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PROJECT WORK REPORT ON: FORMULATION AND EVALUATION OF POLYHERBAL ANTI-AGING CREAM

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Abstract:

Skin aging is a progressive degenerative process influenced by intrinsic factors such as genetic programming and cellular senescence, as well as extrinsic factors including ultraviolet radiation, pollution, and oxidative stress. Excessive formation of reactive oxygen species (ROS) accelerates collagen degradation, wrinkle formation, pigmentation, and thinning of the epidermis. Polyherbal formulations have gained significant attention as safe, natural, and effective anti-aging alternatives due to their rich phytoconstituents, antioxidant potential, and minimal adverse effects compared to synthetic agents.

This review emphasizes the formulation and evaluation of a polyherbal anti-aging cream incorporating botanicals such as Centella asiatica, neem oil, eucalyptus oil, jamun seed powder, and rose oil—each known for their antioxidant, anti-inflammatory, skin-regenerative, and collagen-stimulating properties. The study highlights the scientific basis of skin aging, the role of ROS, benefits of natural antioxidants, and the mechanism by which herbal actives enhance skin health. Methods for extraction, cream formulation (O/W and W/O emulsions), incorporation of active constituents, and evaluation parameters including physicochemical characteristics, spreadability, pH, viscosity, stability, and phytochemical analysis are detailed.

Overall, the polyherbal approach offers a promising natural strategy for preventing premature aging, improving skin texture, and maintaining youthful appearance by synergistically combating oxidative stress and promoting dermal repair.

Keywords: *Polyherbal formulation; Anti-aging cream; Centella asiatica; Neem oil; Rose oil; Eucalyptus oil; Jamun seed powder; Antioxidants; Reactive oxygen species (ROS); Skin rejuvenation; Photoaging; Intrinsic aging;*

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INTRODUCTION:

Skin aging is the result of the continual deterioration process because of damage of cellular DNA and protein aging process is classified into two distinct types i.e., sequential skin aging and photo aging. Both the types have distinct clinical and historical features. Sequential skin aging is universal and predictable process characterized by physiological alteration in skin function. In the aging process keratinocytes are unable to form a functional stratum corneum and rate of formation from neutral lipids slows down, resulting in dry pale skin with wrinkle. In contrast, photo aging is caused by over exposure to UV rays from sunlight. It is characterized by dry, pale and shallow skin, displaying fine wrinkles as well as deep furrows caused by the disorganization of epidermal and dermal components associated with elastosis and Heli dermatitis. Herbs and plants have already proved useful as a tool in complementary medicine. The premature aging is the degenerative disease characterized by dry, wrinkled, rough skin and black spots. two factors trigger premature aging, namely internal factors such as stress, endurance, hormonal changes and health as well as external factors including ultraviolet rays and free radicals. Free radicals are oxygen containing molecules whose atomic arrangement is unstable and hence, undergo chain reactions that can occur in the body and lead to continuous damage. Free radicals are very reactive and dangerous substances that cause damage to the tissues of the body which may lead to the development of various diseases in the old age. However, free radicals are possible to overcome by using antioxidant which stops the chain reactions triggered by free radical by donating electrons to unstable molecules. Examples of antioxidant compounds including carotenoids, saponins, flavonoids, vitamin C, etc.

Centella asiatica vernacularly referred to as gout kola it is a tropical herbaceous plant that is the member of the Umbelliferon family and is indigenous to Asian nations such as India, China, Japan, Indonesia centella asiatica shows many activities like ani-inflammatory, antioxidant, anti-bacterial, neuroprotective, memory improving, etc. Centella asiatica leaves contains the saponins, flavonoids and phenolic compounds that shows the antioxidant property.

