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Formulation and Evaluation of Poly-Herbal Anti-Aging Face Cream

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Abstract: *As earlier studies have stated pomegranate is having rich antioxidant property. The present study is based on combining the antioxidant capacity of pomegranate with eucalyptus oil and other herbs to obtain enhanced antioxidant property which can be used to treat the emerging problems of ageing at early age in youth due to exposure to sunlight, pollutants and many other factors. The present research aims at formulating and evaluating polyherbal ant wrinkle face cream. The cream was checked with different parameters such as Total Phenolic Test, DPPH Test, and Stability studies were carried out for 3 months. And based on the all the evaluation test the formulation F4 was found to be most stable and can be considered good for skin.*

Keywords: Pomegranate, Eucalyptus, Polyherbal Cream, Anti-aging, etc.

I. INTRODUCTION

Skin aging is marked by lowering of elasticity nature of skin, and rough-textured appearance and wrinkling. This may happen due two distinct factors namely Intrinsic and Extrinsic factors. Intrinsic factors include skin exposed to UV radiation. The signs of this type are usually begun at around 50-60 years. Women usually develop this sign earlier than men. Extrinsic ageing mainly occurs due to nutritional deficiencies. Higher levels of vitamin C leads to increase in linoleic acid intake which in turn decreases wrinkles, dryness of the skin.

Historical Background

Food we consume is full of medicinal agents we just need to find the useful ones. Pomegranate originated in Iran and Afghanistan. The chief Antiaging property of pomegranate is marked by the presence of punicalagins, hydrolysable tannins, anthocyanin. Eucalyptus originated between 35- 50 million years ago.

Phytoconstituents

1. **Pomegranate:**
   The pericarp and mesocarp sections make up the husk. 40% arils and 10% seeds are included in the fit for human utilization part of the organic product. Arils have 85% water, 10% complete sugars and mostly flavonoids. Punicalagin (2,3-HHDP-4,6 gallagylglucoside) is the main phenolic *compound in pomegranate is responsible for antioxidant activity.*
2. **Rice:**
   Rice main carbohydrate is starch, which is composed of amylose and amylopectin. Four new compounds, stigmastanol-3beta-p-glyceroxydihydrocoumaroate (1), stigmastanol-3beta-p-butanoxydihydrocoumaroate (2).
3. **Eucalyptus:**
   The essential oil consists of branch tips and fruits is rich in phytochemicals like eucalyptol, terpineol, α-phellanderene and 9β-sitosterol, citral, eudesmol, α & β-pinene, p-cymene, 1, 8-cineole, limonene, citronellal, terpinen-4-ol, etc.

II. MATERIALS AND METHODS:

Collection of Sample

The recent fruits of pomegranate tree were collected from Manchar Market and Eucalyptus oil was collected from the laboratory of Samarth Institute of Pharmacy, Belhe. Rice Seeds were collected from local market.

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Preparation of Extracts

1. **Pomegranate Extract:**
   A fresh Pomegranate fruit was chosen. It was cut from the center ensuring that its seeds do not break. The seeds were then separated and then the Pomegranate juice was extracted by squeezing it.

2. **Rice Extract:**
   And the rice was fermented by soaking it in water for overnight and then the extract was isolated by Filtration.

Antioxidant Activity

1. Total Phenolic Content
   The total phenoplast content of the powder was analyzed by the Folin Ciocalteu technique. The sample was mixed with H2O and a chemical agent. The mixture was left to square at temperature for quarter-hour and three hundred ul of salt resolution was intercalary. The mixture was unbroken at temperature for two hours. The absorbance was measured.

