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Formulation and evaluation of Anti -inflammatory cream containing chlorophytum comosum leaf extract

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ABSTRACT

Objective: To assess the anti-inflammatory activity of chlorophytum comosom several invitro assay will be performed. Thes assay are commonly used to evaluate the effects of substances on key inflammatory markers and process.

Methods: Methanolic extracts of *chlorophytum comosom*is used for *In vitro* anti-inflammatory activity.

Results: Sample was perfoned for the protein denaturation at the concentration 100 µl Sample – PP Showed Good Anti-inflammatory property as compared to standared.

Conclusion-The natural medicines are safer and have fewer side effects than synthetic ones makes them more acceptable the demand for herbal formulations is rising on the global market establishing the herbal anti-inflammatory cream with chlorophytum comosom extract is a trending approach this highlights the potential benefits of using a natural ingredients like cholorophytum cocmosom in the cream while imphasizing its safety profile

Keywords: . Inflammation, spread ability ,Inflorescences, viscosity

1.1 Introduction

Inflammation is a natural response of the body's immune system to protect and repair damaged tissues. It is a complex biological process that occurs in response to harmful stimuli, such as pathogens, injuries, or irritants. Inflammation can be acute or chronic, depending on the duration and underlying cause. Your immune system is activated when your body comes into contact with an inflammatory substance (such as bacteria, viruses, or toxic substances) or sustains damage. Inflammatory cells and cytokines, which act as inflammatory cells' initial responders, are released by your immune system. These cells launch an inflammatory reaction to either engulf germs and other harmful substances or to initiate the healing process for damaged tissue. Pain, edoema, bruising, or redness may be the outcome. But inflammatory disease also has an impact on invisible organ systems. Inflammation may be present when a wound grows, turns red, and

hurts. Inflammation, in its broadest sense, is the immune system's reaction to an irritant. A splinter in your finger or other foreign object, such as a bacterium, could possibly be the source of the irritation. Thus, inflammation doesn't have to begin when a wound is already bacterially infected, leaking pus, or not healing properly. It begins as soon as the body tries to combat the toxic irritation.

While inflammation is a crucial defence mechanism, excessive or prolonged inflammation can have detrimental effects on the body. It is important to manage and control inflammation appropriately. Nonsteroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen and aspirin, are commonly used to alleviate pain and reduce inflammation. However, long-term use of NSAIDs can have side effects.

There are two types of Inflammation:-

Acute Inflammation: Acute inflammation is the immediate and short-term response to tissueinjury, infection, or exposure to harmful agents. Characteristics-

- Rapid onset.
- Localized symptoms such as redness, swelling, heat, pain, and loss of function.
- Neutrophils are the predominant immune cells involved in the inflammatory response.

Resolves within a few days to weeks, depending on the severity and underlying cause.

- Chronic Inflammation: Chronic inflammation is a prolonged and persistent inflammatory response that can last for weeks, months, or even years. Characteristics- •Slow and insidious onset.
- Systemic or localized symptoms depending on the affected organs or tissues.
- Infiltration of immune cells such as lymphocytes, macrophages, and plasma cells.
- Tissue destruction and fibrosis can occur, leading to impaired organ function.
- Commonly associated with autoimmune disorders, chronic infections, or prolongedexposure to irritants.

Chronic inflammation is involved in the disease process of many conditions, including: Alzheimer’s disease, Asthma, Cancer, Heart disease, Rheumatoid arthritis (RA) and ankylosing spondylitis (AS), Type 2 diabetes

Causes of Inflammation:-

✓ Infection: Bacterial, viral, or fungal infections can trigger an inflammatory response as the immune system attempts to eliminate the pathogens.

✓ Tissue Injury: Physical trauma, burns, or surgical procedures can cause tissue damage, leading to localized inflammation.

✓ Autoimmune Disorders: Conditions like rheumatoid arthritis, lupus, and multiple sclerosis result from the immune system mistakenly attacking healthy tissues, causing chronic inflammation.

✓ Chronic Diseases: Chronic diseases such as obesity, diabetes, and cardiovascular diseases can contribute to systemic inflammation due to prolonged activation of the immune system.

✓ Environmental Factors: Exposure to pollutants, allergens, or toxins like cigarette smoke or industrial chemicals can induce inflammation in the body.

Treatment of Inflammation :-

Non-Steroidal Anti-Inflammatory Drugs (NSAIDs): NSAIDs like ibuprofen, aspirin, and naproxen are commonly used to relieve pain and reduce inflammation. They work by inhibiting the production of prostaglandins, which are responsible for promoting inflammation.