Etiologies and Types of Human Skin Aging:

Skin aging is a dermatologic change that progresses as a person age or is exposed to ultraviolet radiations (UVR) if no treatment is adopted. The extensive research activities are focused on this skin concern that involves the appearance of unpleasant, observable marks on skin surface due to proteolysis of cutaneous elastic fibers resulting in the reduced cell functions. Skin aging can be divided into two types, that is, intrinsic aging or chronological aging (inevitable phenomenon) and extrinsic or premature or photoaging (evitable phenomenon) owing to the physiological and environmental factors respectively. Morphologically, photoaging is characterized by dry, rough, pigmented, and abraded skin especially of face and hands in individuals who live in sunny geographical regions and are chronically exposed to direct sunlight Conversely, fine, smooth wrinkles on dry, pale skin impart the characteristics of intrinsic aging. Diagnostically, intrinsic skin aging is identified by seborrheic keratosis which is not a biomarker of photoaging.

Pathologically, the photodamaged skin shows vascular damage that is absent in intrinsically aged skin. An increased skin vascularization and angiogenesis are observed in photoaged skin.

(a) (b)

Figure 1: - Clinical appearance of extrinsic (a) and intrinsic (b) aging of the skin.

Microscopically thicker epidermis is another feature of the photoaged skin. The strength and elasticity of the skin is depended on the proper and uniform arrangement of the collagen fibers and elastin in the dermis. the collagen fibers deficiency can lead to the skin aging due to the production of collagenase and thymine dimer in skin on exposure to the UV radiations. Elastin is a fibrous protein that is reduced in thickness from deeper to superficial dermis.it provides the natural elasticity and strength to the human body. The basic and molecular unit involved in the construction of human skin is collagen this collagen is produced from the procollagen. collagen is the protein that present in the connective tissues of the body.

Reactive oxygen species and photoaging: -

The main cause of oxidation in the skin is the exposure of skin to the UV radiations and hence it causes different skin problems like wrinkles, acne, lesions and also can cause cancer. when exposure to sunlight the skin molecules absorb UVR which results in generation of the reactive oxygen species (ROS).

Types of ROS: - Type 1 consist of the single excited oxygen molecule Type 2 consist of the oxygen molecules with unpaired electron.

These reactive oxygen entities exert a damaging effect on cellular fractions including cell wall, lipid membranes and DNA producing oxidative stress. ROS in excess can leads to the tissue injury and many skin diseases like aging, cancer, ischemia, and Parkinson's syndrome.