2. **Radical-scavenging activity (DPPH assay)**
   Radical-scavenging activity dpph assay for dpph radical scavenging activity inhibitor activity supported dpph 22 diphenyl-1-picryl hydrazyl radical for extracts of pomegranate peel and seed powder were analyzed following the strategy given by whole Williams et al 1995 7 associate in nursing aliquot of 100l of the sample extract was mixed with a pair of9ml of freshly ready dpph operating resolution in 10ml tubing the contents were mixed and product was left in area without sunlight for thirty min when covering the tubing with tin foil the absorbance capacity of the answer was tested at 517 nm in comparision with methyl alcohol exploitation uv-vis photometer inhibitor action was expressed as share inhibition of the dpph radical and make up my mind by the subsequent equation.
   Radical scavenging (%) = [(A blank−A sample) / A blank] × 100

3. **Cream Formulation**
   (A)Bees wax and liquid Paraffin was mixed & heated at 75°C. (B) Borax and methyl Paraben were dissolved in rice extract and heated at 75°C until borax is completely dissolved. The emulsifier (Bees wax) and other oil soluble components (Eucalyptus oil, Neem oil, and Almond Oil & Rose oil) were dissolved in the oil phase Add aqueous phase to the heated oil phase. Add PG extract, Aloe Vera gel and Vitamin E capsules and stir vigorously until semisolid cream is formed. The formula for the cream is mentioned in the Table below.
   The formula for the cream is given in Table 1. The oil phase was prepared .And then the oil and water phases were mixed using magnetic stirrer. Proper care was taken during mixing of phases.

Table 1: Formulation Table of Cream.

Ingredients	Category	F1	F2	F3	F4
Punica granatum extract	A.P.I	2 ml	2.5 ml	2 ml	1 ml
Eucalyptus oil	A.P.I.	2 ml	2.5 ml	1 ml	1.5 ml
Aloe gel	A.P.I.	3 ml	3.5 ml	4.0 ml	4.5 ml
Neem oil	A.P.I.	1 ml	1 ml	1 ml	2 ml
Propylene glycol	Moisturizer Binder	1 ml	1 ml	2 ml	1 ml
Microcrystalline Cellulose	Polymer	-	-	2 gm.	2 gm.
Beeswax	Base	0.9 gm.	0.9 gm.	-	-
Almond Oil	Base	-	-	-	1 ml

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Methyl Paraben	Preservative	0.1 gm.	0.1 gm.	0.1 gm.	0.1 gm.
Rose oil	Flavoring agent	-	-	1 ml	1 ml
Purified water	Vehicle	q.s.	q.s.	q.s.	q.s.

III. EVALUATION OF CREAM

1. **Organoleptic Properties:**
   The organoleptic check of a cream preparation was performed visually together with color, odor, and clarity Physicochemical Parameters.
2. **Spredability Test:**
   For spredability determination spredability equipment was used. This equipment consisted of 2 glass slides, one that is movable and another one is mounted onto the picket board, tied to string that is missed out block, it carries weight regarding 1gm of formulation was placed between the 2 slides. On the higher slide one00gm was allowed to rest for 1 to two minutes to get rid of entrapped air between the slides and to supply uniform film of the gel. the burden was removed and high slide was subjected to drag of 5gm. The time needed for high slide to travel premarked vi.5cm distance was noted. this may be used for relative spredability of formulation. For spredability calculation following formula was used:
   $$S=M*L/T$$
   Where, S is denoted by spredability, M is mass connected with slide in grams, L is length in cm, T is time needed in seconds.
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 below a scientific instrument. If the disperse globules appear red below colorless background, the cream is o/w kind. The reverse condition happens in w/o kind cream i.e., the disperse globules appear colorless among the red background.
4. **Washability:**
   A small amount of cream applied getable and washed below running water.
5. **Irritancy Test:**
   On the dorsal mitt surface a locality of 1 cm2 was marked. The cream was applied and time was noted. Erythema, edema, irritancy was checked for traditional intervals up to 24hrs and reportable. tested for his or her look and presence of any aggregates.
6. **After Feel:**
   Emolliency, slipperiness and amount of residue left once the appliance of fixed amount of cream were checked.
7. **Removal**
   The ease of removal of the cream applied was examined by laundry the applied provide water.
8. **Homogeneity Test:**
   All developed creams were tested for homogeneity by visual examination once the creams square measure set among the instrumentality.
9. **Type of Smear:**
   On application of cream, the type of film or smear intentional on the skin was checked.
10. **Stability Study:**
    By putt the formulation into stability chamber below controlled temperature at thirty ± 2˚c and sixty fifth RH for three months. Evaluated the formulation for his or her physiological and organoleptic parameters at interval of thirty days for three months. Invitro analysis of cream:
    a) Preparation of inoculum:
    For analysis of anti-microbial activity 24hr up to date culture was used.
    b) Test microorganisms
    The developed creams were inoculated on the plates of agar media by streak plate methodology and a smear was prepared by omitting the cream. The plates were placed in to the equipment and are incubated at 370

