FORMULATION AND EVALUATION OF POLYHERBAL FACD SCRUBBER FOR OILY SKIN IN GEL FORM

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Abstract: Cosmetics play a vital role for everyone to have a joyful and sanguine life.

In present scenario herbal cosmeceuticals have more demand because they have no side effects.

People having oily skin suffer from acne, whiteheads and blackheads quite often so scrubbing become more essential.

In our present study we formulated 3 different formulations F1, F2, F3 in gel form for oily skin by using turmeric, aloe vera, cinnamon, potato starch, activated charcoal powder, honey, green tea, lemon juice, onion, walnut shell, coconut oil, beet root juice powder, sodium lauryl sulphate, water and evaluated by using various parameters such as physical appearance, viscosity, pH, Spreadability, irritability, washability, stability studies and got fruitful results with all the tests.

The scrub F2 was found to show excellent effects on controlling oil secretion, and preventing formation of new pimples.

The herbal formulation F2 was having characteristic odour, reddish brown in color having, light, non-irritant to the skin and quite elegant.

Keywords: Organogels, Hydrogels, Polymers, Antiseptic, Antimicrobial.

INTRODUCTION

Facial scrub is the cosmetic product which cleanses, exfoliates the skin of the face and gives healthy complexation.

Generally, skins are of three types; dry skin, oily skin, and sensitive skin.

The people with dry skin must use facial scrub which contains hydrating ingredients and moisturizer is must for them after using scrub.

Gentle scrubs should be used for sensitive skin. For those who are having oily skin, it is essential to get a scrub that exfoliates deeply to prevent the pores from clogging and also to balance the skin's oil production.

We can use a face scrub twice or thrice a week followed by lightweight face oil.

Regardless of skin type, always we should select a scrub which is not hurtful but gentle to the skin.

The harsh ones can do more harm than good to the skin. For oily skin, Gel based scrub is preferred.

For dry skin, cream based scrub is useful.

For sensitive skin, scrubs with super soft granules are having good results. An ideal scrub is accepted to possess the properties like it should be nontoxic, possess small gritty particles, mild abrasive, non-irritating, non-sticky, and able to remove dead skin cells.

Facial scrub in gel form is having many advantages than other formulations for topical application.

Gels are the semi-solid dosage .They are most predominant among all the semi-solid dosage forms. Gel is the network of mixture of gelling agent and a solvent. The drug molecules are embedded or entwined evenly in the solvent.

Based on the nature of the solvent, gels are basically of two types, Hydrogels and Organogels.

Gels are composed of two interpenetrating systems where the colloidal particles, also known as the gelator or gallant, are uniformly distributed throughout a dispersion medium or solvent forming a three dimensional matrix known as the gel.

The polymer in gels acts as the backbone of the gel matrix. The polymeric meshwork gives gel its structural strength, increased adherence to the surface where applied and decreased permeation of the larger molecules hence making the retention possible.

During the gel formation, swelling occurs as a result of solvent penetration causing the polymer network to stretch and hold its shape and entwine the drug particles in them.

Viscosity plays an important role in the preparation of a gel.

Gel present in its solution form requires a specific concentration of polymer to increase its viscosity.

Our present work aimed at formulating the scrub containing herbal gelling agent (potato starch), humectants (honey), coloring agent (beet root juice) so that it has no side effects and contains herbal products also as excipients.

MATERIALS AND METHODS

Materials

All the ingredients were powdered and sieved through sieve no. 120. Then they were packed in moisture resistant, well closed containers. The different ingredients with their key uses are enlisted in table

Preparation of extract

The extract was prepared by cold maceration process. All the active ingredients (turmeric, cinnamon, aloe vera, activated charcoal, honey, green tea, lemon juice, onion, coconut oil) were ground and kept in water for 72 hours. This was dried and kept in desiccator for further process.

Preparation of gel

Sodium lauryl sulphate was weighed and dissolved in water and this solution is added to the potato starch which is used as a gelling agent. To this add the above prepared extract and stirred it for 5 min. Walnut shell microbeads added to this mixture which gives grittiness to the gel.