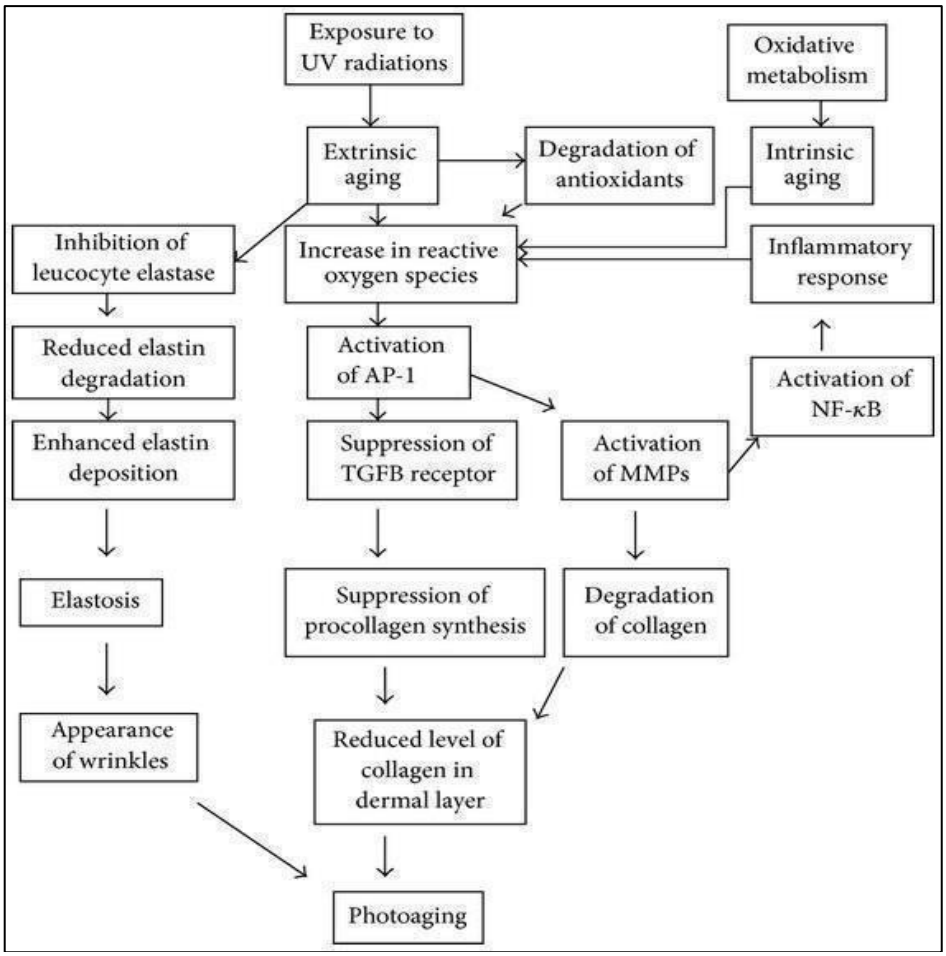

Figure 2: - Mechanism of skin aging

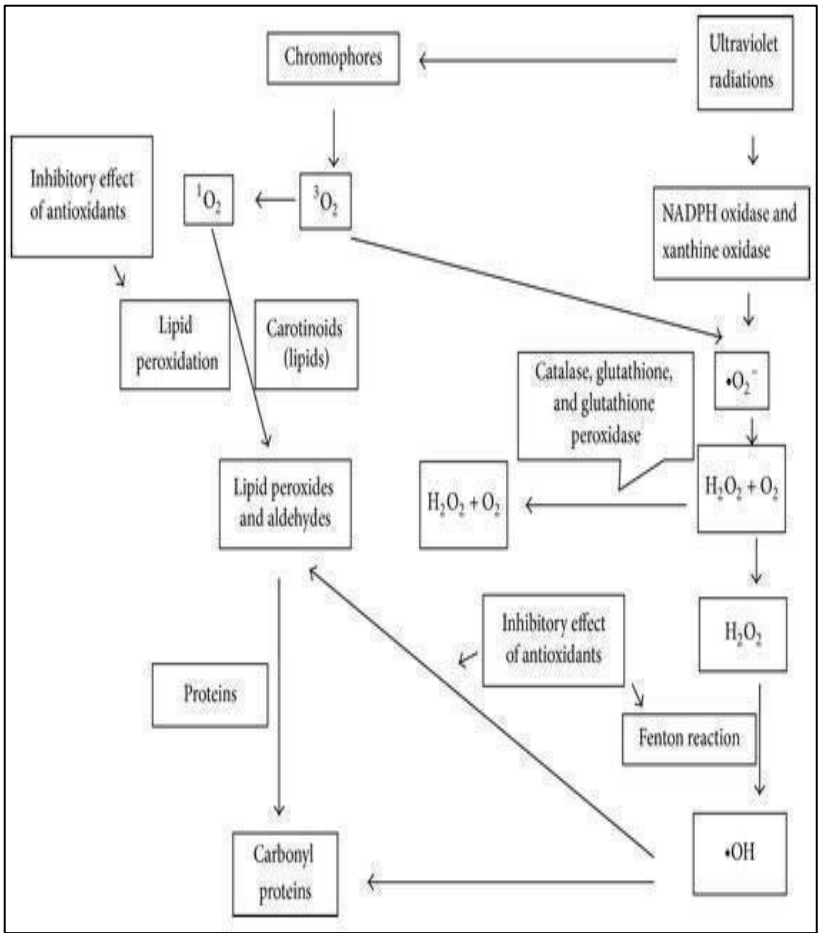

Figure 3: - production of ROS and its role in theinitiation of oxidative chain reactions and target sites for anti-oxidant action

Benefits and types of antioxidants: -

The oxidative stress mediated development of disease is managed by use of the safe antioxidant. the centella asiatica leaves shows good antioxidant property it contains the compounds such as saponins, flavonoids and phenolic compound these compounds are efficient for overcoming the skin problems arises due to the UV exposure and makes it fresh, healthy, and young through collagen synthesis.

