

Formulation and Evaluation of Herbal Gel Using Natural Fruit Extracts

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Date of Submission: 15-10-2021

Date of Acceptance: 27-10-2021

ABSTRACT

Herbal medicines have become an item of global importance both medical and economical. Although usage of these herbal medicine has increased their quality, safety and efficacy. Herbal medicines are oldest form of health care known to mankind. The purpose of the present research work was formulation and evaluation of herbal gels. Herbal gels offer several advantages over other gels. Methods carried out to prepare herbal gel was very simple. Firstly, different powders are used to this gels. Powders are dissolved with distilled water to this add carbopol940 [2g] with continuous stirring to this add methyl paraben, propyl paraben and also add propylene glycol with continuous stirring this gel is taken into air tight container. The above prepared herbal gel evaluated. Further studies are needed to investigate this formulation for its performance

KEY WORDS: Gel, Pomegranate, Papaya, Watermelon.

I. INTRODUCTION

Gels are semi solid preparations that contain small inorganic particles or large organic molecule interpenetrated by a liquid. Gel formulation prepared with carbopol940, and xanthan gum showed good homogeneity, no skin irritation, good stability and anti-inflammatory activity. Gels are prepared by herbal ingredients having lesser side effects are better than synthetic ingredients. These herbal plants have been used since long for having good antimicrobial antiseptic antioxidant and anti-inflammatory activities to keep skin healthy clear and glossy against various odds like dryness roughness, skin redness and pimples. Different fruits can be used for different formulations like apple gel, papaya gel, strawberry gel, watermelon gel. [1]

Advantages of herbal gels

- They do not provoke allergic reaction and do not have negative side effects

- They are easily incorporated with skin
- Small quantity they are very effective as compared to synthetic cosmetics
- Easily available and found in large variety and quantity
- Earth and skin friendly

Types of gels:

1. Based on number: single phase and two phase
2. Based on source of gelling agent: natural and synthetic
3. Based on nature of gelling agent: organic and inorganic
4. Based on type of solvent: hydrophilic and hydrophobic[2].

The term cosmetic derived from Greek word cosmetics which mean pertaining to cosmetics or beautifying substance.

These cosmetics are used for 2 uses:

1. The preservation, restoration or bestowing of bodily beauty.
2. The surgical correction of disfigured physical defect.

Cosmeceuticals represent the union of cosmetics and pharmaceuticals. Examples of products typically labelled as cosmeceuticals include anti-aging creams and moisturizers. Cosmetics in ayurveda defined as varyna, Twakdohargunas. Recently ministry of AYUSH, Govt of India approved after approved after recommendation of ASUTAB "Saundryaposhak categories under the drug and cosmetic act 1940 and there under rule 1945.

In today's world the following popular cosmetic preparation used by the modern society eg: creams, lotion, gel, oil, soap, shampoo, hair colour and dye etc.[3].

In the modern cosmaceuticals the cosmetic preparation are basically divided into following 3 categories as

1. Liquid: Hair oil, body oil, lotions, moisturizers, shampoo, conditioner, cleansing milk, mouth wash deodorant, spray, etc.

2. Semisolid: creams, ointment, paste etc.

II MATERIALS AND METHODS

Materials used and their extraction process:

CARICA PAPAYA: Firstly the outer layer and seeds of the papaya fruits were removed and pulp was collected the pulp was dried in the hot air oven in suitable temperature. About 200g of dried pulp was extracted for 8 hours by using Soxhlet apparatus the extract was filtered and air dried the dried extract was repacked in the soxhlet apparatus using chloroform for 8 hours the extract was air dried .the chloroform extract was repacked in sox let apparatus by using ethanol for 8 hours respectively. Extract was filtered and evaporated.



CITRULLUS LANATUS: The freeze dried watermelon was extracted by soxhlet apparatus. The freeze dried watermelon powder was placed in soxhlet extraction unit and extracted for 12 hours. Extraction was done in the dark to minimize the lycopene degradation. Solvent was evaporated by vacuum rotary evaporator the concentrated watermelon powder extract was weighed. [4].