Corticosteroids: Corticosteroids, such as prednisone, are potent anti-inflammatory medications often used to manage acute or severe inflammation. They work by suppressing the immune system and reducing inflammation throughout the body.

Disease-Modifying Anti-Rheumatic Drugs (DMARDs): DMARDs, such as methotrexate or sulfasalazine, are frequently prescribed for autoimmune conditions. They target the underlying immune response, helping to control inflammation and prevent disease progression.

Biologic Therapies: Biologic drugs, such as tumour necrosis factor (TNF) inhibitors or interleukin-6 (IL-6) blockers, are newer treatment options for inflammatory conditions. They specifically target molecules involved in the inflammatory process, providing targeted therapy with fewer side effects.

- Lifestyle Modifications: Adopting a healthy lifestyle can play a significant role in reducing inflammation. This includes regular exercise, maintaining a balanced diet rich in fruits, vegetables, and omega-3 fatty acids, managing stress levels, and getting adequate sleep.
- Physical Therapies: Physical therapies, such as heat or cold therapy, massage, or physiotherapy, can help reduce inflammation, relieve pain, and improve mobility in specific cases.

There are several classes of drugs commonly used to treat inflammation. The choice of drug depends on the severity and underlying cause of inflammation. Here are some commonly used medications:

1. Non-Steroidal Anti-Inflammatory Drugs(NSAIDs):Ibuprofen,Naproxen,Aspirin,diclofenac
2. Immunosuppressants: Azathoprine, Methotrexate, Cyclosporin.
3. Biologic Response Modifiers: Tumor Necrosis Factor (TNF) inhibitors (e.g., Adalimumab, Infliximab), Interleukin-6 (IL-6) inhibitors (e.g., Tocilizumab), Interleukin-1 (IL-1) inhibitors (e.g., Anakinra).
4. Topical Steroids: Hydrocortisone, Betamethasone, Clobetasol.
5. Disease-Modifying Anti-Rheumatic Drugs (DMARDs): Methotrexate, Sulfazalaine, Hydroxychloroquine.

Today, a more effective and suitable medication that has maybe less side effects is required. creating a new medicinal molecule with improved therapeutic index and potency. New anti-inflammatory medications are crucial for a variety of reasons, including the ability to cure diseases that were previously incurable thanks to our growing understanding of medical disorders. Chlorophytumcomosum, commonly known as spider plant or airplane plant, is a popular indoor ornamental plant that belongs to the family Asparagaceae. While it is primarily known for its aesthetic appeal, there is limited scientific research specifically focusing on the anti-inflammatory properties of Chlorophytumcomosum. The Greek words "chloros" (yellow-green) and "phyton" (plant) are combined to form the generic name "Chlorophytum." 'Comosum' is the precise name for a tuft of hair. The spider plant, Chlorophytumcomosum, is an evergreen perennial with tiny, grass-like

blooms found in the lily family. The linear leaves are less than 2.5 cm broad and 20.3–40.6 cm long.

FIGURE 1:CHLOROPHYTUM COMOSUM

Chlorophytum comosum's extensive pharmacological and anti-inflammatory activity may be attributed to the presence of phytochemicals.

Although Chlorophytumcomosum exhibits a variety of therapeutic perspectives, including anti-inflammatory properties, there are still many areas that require additional investigation in order to reap the health benefits of its phytoconstituents. The aim was to

identify phytoconstituents of the methanolic extract of leaves of C. comosum and biological properties of its different fractions.

Nineteen compounds belonging to different chemical classes were identified in the methanolic extract of leaves of C. comosum.

Phytrochemistry- The root tubers of C.comosom have been chemically analyzed by automoicabstorption spectroscopy. Calcium ,potassium ,sodium,zinc,andiron,content of tubers has been quantified the nutritional value of tubers has been estimated to be between 281.4 to 303.9 kcal/100gram. Three sapogenins have been identified in c- comosom tubers – gitogenin ,hecogenin and tigogenin.thesaponin of C-comosom tubers include getonin and disgalactotogonin .the finolic content of tubers has been estimated to be 1.36%.Apiose,glucose and galactose have reported in the tubers in free as well as glycosylated form.

Spider plant, Chlorophytumcomosum, is one of the most common and well-known of all houseplants. It is especially popular with beginners, being easy to grow and propagate, tolerant of neglect, and able to thrive in nearly any type of condition. It gets its common name from the small plantlets produced on long trailing stems that vaguely resemble spiders.