The antioxidants are used as the antiaging compounds because they are capable of scavenging ROS leaving healthy effect on the skin. by forming the antioxidant complex we can protect the skin from the direct exposure to the UV radiations. there are two types of the antioxidant i.e., **endogenous** and **exogenous**. in general, the oxidative enzymes found in high amount in the epidermal layer than that of stratum corneum and dermis layer. when there is the imbalance between oxidants and endogenous antioxidant then the exogenous antioxidants are used to balance them.

Endogenous antioxidant: - The compounds present in the endogenous antioxidant cannot synthesized by the body. The endogenous antioxidant in dermal and epidermal layer of skin exposed to the sunlight are depleted under the increased levels of the UVR generated ROS. This depletion results in the destroying the activity of these antioxidants which leads to the skin diseases and skin damage. With the age the endogenous antioxidants are steadily consumed which causes increases the risk of the oxidative stress then the use of exogenous antioxidant as prevention strategy is essential.

From the above discussion we can conclude that skin cells are damaged by the oxidative stress of the ROS

Exogenous antioxidants: - There are many natural and synthetic compounds present in the exogenous antioxidants. The synthetic compounds like monoethanolamine, diethanolamine, sodium lauryl sulphate and triethanolamine but these compounds show some adverse effects like allergy, dermatitis and contact dermatitis. The natural antioxidant is nontoxic and nonirritant to the skin also they don't produce any unwanted effect on skin.

Stratum corneum as target site for Antioxidants: - The normal skin maintains the homeostasis of the body due to the presence of the stratum corneum. the stratum corneum is the uppermost layer of the epidermis it acts as a water barrier. it mainly contains the lipids i.e., cholesterol, ceramides, triglycerides, free fatty acids, and cholesterol sulphate. When we use the cholesterol sulphate in high concentration it inhibits the desquamation. Many factors affect the synthesis of the lipids present in the stratum corneum mainly related to enzymes, environments, cosmetics and free fatty acids. other contents of the stratum corneum are proteins, enzymes and water. some water is tightly held in the layer of stratum corneum which is responsible for the skin elasticity. any disturbance in the in level of proteins, lipids, enzymes might cause many skin problems like wrinkles, dry skin, roughness of skin, etc. dry skin might due to the excessive water loss that could be retained for hydration of the skin by using the moisturizer. skin moisturizer moisturizes the skin and makes it soft. it should be nonirritant, stable, sterile and nontoxic.

Wrinkle formation: - Wrinkles are formed due to the distortion of the elastic fibers, diminished collagen contents and uneven types of collagens. due to the activation of the MMPs there is decrease in the type IV collagen. the MMPs are collagen degrading enzymes. also, the activation of MMPs can cause upregulation of the collagenase and gelatinase. The skin wrinkles can be reduced by using the topical formulations which contains the bioactive compounds which inhibit the MMPs which would increase the collagen level.

The skin color depends on the amount of the melanin in the skin the melanocytes cells are responsible for the production of melanin. Melanin is synthesized by the oxidative reactions which are inhibited by using skin whitening agents like zinc oxide. hence the stratum corneum is the primary site for many Phyto antioxidants for the skin protection against the UVR mediated oxidative stress. These Phyto antioxidants stimulates the regeneration of the stratum corneum to protect and underlying the epidermis from harmful effects of the UVR and also promotes the growth.

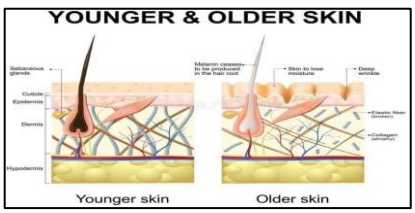

Fig 4. Wrinkle formation

DRUG PROFILE AND EXCIPIENTS

CENTELLA ASIATICA

Fig 5: - Centella asiatica

- **SYNONYM**: Hydrocotyleasiatica L.
- **BIOLOGICAL SOURCE**: Obtained from plants of *centella asiatica.*
- **FAMILY: Apiaceae**.
- **KINGDOM:** Plantae.