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C for 24 hours. once the fundamental measure, plates were taken out and check the organism growth by scrutiny it with the management.

IV. RESULTS AND DISCUSSION

1. **Total phenolic Content:**
   The results have indicated that the PSP includes a considerably higher (P0.05) between water (We) and methanolic extracts (Me) of either surgical operation or PSP, but Maine had numerically a bit higher values for each surgical operation and PSP.

2. **DPPH:**
   The reduction capability of DPPH radical is set by the decrease in its absorbance at 517 nm iatrogenic by antioxidants. ends up in gift investigation have indicated that the p.c DPPH-RSA of pomegranate seed extract (PPP) samples were considerably higher (P < zero.05) than the pomegranate seed powder (PSP) samples.

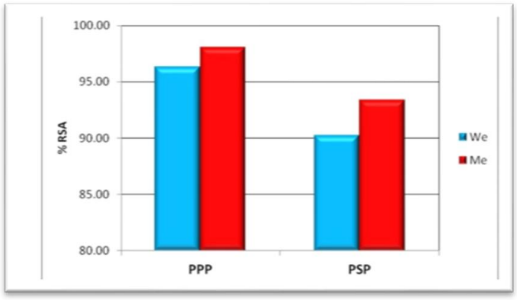

Figure 1: DPPH Test for Pomegranate.

Evaluation of Cream:

1) Organoleptic Evaluation:

Various parameters were tested and the results found are mentioned in the below. The pH was found to be 6.4.Spradability was Good. In the analysis of Dye Test the formulation was found to be o/w type. The Washability of cream was found to be good & non-greasy. The Irritancy test gave appropriate results. The Cream did not produce any irritation on application. After applying the cream gave emollient effect. It possessed good Homogeneity. And the formulated cream was in the semi-Solid form.

Irritancy Test

The formulation F3 and F4 shows no redness, edema, inflammation and irritation throughout irritancy studies.

After Feel

After feel Emolliency, slipperiness and Smoothening effect.

Removal

The cream of F3and F4 applied on skin was merely removed by laundry with water.

Homogeneity

All formulations prove uniform distribution of extracts in cream. This was confirmed by visual look and by bit Stability Studies.

2) Spredability Test:

The capacity of the cream to spread on application was tested. The results are mentioned in the table below.

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Table 2: Spredability Test

Formulation	Time in seconds	Spredability [g cm/sec]
F1	**11**	**13.63**
F2	11	13.63
F3	10	15
F4	8	18.75

3) Stability Studies:

The stability studies were applied as per ICH pointers. The cream stuffed in bottle and unbroken in condition chamber maintained at thirty ± 2 °C/ sixty 5 ± 5 naught RH and forty ± 2 °C / seventy 5 ± 5 naught RH for two months. The result was tabulated in Table.

Table 3: Stability Studies

Formulation	pH	Color
F1	**5.3**	**Half white**
F2	5.5	Yellowish white
F3	6.2	Pinkish white
F4	6.4	Pinkish white

4) Test for microbial growth

This test shows that the formulation is free from microorganisms. Results square measure listed in Table 3.