Topical Drug Delivery System:

The goal of any drug delivery system is to provide a therapeutic amount of drug to theProper site in the body to promptly achieve and then maintain the desired drug concentrations. The route of administration has a significant impact on the therapeutic outcome of a drug. SkinIs one of the most readily accessible organs on human body for topical administration and isMain route of topical drug delivery system. Topical delivery can be defined as the application of"A drug containing formulation to the skin to directly treat cutaneous disorders (e.g. acne) or The cutaneous manifestations of a general disease (e.g. psoriasis) with the intent of

Containing the pharmacological or other effect of the drug to the surface of the skin or within the skin." Semi-solid formulation in all their diversity dominate the system for topicalDelivery, but foams, spray, medicated powders, solutions, as well as medicated adhesive Systems are also inus.

Advantages of Topical Drug Delivery System:

External topical that are spread, sprayed, or otherwise dispersed on to cutaneoustissuesTo cover the affected area.

- Avoidance of first pass metabolism.
- Convenient and easy to apply
- Avoidance of the risks and inconveniences of intravenous therapy.
- A relatively large area of application in comparison with buccal or nasal cavity.
- Ability to deliver drug more selectively to a specific site.
- Providing utilization of drugs with short biological half-life,
- Improving physiological and pharmacological response.
- Improve patient compliance.
- Provide suitability for self-medication.

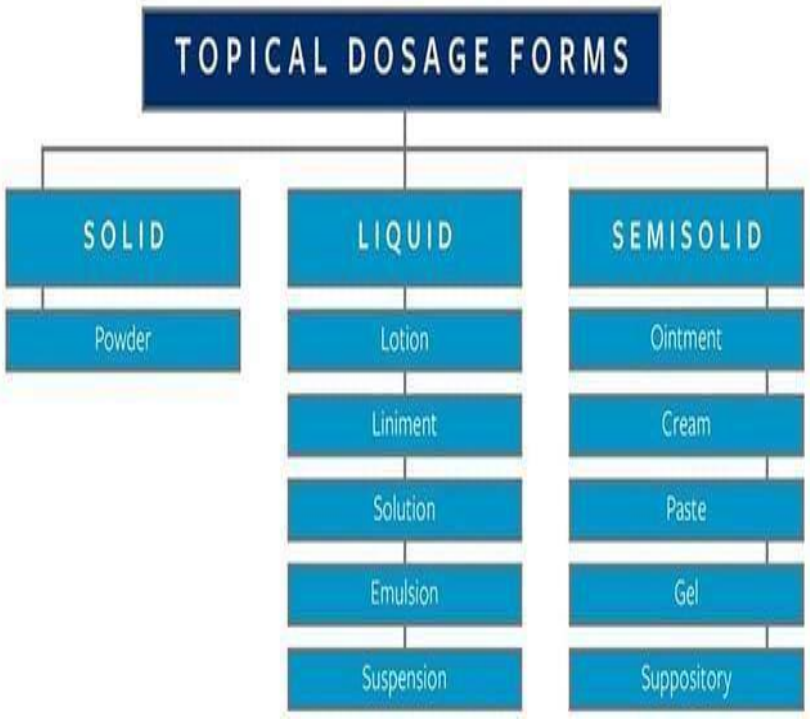
Disadvantages of Topical Drug Delivery System:

- Skin irritation of contact dermatitis may occur due to the drug and/or excipients

. •Poor permeability of some drugs through the skin.

- Possibility of allergenic reactions.
- Enzyme in epidermis may denature the drugs
- Drugs of larger particle size not easy to absorb through the skin.

Classification Of Topical Dosage Forms –



Inflammation is the local response of living mammalian tissues to injury from any agent which could be microbial, immunological, physical or chemical agents. Inflammation can be caused by various factors such as injury, infection, allergies or autoimmune conditions. It is body's natural response to protect & heal damaged tissue. It comprises systemic response and local responses such as pain, redness, heat and swelling. Inflammation may ends with complete healing of tissues and permanent distruction of tissues. Inflammation is of two types :

1)Acute Inflammation –

a) Due to early response by the body

b) Short duration

2)Chronic Inflammation –

a) Characterized by response bychronic inflammatory cells

b)it is for longer duration

c) Occurs after delay

The herbal creams are prepared by using plant-based ingredients like herbs, oils and extracts. This natural component has beneficial properties for the skin such as moisturizing, soothing or anti-inflammatory effects. By combining these elements in the cream, it aims to provide skin care products with potential benefits while minimizing the use of synthetic or chemical substances**.**

AIM

The aim of this project is to study, investigate and evaluate the potential in-vitro anti- inflammatory activity and effect of methanolic extract of Chlorophytum comosum, a medicinal plant.