Name of ingredients

1. Turmeric

Kingdom: Plantae

Clade:Tracheophytes

Clade:Angiosperms

Clade:Monocots

Clade:Commelinids

Order:Zingiberales

Family:Zingiberaceae

Genus:Curcuma

Species:C. longa

Turmeric is a flowering plant, Curcuma longa, of the ginger family, Zingiberaceae, the rhizomes of which are used in cooking. The plant is a perennial, rhizomatous, herbaceous plant native to the Indian subcontinent and Southeast Asia that requires

temperatures between 20 and 30 °C (68 and 86 °F) and a considerable amount of annual rainfall to thrive. Plants are gathered each year for their rhizomes, some for propagation in the following season and some for consumption.

Uses :- as an Antibacterial, antifungal and brings glow to the skin.

2. Aloe vera

Kingdom: Plantae

Clade: Tracheophytes

Clade: Angiosperms

Clade: Monocots

Order: Asparagales

Family: Asphodelaceae

Subfamily: Asphodeloideae

Genus: Aloe

Species: A. vera

Aloe vera is a succulent plant species of the genus Aloe.[4] Having some 500 species, Aloe is widely distributed, and is considered an invasive species in many world regions.

USES :- Moisturizing agent and delivers smoothing property to the skin.

3.cinnamon

Cinnamon is a spice obtained from the inner bark of several tree species from the genus Cinnamomum.

Cinnamon is used mainly as an aromatic condiment and flavouring additive in a wide variety of cuisines, sweet and savoury dishes, breakfast cereals, snack foods, teas, and traditional foods.

The aroma and flavour of cinnamon derive from its essential oil and principal component, cinnamaldehyde, as well as numerous other constituents including eugenol.

USES :- Anti-inflammatory property, Removes acne, scars and wrinkles.

4. charcoal powder

Activated charcoal is a black, odorless, flavorless powder that has been used since ancient times to treat various ailments.

Nowadays, it's most commonly utilized in medical settings to treat drug overdoses or as an emergency anti-poison remedy.

Activated charcoal is thought to offer several other benefits, including less gas and flatulence, lower cholesterol levels, and improved kidney function. Some people claim that it helps whiten your teeth, filters water, and even cures hangovers.

USES:-Activated charcoal removes dirt, chemicals, bacteria, poisons, and other micro-particles from the surface of skin, brings flawless complexion and clears acne.

5. walnut shell

Walnut shells are a versatile abrasive media widely used in blasting, tumbling, cleaning, polishing, filtration, cosmetics, as well as non-skid applications and filler applications. Walnut shells are crushed, ground and classified to standard mesh sizes that range from coarse grio fine powders.

Uses :- Exfoliator that gently removes impurities and dull cells leaving skin instantly smooth and radiant.

6. Honey

Honey is a sweet, viscous food substance made by honey bees and some other bees.

Bees produce honey from the sugary secretions of plants (floral nectar) or from secretions of other insects (such as honeydew), by regurgitation, enzymatic activity, and water evaporation. Honey bees store honey in wax structures called honeycombs, whereas stingless bees store honey in pots made of wax and resin.

The variety of honey produced by honey bees (the genus Apis) is the best-known, due to its worldwide commercial production and human consumption. Honey is collected from wild bee colonies, or from hives of domesticated bees, a practice known as beekeeping or apiculture (meliponiculture in the case of stingless bees).

Uses:- as humectants and as nutrient, used as thickening agent.

7. Beet root juice powder

Most lists of "super foods" don't include beetroot juice, but maybe they should.

Beet juice may boost stamina to help you exercise longer, improve blood flow, and help lower blood pressure, some research shows.

Beets are rich in natural chemicals called nitrates. Through a chain reaction, your body changes nitrates into nitric oxide, which helps with blood flow and blood pressure.

Beet juice may boost stamina, improve blood flow, and help lower blood pressure, some research shows.

USES :- It is used as a coloring agent. It also gives healthy and glowing skin.

8. Green Tea

Green tea is made from the Camellia sinensis plant. Its dried leaves and leaf buds are used to make several different teas, including black and oolong teas. Green tea is prepared by steaming and pan-frying the Camellia sinensis leaves and then drying them**.**

USES :- Polyphenols containing green tea helps in anti ageing, skin looks younger and attractive.

9. COCONUT OIL

Many manufacturers have begun to use coconut oil in packaged products, and many people use it for cooking. Many products, such as fried foods, sweets, shampoos, coffee, smoothies, contain coconut oil.

In July 2016, results of a survey in the United States showed that 72% of people believed that coconut oil was healthful, but only 37% of nutritionists agreed.

Coconut oil contains over 80%Trusted Source saturated fat. Some expertsTrusted Source have linked saturated fats with cardiovascular and other diseases.