MORPHOLOGICAL FEATURES:

- The plant is a small trailing herb and it is the onlyspecies of Centella found .
- Leaves are fleshy, orbicular to reniform

Centella asiatica known as Gotu Kola is a medicinal plant that has been used in folk medicine for hundreds of years as well as in scientifically oriented medicine. The active compounds include pentacyclic triterpenes, mainly asiaticoside, madecassoside, Asiatic and madecassic acids.

Centella asiatica is effective in improving treatment of small wounds, hypertrophic wounds as well as burns, psoriasis and scleroderma. The mechanism of action involves promoting fibrobla phase of hypertrophic scars and keloids. Research results indicate that it can be used in the treatment of photoaging skin, cellulite and striae

CHEMICAL CONSTITUENTS:

isoprenoids (sesquiterpenes, plant sterols, pentacyclic triterpenoids and saponins) and phenylpropanoid derivatives (eugenol derivatives, caffeoylquinic acids, and flavonoids).triterpenoid saponins, triterpenoids, essential oils, flavonoids, phytosterols, and other active ingredients.

USES:

- To avoid the growth of anti-aging skin while helping your skin look younger.
- Widely used as a blood purifier as well as

for treating high blood pressure, for memory enhancement and promoting longevity.

- Relieves, strengthens, and intenselymoisturizes your skin to help restore its healthy appearance

NEEM OIL

Fig 6: - Neem oil

- **SYNONYMS**: Margosa oil, Neem tree, Indian lilac
- **BIOLOGICAL SOURCE**: - Neem consists of almost all the part of the plant which are used as drug of *Azadirachta indica*.
- **FAMILY: Meliaceae**
- **KINGDOM**: Plantae

GEOGRAPHICAL SOURCE: -

India is native of Azadirachta.

It is also cultivated in Nepal Pakistan Bangladesh and Sri-Lanka.

Neem is a fast-growing tree that can reach a height of 15-20 m, rarelyto 35-40m. It is evergreen.

MICROSCOPIC CHARACTERS:

Macroscopy of leaf: - Apex: - Ovate – Lanceolate Base: - Unequal

Color: - Smooth and dark green Odor: - Typical

Taste: - Bitter

Neem oil, also known as margosa oil, is a vegetable oil pressed from the fruits and seeds of the neem (Azadirachta indica), a tree which is indigenous to the Indian subcontinent and has been introduced to many other areas in the tropics. It is the most important of the commercially available products of neem, and its chemical properties have found widespread use as a pesticide in organic farming.

CHEMICAL CONSTITUENTS:

- Various parts of the plant are used for various therapeutic and commercial purposes due to presence of different type of chemical in different parts of this plant. Some of them being: Leaf: - quercetin, nimbosterol, nimbin
- Flower: - nimbosterol, kaempferol Bark:- nimbin, nimbidin, nimbosterol
- Seeds: - Azadirachtin, Azadiradione, nimbin, vepinin
- Azadirachtin: - Provide repellent, anti-hormonal and anti feedant properties. Nimbin: - Provide anti -inflammatory, anti-pyretic, anti-histamine, and anti- fungal

USES:

- All parts of neem tree used as anthelmintic, anti-fungal, anti-diabetic, anti-bacterial, anti- viral, contraceptive and sedative.
- Oil of neem used in soap, shampoo, balms and Cream as well as toothpaste.
- Neem gum is used as a bulking agent and for the preparation of special purpose food (For diabetic).
- A decoction prepared from Neem roots is ingested to relieve fever in traditional Indian medicine

EUCALYPTUSOIL

Fig 7:- Eucalyptus oil

- **SYNONYM**: Dinkum oil, lemon gum tree, blue gum tree
- **BIOLOGICAL SOURCE**: Eucalyptus oil is the volatile oil obtained by the hydro distillation of fresh leaves of *eucalyptus globulus*.
- **FAMILY: Myrtaceae**
- **KINGDOM**: Plantae