OBJECTIVE

To assess the anti-inflammatory activity of Chlorophytumcomosum, several in vitro assays will be performed.

To develop an ecofriendly and economically cheaper formulation. To overcome the problems for treating inflammation.

Developing such an herbal formulation could be avoiding side effects of synthetic formulation. Formulate the cream with suitable excipients and ingredients for stabilityand efficacy.

To evaluate formulated product by using different tests.

To carry out in vitro anti-inflammatory activity of anti-inflammatory cream.

LITREATURE REVIEW

1) Rajesh A, Doss et al (2022) The objective of this study was to determine the anti-inflammatory activity of methanol extract of Chlorophytumcomosum and its possible mechanism of action.

2) Adhami S, Farooqi H et al [2013]Chlorophytumcomosum popularly known as Spider Ivy is an important medicinal plant in traditional Chinese medicine utilized in the treatment of many ailments, however its detailed chemical composition and biological activity is not much explored.

3) Pahwa R, Goyal A, Jialal et al [2007] The information of inflammation,Types of inflammation, how inflammation is caused?, its etiology, pathophysiology, drugs used to recover inflammation and the treatment of it was been studied.

4) Bairagi J, Katare V,Chourey B et al [2014]

Inflammation is a reaction of a living vascularised tissue to an injury. Conventional or synthetic drugs used in the treatment of inflammatory diseases are inadequate, it sometimes have serious side effects. So, number of herbal medicines is recommended for the treatment of inflammation that has no side effects.

5) Rzhepakovsky IV, Areshidze DA, Avanesyan SS, Grimm WD, Filatova NV, Kalinin AV, Kochergin SG, Kozlova MA, Kurchenko VP, Sizonenko MN, Terentiev AA, Timchenko LD, Trigub MM, Nagdalian AA, Piskov SI et al [2015] we evaluated the methanolic extract of leaves of Chlorophytumcomosum, the species that is less studied compared to C. borivilianum. Nineteen compounds belonging to different chemical classes were identified in the methanolic extract of leaves of C. comosum. Methanolic extract of leaves of C. comosum can be a valuable source of bioactive constituents.

6) Vipin Jain, Kawale SK, Sushil Kumar Varma, Megha Jain, Tiwari S, Prafulla P. Thawareet al (2022)This research paper consist of:
Different medicinal properties of weed plant chlorophytumused by tribes as a remady for inflammation, eczema, skin rashes, rheumatic pain and gynecological ailments and to be pharmacologically active as analgesic in muscular rheumatism, therapeutic for neuralgia and vermifuge. The decoction of plant has been used in traditional medicine totreat fever, diarrhoea neurologia, UTI, dysentery, malaria.

Pratyush Jain, Anjana Bhardwaj, Alok Pal Jain et al (2019) ; FORMULATION

AND EVALUATION PF ANTI-INFLAMMATORY cream; This research paper consist theaim to

formulate and evaluate the etoricoxib gel containing lanzan extract. The gel

formulation was designed by using etoricoxib, menthol, linseed oil with differentpolymer in

the composition of gel. Formulated gel was evaluated in terms of variousphysicochemical

parameters, ph, viscosity, and Spreadibility

6) David A. Areshidze et al (2022) Chlorophytum genus has been extensively studied due to its diverse biological activities. We evaluated the methanolic extract of leaves of Chlorophytumhttps://pubmed.ncbi.nlm.nih.gov/?term=Ghasemian%20M%5BAuthor%5Dcom osum (Green type) (Thunb.) Jacques, the species that is less studied compared to C. borivilianum. The aim was to identify phyto-constituents of the methanolic extract of leaves of C. comosum.

7) Mona Ghasemian, SinaOwlia et al (2016)anti-inflammatory effects have been evaluated in clinical and experimental studies; of course, clinical data is more reliable than others; among our research data, the Curcuma longa had the most clinical evidence about different inflammatory disorders such as RA, uveitis, and IBD.

8) TundeJurca et al (2020) Topical anti-inflammatory and analgesic effect for the treatment of rheumatoid arthritis is of major interest because of their fewer side effects compared to oral therapy. The purpose of this study was to prepare different types of topical formulations (ointments and gels) containing synthetic and natural anti- inflammatory agents with different excipients (e.g.,: surfactants, gel-forming) for the treatment of rheumatoid arthritis.