PUNICA GRANATUM: Pomegranate fruits shall be washed with distilled water and cut manually to separate the arils and peel. The arils shall be pressed manually to extract pomegranate juice, pomegranate seeds was dried an air circulatory tray dried at 60 degrees for 6 hours or till it moisture content reaches to 5-6%, dried seeds shall be cooled powdered to be able to pass through 40 mesh screen packed in high density polyethylene bags and stored at room temperature.



Formulation of Herbal Gels:

Ingredients	Formulation:1	Formulation:2	Formulation:3
Carica Papaya	API	----	----
Punica Granatum	----	API	----
Citrullus Lanatus	----	----	API
Carbopol 940	2g	2g	2 g
Methyl Paraben	0.2g	0.2g	0.2g
Glycerin	0.3ml	0.3ml	0.3ml
Sodium benzoate			

	0.05g	0.05g	0.05g
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Three different formulations were prepared using different concentration of carbopol 940. Accurately weighed carbopol was taken in a beaker and dispersed in distilled water with constant stirring using a mechanical stirrer for 30 min at 1200 rpm. After all the carbopol was dispersed, the extract dissolved in ethanol and the preservatives were added and mixed well. The pH was adjusted to neutral using triethanolamine until a clear consistent gel was obtained. [5].

Extrudability: A closed collapsible tube containing about 20 g of gel was pressed firmly at the crimped end and a clamp was applied to prevent any rollback. The cap was removed and the gel was extruded until the pressure was dissipated.

pH measurements: pH measurements of the gel were carried out using a digital pH meter by dipping the glass electrode completely in to the gel system to cover the electrode.

Viscosity: Viscosity of the gels was determined using Brookfield viscometer (Spindle type, S-24; model LVDV-E) at 10 rpm. 200 g of the gel was taken in a beaker and the spindle was dipped in it for about 5 minutes and then the reading was taken. [6].

Spreadability: Two sets of glass slides of standard dimensions were taken. The herbal gel formulation was placed over one of the slides. The other slide was placed on the top of the gel, such that the gel was sandwiched between the two slides in an area occupied by a distance of 7.5 cm along the slide. 100 g weight was placed upon the upper slides so that the gel between the two slides was pressed uniformly to form a thin layer. The weight was removed and the excess of gel adhering to the slides was scrapped off. The two slides in position were fixed to a stand without slightest disturbance and in such a way that only the upper slide to slip off freely by the force of weight tied to it. A 20 g weight was tied to the upper slide carefully. The time taken for the upper slide to travel the distance of 7.5 cm and separated away from the lower slide under the influence of the weight was noted. The experiment was repeated by three times and the mean time. [7].

Skin irritation study: Absence of skin irritation in gel formulation is acceptable by patient. Skin irritation test performed by using in-vitro skin irritation test method. [8].

III. RESULTS AND DISCUSSION

Formulated herbal gels:

Citrullus lanatus gel:



Punica grantum gel:



Carica papaya gel:



Physicochemical evaluation:

Physical Appearance: All formulation batches were found to be homogeneous gel preparations.

Measurement of pH: The pH values of all prepared formulation ranged from 6-7 which are considered acceptable to avoid the risk of irritation upon application to the skin because adult skin pH is 5.5.

Spreadability: The spreadability of the extract gel formulation was found to be easy spreadable.

Skin irritation study/ Patch test: No redness or erythema was found.

Extrudability: The extrudability of gels from the container was found to be good.

Homogeneity: The homogeneity of gels from the container was found to be good.

Formulation	Appearance	Homogeneity	Viscosity	Extrudability
F1	Good	Good	1690	Good
F2	Good	Good	1690	Good
F3	Good	Good	1690	Good

Formulation	pH	Spreadability test	Patch test	Gel stability
F1	7	Easy spreadable	Not Found	Good
F2	7	Easy spreadable	Not Found	Good
F3	7	Easy spreadable	Not Found	Good

IV. SUMMARY AND CONCLUSION

The polyherbal gel of crude drugs with the best properties and having nutritional value was to be prepared by simple methods and less equipment are required.

Further studies are required for this polyherbal gel. Total Three gels are formulated and evaluated. The formulated gels are good spreadability and good gelling property and maintained PH.

The gels were formulated by using natural ingredients and were evaluated by combining all these ingredients it can concluded that the gels can be used as multi Purpose gel. The work was concluded that all the formulations were found to be satisfactory.

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