ORGANOLEPTIC CHARACTERS:

Color: - Colorless or pale yellow Odor: - Aromatic

Taste: - Pungent and Camphoraceous Weight: - 0.897 to 0.916 gm

CHEMICAL CONSTITUENTS:

Cineole (eucalyptol, 70-85%) Citronellal

Terpenes: - pinene, camphene, phellandrene

Polyphenolic acid: - caffeic acid, gallic acid

Flavonoids: - Eucalyptin, Rutin

USES:

anti-inflammatory and anti-bacterial properties which can help to sooth acne prone and congested skin heal damaged skin and provide deep nourishmentEucalyptus also boosts circulation, a critical element for healthy vibrance and glow. Anti- inflammatory properties reduce redness and other

inflammatory conditions, making the oil a super skin soother.

JAMUL POWDER

Fig 8: - Jamul powder

- **SYNONYM**: Eugenia cumin, java plum, jamun.
- **BIOLOGICAL SOURCE**: these are the fruits of the plant *Syzygiumcumini.*
- **FAMILY: Myrtaceae**.
- **GEOGRAPHICAL SOURCE**: south east Asia
- **ORGANOLEPTIC CHARACTERS**:
  COLOUR: Deep purple to bluish. ODOUR: Characteristic.
  TASTE: bitter and sour. APPEARANCE: Coarsepowder.
- **INTRODUCTION:**
  Jamul seeds powder contains antioxidants called ellagic acid that may help in keeping a check on rapid fluctuations of blood pressure. 5. Jamun seeds contain powerful antioxidants like flavonoids and phenolic compounds that help keep harmful free radicals at bay
- **CHEMICAL CONSTITUENS**:
  Jamul mainly containspolyphenols, flavonoids, phenolic, anti-inflammatory, anthocyanins, gallic acids, tannins, phenols, alkaloids, ellagic acid, glycoside, is quercetin,
- **USES**:
  Jamul Seed Powder offers a plethora of jamun seed benefits, including diabetes control, blood pressure regulation, boosted hemoglobin levels, antioxidant power, detoxifying properties, anti- inflammatory benefits, support for cardiovascular health, richness in essential vitamins

ROSE OIL

Fig 9: - Rose oil

- **SYNONYM:** Attar of rose, ottar.
- **BIOLOGICAL SOURCE**: Oil of petals of plant *Rosa centifolia L.*
- **FAMILY**: Rosaceae
- **KINGDOM**: Plantae
- **GEOGRAPHICAL SOURCE**: Native to Asia, north America, Europe

ORGANOLEPTIC CHARACTERS:
COLOR:pink,red, yellow ODOUR: pleasant.
TASTE: characteristic.

CHEMICAL CONSTITUENTS:

- Citronellol, geraniol, and linalool phenolics, flavonoids, anthocyanins, and carotenoids citronellol (34–55%), geraniol, (around 14%) and nerol (around 7%).
- flavonoids, triterpenes, tannins, phenolic acids, polysaccharides, fatty acids, organic acids,.

USES :
Rose is mainly used in commercial and medicinal purposes. It treats skin diseases, eye strain, stress, insomnia, diarrhoea and hyperacidity due to its medicinal properties like anti- inflammatory, aphrodisiac, anti-depressant, astringent, antispasmodic, cleansing, anti- bacterial and antiseptic properties

METHODOLOGY:

1. **Selection and Preparation of Herbal Ingredients**

Keymedicinal plants are chosen for their antioxidant, anti- inflammatory, and skin-rejuvenating properties:

- **Rose Petals (Rosa spp.)**: Moisturizes, protects against UV damage, stimulates collagen.
- **Marigold Leaves (Tagetes erecta L.)**: Anti-aging, antioxidant effects.
- **Lemon Peel (Citrus limon)**: Provides Vitamin C, brightening effects.
- **Aloe vera gel**: Hydrating, anti-wrinkle, improves skin elasticity.
- **Carrot (Daucus carota)**: Rich in β-carotene and Vitamin A, antioxidant.
- **Turmeric (Curcuma longa)**: Anti-inflammatory and antioxidant.