(11)GoutamRath&Amit K. Goyal et al (2011) Topical dosages form such as ointment, cream, paste, gel, lotion, powder and liniments place a very important role in pharmaceutical as well as cosmetics fields. Additives of topical dosage forms show their excellent role in dosage form design, dosage form stability, controlled drug release pattern and deliver the drug to the target place for the longer duration of period. Now-a-days, topical dosage forms are the first choice as delivery systems in pharmaceutical and other fields

PLANT PROFILE -

Figure2 :chlorophytrumcomosom

Botanical Name –Chlorophytum comosom

Synonym –Anthericum comosom Thumb.Hartwegiacomosa(Thumb)

Common Name – Spider Evy, Air plane Plant, Ribbon Plant

Family – Asparagaceae

Table No 4.1:Classification Of Plant

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Monocots
Order	Asparagales
Family	Asparagaceae
Sub - Family	Agavoideae
Genus	Chlorphytum
Species	C.comosum

Chemical Constituents of plant-

Chlorophytum comosum, commonly known as the spider plant. Among its constituents are saponins, flavonoids, alkaloids, triterpenoids, glycosides, phenolic compounds, polysaccharides, tannins, vitamins, minerals, proteins, amino acids, essential oils, chlorophyll, water, fiber, trace elements, organic acids, enzymes, chitin, lignin, pigments, sterols, mucilage, cytokinines, gibberellins, abscisic acid, jasmonates, auxins, salicylic acid,oxalates, and phytoecdysteroids.

Flavonoids, Alkaloids, Glycosides,. Polysaccharides, meanwhile, may enhance immunity.

vitamins such as C and E,. Proteins and amino acids, iron and zinc, alongside organicacids, enzymes, chitin, and lignin,

The array of pigments, sterols, and cytokinins, gibberellins, abscisic acid, jasmonates,auxins, and salicylic acid Oxalates and phytoecdysteroids

DISTRBUTION –

Native Range (Southern Africa): Southern Africa, specifically countries like South Africa and Mozambique. Within this region, it can be found growing in diverse habitats, including grasslands, forest margins, and rocky slopes.

Europe Europ, UK, France, Germany, and Italy.

North America: United States and Canada and is also grown outdoors in regions with mild climates.

Asia: India, China, Japan, and Indonesia.

Australia: It is grown as an ornamental plant in gardens and homes across Australia.

Indoor and Outdoor Environments: Chlorophytumcomosum can be found in a variety of settings, including households, offices, gardens, balconies, and public spaces. Its adaptability to both indoor and outdoor environments contributes to its widespread distribution.

Chlorophytumcomosum has a widespread native distribution in Africa, being native to six of the ten World Geographical Scheme for Recording Plant Distributions regions of Africa (West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, and Southern Africa).

FIGURE 3:INDOOR ENVIORNMENT OF PLANTDISCRIPTION OF PLANT –

Chlorophytumcomosum grows to about 60 cm (24 in) tall, although as a hanging plant it can descend many feet. It has fleshy, tuberous roots, each about 5–10 cm (2–4 in) long. The long narrow leaves reach a length of 20–45 cm (8–18 in) and are around 6–25 millimetres (0.2–1.0 in)wide.

FIGURE 4:FLOWER OF CHLOROPHYTUM COMOSOM

Flowers are produced in a long, branched inflorescence, which can reach a length of up to 75 cm (30 in) and eventually bends downward to meet the earth. Flowers initially occur in clusters of 1–6 at intervals along the stem (scape) of the inflorescence. Each cluster is at the base of a bract, which ranges from 2–8 cm (0.8–3.1 in) in length, becoming smaller toward the end of the inflorescence. Most of the flowers that are produced initially die off, so that relatively, the inflorescences are sparsely flowered.

Individual flowers are greenish-white, borne on stalks (pedicels) some 4–8 mm (0.2–0.3 in) long. Each flower has six triply veined tepals that are 6–9 mm (0.2–0.4 in) long and slightly hooded or boat-shaped at their tips. The stamens consist of a pollen-producing anther about 3.5 mm (0.1 in) long with a filament of similar length or slightly longer. The central style is 3–8 mm (0.1–0.3 in) long. Seeds are produced in a capsule, 3–8 mm (0.1–0.3 in) long, on stalks (pedicels) that lengthen to up to 12 mm (0.5 in).