USES :Nutrient, Skin tonic and emollient.

Composition of developed formulation

Sr.no.	Ingredients	Quantity taken for 10 g gel		
		F1	F2	F3
1	Turmeric	0.5g	0.5 g	0.5 g
2	Aloe vera	0.7 ml	0.7 ml	0.6 ml
3	Cinnamon	0.01 g	0.01 g	0.01 g
4	Potato starch	0.5 g	0.75 g	0.25 g
5	Activated charcoal	0.2 g	0.2 g	0.3 g
6	Honey	3 ml	4 ml	3 ml
7	Green tea	0.2 g	0.1 g	0.1 g
8	Lemon	0.7 ml	0.8 ml	0.7 ml
9	Onion	0.01 ml	0.01 ml	0.01 ml
10	Walnut shell	0.5 g	0.5 g	0.5 g
11	Coconut oil	0.2 ml	0.2 ml	0.2 ml
12	Beet root juice powder	0.2 ml	0.2 ml	0.2 ml
13	Sodium lauryl sulphate	0.01 g	0.01 g	0.01 g
14	Water	q.s	q.s	q.s

Evaluation

Color: The color of the face wash gel was checked visually.

Odour: The formulation was evaluated for its odour by smelling it.

pH: 1% solution of our sample was measured by using a digital pH meter at constant temperature.

Consistency: It was tested manually.

Spreadability: Two slides are taken and herbal sample was placed on one slide. Other slide was placed on thefirst slide. 100 g of weight was kept on the slides so that it spreads as a thin layer. Weight was been eliminated much high than the prisons. Next weight of 20 g was kept on the upper slide. It was performed for 3 times and average was calculated.

Spreadability was calculated by using the following formula, S=M×L/T Where, S- Spreadability; M- Weight tied to the upper slide (20 g); Length of the glass (6.5 cm); Time in sec.

Viscosity: Brookfield viscometer was used to measure the viscosity of our sample. Viscosity of sample and water were taken in poise.

Washability: Formulations when applied on the skin can be easily removed by washing with water were tested manually. Grittiness: The product was checked for the presence of any gritty particles by applying it on the skin .

Foamability: Small amount of gel was taken in a beaker containing water. Initial volume was noted; beaker was shaken for 10 times and noted the final volume.

Grittiness: The formulation was checked for the presence of any gritty particles by applying it on the skin.

Patch test: Patch testing is well established method for diagnosing the hypersensitivity as well as to determine the potential of a specific substance to cause the allergic action on patient skin.

Evaluation parameters for facial scrub

Sr.no.	Parameter	Observation		
		F1	F2	F3
1	Colour	Reddish brown	Reddish brown	Reddish brown
2	Odour	characteristic	characteristic	Characteristic
3	PH	6.0	5.8	6.2
4	Consistency	Semi solid	Semi solid	Semi solid
5	Spreadability	4.8 g-cm/sec	5.6 g-cm/sec	4.1 g-cm/sec
6	Viscosity	1.4 poise	1.7 poise	1.2 poise
7	Washability	Good	Easily washable	Good
8	Grittiness	No	No	No
9	Foamability	150 ml	150 ml	150 ml
10	Patch test	No allergic action	No allergic action	No allergic action

RESULTS AND DISCUSSION

Formulation F1, F2, F3 was tested using various evaluation parameters. Spreadability, viscosity and pHof F2 formulation was found very good when compared to F1 and F2.

Stability studies: stability studies of F2 formulation gives good results during 3 months and the values are below.

Results for Stability studies of F2 Formulation

Parameter	Initial	1st Month	2nd month	3rd month
Colour	Reddish brown	Reddish brown	Reddish brown	Reddish brown
Odour	Characteristic	Characteristic	Characteristic	Characteristic
Spreadiability	5.6 g cm/sec	5.5 g cm/sec	5.4 cm/sec	5.4 g cm/sec
PH	5.8	5.7	5.6	5.5
Viscosity	1.7 poise	1.6 poise	1.58 poise	1.56 poise

All the ingredients used in this poly herbal facial scrub are our food ingredients. So, the chances for its side effects are less. F2 is more effective than F1 and F3. We can use this herbal facial scrub for getting best results for oily skin. The efforts are on to reformulate the scrub in a gel form in order to achieve better spreadibility along imparting emollient and smoothing action.

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