2. **Extraction of Bioactive Compounds**:

Maceration: Powdered plant material is soaked in solvents like ethanol, methanol, or water for 24- 48 hours to extract phytoconstituents.

- Filtration using Whatman paper, followed byconcentration to obtain viscous extracts

- For Aloe vera, gel extraction from the inner mucilage is conducted, blended, and filtered.

3 . Cream Formulation Techniques

Two primaryphases are involved: **oil phase and aqueous phase**.

Oil Phase

- Beeswax, liquid paraffin, and other lipid components are heated to **~75°C**.
- Acts as the oil carrier and thickening agent.

Aqueous Phase

Solubilize borax, methylparaben, and hydrophilic excipients in distilled water and heat to similar te mperature.

Combination

Slab Method / Trituration: Gradual incorporation of the aqueous phase into the oil phase with cons tant stirring to create a smooth, homogenous semisolid cream.

- Add herbal extracts (e.g., marigold, rose, lemon) and essential oils (e.g., lavender, rose oil) post-emulsification.
- Homogenization ensures uniform distribution of active constituents.

3.2 Emulsion Types

- **Oil-in-water (O/W):** Non-greasy, easilywashable, suitable for normal-to-oilyskin.
- **Water-in-oil (W/O):** Provides occlusive barrier, reducing water loss, suitable for dryskin.

4. Incorporation of Active Ingredients and Excipients

Keyexcipients stabilize the cream and enhance usability:

- **Beeswax:** Thickening agent, moisture retention.
- **Borax:** Emulsifier for cream consistency.
- **Liquid paraffin:** Lubricant and emollient.
- **Methyl paraben:** Preservative.
- **Glycerine and Propylene glycol:** Humectants.
- **Essential oils (Rose, Lavender):** Fragrance and therapeutic activity.
- **Titanium dioxide:** UV protection and opacifier.

5. Evaluation of Cream

The formulated cream undergoes systematic evaluation:

5.1 Physicochemical Parameters

- **Appearance & Color:** Visual inspection.
- **Consistency & Homogeneity:** Assessed bytouch and palpation.
- **pH:** Measured in aqueous dispersion to ensure compatibilitywith skin (≈6–7).
- **Viscosity:** Brookfield viscometer; ensures proper spreadability.
- **Spreadability:** Measured bythe time required for a known weight to separate glass slides over the crea m.
- **Washability:** Ease of removal with tap water.
- **Phase Separation & Greasiness:** Monitored during stabilitystudies.

5.2 Phytochemical Verification

- **Shinoda Test:** Confirms flavonoid presence.
- **Salkowski Test:** Detects sterols.
- **Saponin Test:** Identifies foaming saponins with antioxidant and healing properties.

5.3 Safety and Irritancy

- **Skin Sensitivity Test:** Applied to dorsal skin for 24 hours; monitoring for redness, edema, or irritation.
- **Microbial Testing:** Inoculation on Muller Hinton agar to verifyabsence of microbial contamination.

5.4 Stability Studies

- Conducted as per ICH guidelines:
- **30 ± 2 °C / 65 ± 5 % RH** for mid-term storage.
- **40 ± 2 °C / 75 ± 5 % RH** for accelerated stability.
- Assessment includes pH, viscosity, appearance, and phase separation over 2–12 months.

5.5 Efficacy Parameters

- **Moisturization / Skin Hydration:** Measured with corneometryor visuallyobserved enhancement in ski n flexibility.
- **Wrinkle Reduction:** Sensory evaluation and user feedback.
- **Antioxidant Activity:** Total antioxidant capacity(e.g., phosphomolybdenum assay expressed as ascorbi c acid equivalents).
- **Collagen Stimulation & Skin Elasticity:** Optional clinical or in vitro assays.