The inflorescences carry not only flowers but also vegetative plantlets at the tips of their branches, which eventually droop and touch the soil, developing adventitious roots. The stems (scapes) of the inflorescence are called "stolons" in some sources, but this term is more correctly used for stems that do not bear flowers and have roots at the nodes

MATERIAL AND METHODS MARERIAL USED FOR THE STUDY

TABLE NO 2 : MATERIAL USED FOR STUDY

Sr.No	Instruments	Manufacturer
1	Analytical weighing balance	Shimadzu
2	Electric water bath	Technico
3	Homogenizer	Remi
4	P^H meter	Eutech
5	Rotary evaporator	IKA RV10
6	Ultra sonicator	Soltec
7	Soxhlet continuous extraction apparatus.	India mart

CHEMICAL USED FOR THE STUDY-

TABLE 3 : LIST OF CHMICALS

Sr.No	Chemicals	Manufacturer
1	Methanol	Reserch lab fine chem Mumbai
2	Stearic acid	Ritesh International pvt.ltd
3	Cetyl alcohol	Atul Chemicals Nashik

4	Almod Oil	AdraInternational.Mumbai
5	Methyl paraben	Anant Pharmaceuticals in india
6	Propyl paraben	Anant Pharmaceuticals in india
7	Propylene glycol	Meruchempvt.ltd Mumbai
8	Triethanolamine	OEM manufacturer in india

METHOD -

Extraction

1. The powder of *Chlorophytumcomosum*was mixed with methanol.
2. Soxhlet apparatus was used for the preparation of extract.
3. First loaded the sample material containing the desiredcompound into the thimble.
4. Thimble was placed into the main chamber of soxhlet extractor.
5. Chosen solvent was added to a round bottom flask and placed onto a heating mantle.
6. Soxhlet extractor attached to the round bottom flask.
7. Reflux condenser was attached to the extractor, with cold water entering at the bottom andexiting above.
8. After the set up of apparatus solvent was heated to reflux and left out the extract for therequired amount of time.

FIGURE 5: DRUG POWDER

FIGURE 6:PLANT EXTRACT

FIGURE 7: EXTRACTION PROCESS

METHOD OF TEST:

In vitro anti-inflammatory activity by Protein denaturation method The reaction mixture (10 mL) consisted of 0.4 mL of egg albumin (from fresh hen's egg), 5.6 mL of phosphate buffered saline (PBS, pH 6.4) and 4 mL of Synthetic compound (1000µg/ml). Similar volume of double-distilled water served as control. Then the mixtures were incubated at (370c ±2) in a incubator for 15 min and then heated at 70oc for 5 min. After cooling, their absorbance was measured at 660 nm by using vehicle as blank. Diclofenac sodium at concentration 1000 µg/ml) was used as reference drug and treated similarly for determination of absorbance. The percentage inhibition of protein denaturation was calculated by using the following formula, % inhibition = absorbance of control - absorbance of test / absorbance of control x 100

TABLE 4: Effect Of Plant Extract By Using Anti-Inflqamatory Activity By Protein Denaturation Method

Sr. no.	Sample (1000µg/ml)	Conc.	O. D.	Mean	Percent inhibition
1.	Control	-	0.42 0.43 0.46	0.43	
2	Standard Diclofenac sodium	1mg/ml	0.09 0.08 0.07	0.08	81.39
3	Sample- PP	1mg/ml	0.12 0.19 0.17	0.16	62.79

Figure 8: Plat showed Anti-inflammatory Activity of Sample

SIGNIFICANCE:

Denaturation of tissue protein is one of the well documented causes of inflammatory and arthritic diseases. Production of auto antigen in certain arthritic diseases may be due to denaturation of protein in vivo. Agents that can prevent protein denaturation therefore could be worthwhile for anti- arthritic and anti-inflammatory drug development Sample- PP showed Good activity as compared with standard drug.

5.3 CREAM FORMULATION –

Oil in water (O/W) emulsion based cream was formulated. The emulsifier (Stearic acid) and other oil soluble components (Cetyl alcohol, Almond oil) were dissolved in the oil phase (part A) and heated to 75 The preservative and other water soluble components (methyl paraben, propyl paraben, triethanolamine, propylene glycol, ethanol extract of BoswelliaSerrata) was dissolved in aqueous phase After heating, the aqueous phase was added in portions to oil phase continuous stirring until cooling of emulsifier take place.

Table 5 : Composition of Cream

Sr. No	Ingredients	Quantity (%)	Uses
1.	Methanol extractof chlorophytum comosum	1	Anti-inflammatoryagent
2.	Stearic acid	15	Stabilizer
3.	Cetyl alcohol	10	Soothing agent
4.	Almod oil	2.5	Flavoring agent
5.	Methyl paraben	2.5	Preservative
6.	Propyl paraben	2.5	Preservative
7.	Propylene glycol	5	Emollient
8.	Triethanolamine	2.5	Moisturizers
9	Water	Q.S.	Vehicle

FIGURE: PREPARED CREAM

Evaluation of Cream

1) pH of the Cream

The pH meter was calibrated using standard buffer solution. About 0.5 g of the cream was weighed and dissolved in 50.0 ml of distilled water and its pH was measured.