Table 4: Microbial Test

Microbial load	Limits	Results
TMC	NMT 100	65
Limit tests: S. Aureus, Candida Albuccans	No Characteristic colonies	Complies

V. CONCLUSION

It can be concluded that polyherbal creams was formulated without side effects having antioxidant property can be used as provision of a barrier to take care of damage to the skin and avoid aging of the skin. It has also shown that on combining the extracts of eucalyptus and pomegranate different components in different ratio to get multipurpose effect such as, anti-aging, whitening anti-Aging and effect on skin was successfully tested. From all the evaluation test it was concluded that Formulation (F3) was found to be most stable and complied all the test.

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REFERENCES

[1] Antioxidant activity of pomegranate peel and seed powder extracts, Heena Jalal, Mohammad Ashraf Pal, Henna Jamdani, Mir Rovida and Nusrat Nabi Khan, JPP 2018;7(5):992-997.

[2] Pomegranate Peel Extract as a Source of natural antioxidant, A. padmaja and N. B. L. Prasad, Journal of Food

Science and Engineering 1(2011)171-182.

[3] Evaluation of antioxidants and antiradical properties of pomegranate (Punica Granatum L) seed and defated seed extracts, Shadi Basi,J Food Sci Technol(February 2015)1117-1123.

[4] Phytochemical analysis and Antioxidant activity of Eucalyptus Globus:A comparative study between fruits and leaves extracts, Zakia bey-Ould Si Said, Sakina Slimani, Hocine Remini, Hayat Idir-Himed, Jean-Paul, SDRP Journal of chemistry engineering and bioanalytical Chemistry, 2015.

[5] Antimicrobial and Antioxidant Activities and Phenolic Profile of Eucalyptus globulus Labill. and Corymbia ficifolia (F.Muell.), Molecules 2015,20,4720-4734.

[6] Rafraf M, Hemmati S, Jafarabadi AM, Moghaddam A, Haghighian KM. Pomegranate (Punica Granatum L.) Peel Hydroalcoholic Extract Supplementation Reduces Pain and Improves Clinical Symptoms of Knee Osteoarthritis: A Randomized Double-Blind Placebo Controlled Study. Iranian Red Crescent Medical Journal.2017; 19(1):377-385.

[7] Brooker, M.I.H.; Kleinig, D.A. Field Guide to Eucalypts, Volume 1, South-eastern Australia, 3rd ed; Bloomings Books Pty Ltd: Richmond, VA, USA, 2006.

[8] Luis, A.; Neiva, D.; Pereira, H.; Gominho, J.; Domingues, F.; Duarte, A.P. Stumps of Eucalyptus

[9] Globulus as a source of antioxidant and antimicrobial polyphenols. Molecules 2014, 19, 16428–16446.

[10] Singh, H.P.; Kaur, S.; Negi, K.; Kumari, S.; Saini, V.; Batish, D.R.; Kohli, R.K. Assessment of in vitro antioxidant activity of essential oil of Eucalyptus citriodora (lemon-scented Eucalypt; Myrtaceae) and its major constituents. LWT-Food Sci. Technol. 2012, 48, 237–241.

[11] Pereira, V.; Dias, C.; Vasconcelos, M.C.; Rosa, E.; Saavedra, M.J. Antibacterial activity and synergistic effects between Eucalyptus globulus leaf residues (essential oils and extracts) and antibiotics against several isolates of respiratory tract infections (Pseudomonas aeruginosa). Ind. Crops Prod. 2014, 52, 1–7.

[12] Boulekbache-Makhlouf, L.; Slimani, S.; Madani, K. Total phenolic content, antioxidant and antibacterial activities of fruits of Eucalyptus globulus cultivated in Algeria. Ind. Crops Prod.2013,41, 85–89.

[13] Bachir, R.G.; Benali, M. Antibacterial activity of the essential oils from the leaves of Eucalyptus globulus against Escherichia coli and Staphylococcus aureus. Asian Pac. J. Trop. Med. 2012, 2739–742.