6. Conclusion of Methodology

- Bycombining multiple herbal extracts rich in antioxidants, vitamins, and phytochemicals, th e polyherbal anti-aging cream is formulated to:
- Reduce fine lines and wrinkles.
- Improve skin hydration and elasticity.
- Offer antioxidant protection and gentle skin nourishment.
- The combined methodology ensures a cream that is stable, safe, cosmetically acceptable, a nd therapeutically efficacious, aligning with both traditional herbal knowledge and modern p harmaceutical science.

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EVALUATION TEST

1) **Organoleptic evaluation: -**

The cream thus obtained was evaluated for its organoleptic properties like color, odor and state. The appearance of the cream was judged by its color and roughness and graded.

2) **Stability studies: -**

Stability testing of drug product begins as a part of drug discovery and ends with demise of

the compound or commercial product. To access the drug and formulation stability, stability studies were done according to ICH guidelines. The stability was carried out as per ICH guidelines. The cream filled in bottle and kept in humidity chamber maintained at 30+_ 2 *C / 65+_5% RH and 40+_2 *C / 75+_5% RH for 2 months. At the end of studies, samples were analyzed for the physical properties and viscosity.

3) **PH of the cream: -**
The pH meter was calibrated using standard buffer solution. About 0.5g of the cream was weighed and dissolved in 50ml of distilled water and its pH was measured

4) **Spread ability studies: -**
An important criterion for semisolids is that it possesses good spreadability. Spreadability is a term expressed to denote the extent of area to which the cream readily spreads on application to the skin. The therapeutic efficacy of formulation also depends on its spreadability value. A special apparatus has been designed to study the spreadability of the formulation. Readability is expressed in terms of time in seconds taken by 2 slides to slip off from the formulation placed between, under the application of Certain load. Lesser the time taken for the separation of the 2, better the spreadability. 2 glass slides of standard dimensions were selected. The formulation whose spreadability had to be determined was placed ore one of the slides. The other slide was placed on top of the formulation was sandwiched between the 2 slides across the length 5cm along the slide. 100g weight was placed up on the upper slide so that the formulation between the two slides was pressed uniformly to form a thin layer. The weight was removed and the excess of formulation adhering to the slides was scrapped off. One of the slides was fixed on which the formulation was placed. The second movable slide was placed over it, with one end tied to a string to which load could be applied by the help of a simple pulley and a pan. A 30g weight was put on the pan and the time taken for the upper slide to travel the distance of 5.0cm and separate away from the lower slide under the direction of the weight was noted.
The spreadability was then calculated from the following formula:

Credibility= m x l / T

M = weight tied to the upper slide [30g] L = length of glass slide [5cm]

T = time taken in seconds

4. **Homogeneity: -**The formulation was tested for the homogeneityby visual appearance

5. **After feel: -**
Emolliency, slipperiness and amount of residue left after the application of fixed amount of cream was checked.

6. **Removal: -**
The ease of removal of the cream applied was examined by washing the applied part with tap water

7. **Irritancy test: -**
Mark and area [1sq.cm.] on the left-hand dorsal surface. The cream was applied to the specified area and time was noted. Irritancy, erythematic, edema, was checked if any for regular intervals up to 24 hours and reported.The ease of removal of the cream applied was examined by washing the applied part with tap water.

CONCLUSION:

1. Physical evaluation such as color, odor, and consistency were examined by physical examination.
2. The PH of prepared herbal anti-aging cream was measured by using PH paper. It was found to be 5.7-6 which is good for the skin.
3. Stability studies were done by opening and closing the tube in specified time. Here the tube is placed for the one month at room temperature and check any physical and chemical change in it.
4. The viscosity was checked by the Brookfield viscometer and the viscosity was in the range of 500- 600cps it indicates that the cream is readily spreadable.
5. The after feel was found good like emollience, slipperiness and amount of residue.
6. The cream formulation on skin was easilyremoved bywashing with the water.
7. The formulation shows no redness, edema, inflammation and irritation while performing the irritancy test.
8. The formulation were kept for long time at room temperature and it was found that no change in color of cream.

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