2) Viscosity

Viscosity of the formulation was determined by Brookfield Viscometer at 100 rpm, using spindle no L4.

3) Dye test

The scarlet red dye is mixed with the cream. Place a drop of the cream on a microscopic slide covers it with a cover slip, and examines it under a microscope. If the disperse globules appear red in the background colorless. The cream is o/w type. The reverse condition occurs in w/o type cream i.e. the disperse globules appear colorless in the redbackground.

4) Homogeneity

The formulations were tested for the homogeneity by visual appearance and by touch

5) Appearance

The appearance of the cream was judged by its color, pearlscence and roughness and graded.

6) After feel

Emolliency, slipperiness and amount of residue left after the application of fixed amount of cream was checked.

7) Washability: The ease of removal of the cream applied was examined by washing the applied part with tap water.

RESULT -

Table No: 6 Macroscopic Characteristics of leaves of *cholorophytumcomosom*

Sr. No.	Parameters	Observation of leaves
1	Colour	Greyish green
2	Odour	Odourless
3	Taste	Bitter
4	Size	20 - 45 cm LONG
5	Shape	Lanceolate
6	Surface	Smooth & shiny

Table No: 7. Solvent extraction of air-dried plant material of *chlorophytuimcomosum*

Sr. No.	Extracts	Nature of Extract	Colour	Weight (g) %	Yield (w/w)
2	**Ethanol**	**Semi-solid**	**Greyish Green**	**24.50**	**9.50**

TABLE 8 : Effect Of Plant Extract By Using Anti-Inflqamatory Activity By Protein DenaturationMethod

Sr. no.	Sample (1000µg/ml)	Conc.	O. D.	Mean	Percent inhibition
1.	Control	-	0.42 0.43 0.46	0.43	
2	Standard Diclofenac sodium	1mg/ml	0.09 0.08 0.07	0.08	81.39
3	Sample- PP	1mg/ml	0.12 0.19 0.17	0.16	62.79

Figure 9:Plate showed Anti-inflammatory Activity of Sample

EVALUTION TEST:

1) PH of the Cream

The pH of the cream was found to be in range of 6.2 to 6.8 which is good for skin pH. The herbalformulation was shown pH nearer to skin required i.e. pH 6.3.

2) Viscosity

The viscosity of cream was in the range of 1730-1820 cps which indicates that the cream is easilyspreadable by small amounts of shear. The cosmetic formulation was shows viscosity within the range.

3) Dye test

The scarlet red dye is mixed with the cream. Place a drop of the cream on a microscopic slide coversit with a cover slip, and examines it under a microscope. The disperse globules appear colorless in the red background.It concludes that the formulated cream is W/O type.

4) Homogeneity

The formulation was tested for the homogeneity by visual appearance and by touch, appearanceand touch was good.

5) Appearance

When formulation were kept for long time, it found that no Change in colour of cream.

7) After feel

Emolliency, slipperiness and amount of residue left after the application of fixed amountof creamwas found

8) Washbilitytest –

1) The Washbility was determined by simply applying the gel on hairless skin surface.

2) Then area of applied skin is washed using distilled water or purified water and determined the ease and degree of washing.

FIGURE10: WASHBILITY TEST

CONCLUSION -

From above discussion it is concluded that the prepared formulation showed good spreadability, no evidence of phase separation and good consistency during the study period. From the above study it can be concluded that it is possible to develop creams with herbal extracts. The methanolic extract of Clorophytumcomosom used in formulation of creams successfully. The results of different tests of cream showed that the formation couldbe used topically in order to protect skin against damage. The lab made formulation complisewith marketed herbal formulation in degree of standardization and shows the evaluation test results better than the marketed ones. The lab made formulation passes all evaluation tests which gives the conformation about their administration. In little bit it is very better than other marketed formulation. Since this cream is multi-function. So, a cosmetic cream which is nontoxic, safe, and effective and improves patient compliance by the utilization of herbal extracts would be highly acceptable. Further research will carry out to check scientifically thesynergistic action of formulation.

The natural medicines are safer and have fewer side effects than synthetic ones makes them more acceptable. The demand for herbal formulations is rising on the global market.
Establishing the herbal anti-inflammatory cream with *Chlorophytum comosom* extract is a trending approach. This highlights the potential benefits of using a natural ingredient like chlorophytum comosum in the cream while emphasizing its safety profile.
Denaturation of tissue protein is one of the well documented causes of inflammatory and arthritic diseases. Production of auto antigen in certain arthritic diseases may be due to denaturation of protein in vivo. Agents that can prevent protein denaturation therefore could be worthwhile for anti- arthritic and anti-inflammatory drug development Sample- PP showed Good activity as compared with standard drug.

