Herbal Cream; Systematic Review Pharmacy;2023, Volume 14, Issue

[19] Sushil Kumar Pal1, Shashank Tiwari* 2, Formulation and Evaluation of Skin Infection Care Cream, Int. J. of Pharm. Sci., 2024, Vol 2, Issue 8, 3189-3207

[20] Sujith S Nair, Molly Mathew and Sreena K; Formulation and Evaluation of Herbal Cream containing Curcuma longa; International Journal of Pharmaceutical and Chemical Sciences, Oct-Dec 2012; 1(4)

[21] Sharmila Dusi, J. Saminathan, International Journal of Pharmacy research and Technology, 2020; Volume 10: 1

[22] Dhase AS, Khadbadi SS, Saboo SS. Formulation and evaluation of vanishing herbal cream of crude drugs.Am J Ethnomed. 2014; 1:313-318

[23] Rajendra Gurjar, Dr. Hariom Sharma, Anil Sharma. A review on herbal cream and Some Plant using for herbal cream Formulation; International Journal of Creative Research Thoughts; May 2023; Volume 11; Issue 5:1392-1399

[24] ishnu. Narayanan, Ahalya. S. S, Akash. Jayaprakash. A review on herbal cream; Indo American Journal of Pharmaceutical

Sciences;2023; Volume 10; Issue 2349-7750:734-742

[25] Prashant Chavan, Mallinath Kalshetti, Nikhi. Navindgikar; Formulation and Evaluation of Polyherbal Cream; International Journal of Current Pharmaceutical Research, May 2020 Volume 12, Issue 4: 75-77