REFERENCES -

1. Rajesh A, Doss A, Tresina PS, Mohan VR Anti-inflammatory activity of methanol extract of Niebuhriaapetala (roth) Dunn–in vitro models. Asian Journal of Pharmaceutical and Clinical Research.2019;12(5):278-81.

2. Michels da Silva D, Langer H, Graf T. Inflammatory and Molecular Pathways in Heart Failure-Ischemia, HFpEF and Transthyretin Cardiac Amyloidosis.Int J Mol Sci. 2019 May 10;20(9) [PMC free article] [PubMed]

3. Zhang X, Wu X, Hu Q, Wu J, Wang G, Hong Z, Ren J., Lab for Trauma and Surgical Infections. Mitochondrial DNA in liver inflammation and oxidative stress. Life Sci. 2019 Nov 01;236:116464. [PubMed]

4. Fritsch J, Abreu MT. The Microbiota and the Immune Response: What Is the Chicken and What Is the Egg? GastrointestEndoscClin N Am. 2019 Jul;29(3):381-393. [PubMed]

5. Pahwa R, Goyal A, Jialal I. Chronic Inflammation. [Updated 2022 Aug 8]. In: StatPearls[Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK493173/

6. Heendeniya S, Ratnasooriya WD, Pathirana RN. In vitro investigation of anti- inflammatory activity and evaluation of phytochemical profile of Syzygiumcaryophyllatum.

7. Deore SL, Jajoo NB, Chittam KP, Deshmukh TA. Comparative pharmacognostic, phytochemical andbiological evaluation between five Chlorophytum species. Pharmacognosy Journal. 2015;7(5).

8. TharinduMadhuranga, HewaDikkumburage&Samarakoon, Nirmani. (2023). In vitro anti- inflammatory eggalbumin denaturation assay: Methodology.10.13140/RG.2.2.22740.88960.

9. Gandhidasan R, Thamaraichelvan A, Baburaj S. Anti- ~36~ International Journal of Herbal Medicine inflammatory action of Lanneacoromandelica by HRBC membrane stabilization, Fitoterapia. 1991; 12(1):1-83.

10. Bairagi J, Katare V, Chourey B, Delouri A, Nema S, Evaluation of In- Vitro Anti-Inflammatory Activity of Leavesof Pongamiapinnata, Asian Journal of Dental and Health Sciences. 2023; 3(1):8-10

11. Rzhepakovsky IV, Areshidze DA, Avanesyan SS, sGrimm WD, Filatova NV, Kalinin AV, Kochergin SG, Kozlova MA, Kurchenko VP, Sizonenko MN, Terentiev AA, Timchenko LD, Trigub MM,

13 Jain, Pushpendra Kumar, YogeshPounikar, and NavneetKhurana. "Wound healing activity of aerial parts of Euphorbia hirta Linn. and its polyherbal formulation." IndianDrugs 57.7 (2020): 58-62.

14..Kumar S, Malhotra R, Kumar D. Euphorbia hirta: Its chemistry, traditional and medicinal uses, and pharmacological activities. Pharmacogn Rev. 2010 Jan;4(7):58- 61..

15..Alsaffar, Dania F., et al. "Comarative studies of phytochemical screening, anti oxidant, anti inflammatory, assays and LC-MS/MS analysis of Euphorbia hirta L. collected from malaysia and IRAQ." Biochemical & Cellular Archives 22.1 (2022).

16.,Das, Kuntal, et al. "Phytochemical investigation and evaluation of in vitro anti- inflammatory activity of Euphorbia hirta ethanol leaf and root extracts: A comparative study." Journal of King Saud University-Science 34.7 (2022): 102261

17..Sharma, Neelesh, et al. "Evaluation of the antioxidant, anti-inflammatory, and anticancer activities of Euphorbia hirtaethanolic extract." Molecules 19.9 (2014): 14567-14581.

18. Gani, Fadli A., Nadia Isnaini, and Siti Maryam. "Formulation and Investigation A Misal, Ganesh, Gouri Dixit, and Vijay Gulkari. “Formulation and evaluationof herbal gel.” (2012).

19. Monteiro-Riviere, Nancy A. “Structure and function of skin.” In Toxicologyof the Skin, pp. 15-32. CRC Press, 2010.

20. Antioxidant of O/W Cream Containing Clorophytum comosum Herb Extract." E3S Web of Conferences. Vol. 151.