FORMULATION AND EVALUATION OF CROCUS SATIVUS (SAFFRON) HERBAL SOAP

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Abstract-

The skin is constantly exposed to a range of stimuli because it interacts with the environment. As a result, the skin is prone to injury. When a badly damaged skin tries to heal, scar tissue emerges, which is typically decolorized and depigmented. Chemical soaps, on the other hand, are known to promote skin irritation and dryness. Natural ingredaient cosmetics are becoming more popular among consumers as a healthier, organic, and ecologically responsible option. Ayurvedic cosmetics are sometimes known as herbal cosmetics. **Crocus sativus** (Saffron) has been valued for its medicinal properties for centuries, including antioxidant, anti-inflammatory, and skin-brightening effects.

INTRODUCTION

The skin outermost layer, human skin, acts as the body's first line of defense against a range of infections.

1. The skin is constantly exposed to a range of stimuli because it interacts with the environment. As a result, the skin is prone to injury.

2. When a badly damaged skin tries to heal, scar tissue emerges, which is typically decolorized and depigmented. Chemical soaps, on the other hand, are known to promoteskin irritation and dryness.

3. Natural ingredaient cosmetics are becoming more popular among consumers as a healthier, organic, and ecologically responsible option. Ayurvedic cosmetics are sometimes known as herbal cosmetics.

4. The natural component of herbal medicine has no negative effects on the human body in the vast majority of cases. A pharmaceutical or medication that contains antibacterial and antifungalingredientsisknownasan"herbalsoappreparation."It'smadeupofplantparts

including leaves, stems, roots, and fruits, and it's used to treat damage, disease, and keep people healthy.

5. Soaps have been used in our daily lives for over 6,000 years and have a rich history. Ancient Babylonians developed a cleaning material by combining animal fats, wood ash,and water, which became known as "soap." Saponification is the basic method of soap production in which fats or oils react with a base/lye. Soaps are divided into two types: solid and liquid. Solid soaps are made with NaOH as the basis, while liquid soaps are made with KOH. Medicinal soaps differ from regular soaps in that synthetic or natural bioactive substances are added to the basic soap medium to give the end product a wide range of biological activity.

DRUG PROFILE

SAFFRON Scientific classification

Kingdom: Plantae

Division: Magnoliophyta

Order: Sapindales

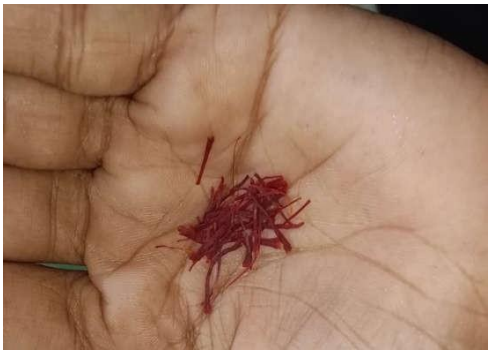
Family: Iridaceae

Genus: Crocus

Species: CrocussativusL

Biologicalsource-It consists ofall aerialparts ofplant knows asAzadirachtaindica.Family-Meliaceae. Crocus sativus (Saffron) has been valued for its medicinal properties for centuries, including antioxidant, anti-inflammatory, and skin-brightening effects.

Using saffron in soap formulations can add both therapeutic and cosmetic benefits. This experimentaimstocreateasaffron-basedherbalsoapandevaluateitsproperties.Crocus



sativus L. belonging to the family Iridaceae (syn - kesar) comprises the dried red stigma and is widely cultivated in Iran and other countries such as India and Greece. Saffron contains morethan150 volatileand aroma-yieldingcompounds mainlyterpenes,terpene alcohol, and their esters. The bitter taste and an iodoform or hay-like fragrance are caused by chemicals picrocrocin and safranal. C. sativus possesses a number of medicinally important activities such as antihypertensive, anticonvulsant, antitussive, antigenototoxic and cytotoxic effects, anxiolytic aphrodisiac, antioxidant, antidepressant, antinociceptive , anti-inflammatory, and relaxant activity. It also improves memory and learning skills, and increases blood flow in retina and choroid.

The present review explores the historical background, chemical constituents, pharmacological actions, uses, substitutes and adulterants, and toxicity.

MACROSCOPY

Crocus sativus, commonly known as saffron, is a valuable spice derived from the flowers of the Crocus plant. When it comes to microscopy, the stigma of Crocus sativus would show unique characteristics, such as: - Long, thread-like structures - Yellow-orange pigmentation due to crocin and crocetin compounds - Specific cellular structures containing these pigments.

1. Stigma: The stigma is deep orange-red, long, and thread-like. It shows papillose epidermal cells (cells with finger-like projections).Epidermal cells are elongated andcovered with a thick cuticle. Vascular bundles are small and located centrally. Oil globules and pigmented cells (containing crocin) are present, giving saffron its characteristic color.

2. Style: Cylindrical and elongated structure. Composed of parenchymatous cells with a few vascular strands. Cells contain starch grains and coloring matter(crocinandcrocetin).Shows fibrovascular bundles running longitudinally.

Powder Microscopy of Saffron: Under the microscope, saffron powder shows: Reddish-orange fragments of stigma tissue. Elongated epidermal cells with papillae. Oil globules and coloringmatter(crocin).Occasionallypollengrainsandfibrovasculartissues.Diagnostic

Features: Presence of branched or papillose stigma cells.Orange-red coloring matter in parenchymatous cells. Aromatic odour due to volatile oil. No trichomes or calcium oxalate crystals (helps in identification). Chemical compounds 1. Major Chemical Constituents: Class of Compound Name of Compound Function / Property Carotenoids: Crocin Gives saffron its deep orange-red color; powerful antioxidant. Crocetin Responsible for color and therapeutic effects (anti-inflammatory, antioxidant). Monoterpene Aldehyde (Volatile oil) Safranal: Responsible for the characteristic aroma of saffron; antioxidant and antidepressant activity. Bitter Glycoside: Picrocrocin - Responsible for the bitter taste of saffron; precursor of safranal on drying. Flavonoids - Kaempferol,

Quercetin-Antioxidant,anti-inflammatory.

Sugars -Glucose,Fructose,SucroseProvidenutritivevalue.

Aminoacids-Tyrosine,PhenylalaninePrecursorsforaromacompounds. Minerals -

Potassium, Calcium, Magnesium, Iron, Zinc

Nutritionalelements-Proteinsandvitamins. Trace

amounts Supportive nutritional role. **Result:**

1. **Description Parameter Observation**

Color- Deeporange-redstigmasandstyles

Odor- Strong, pleasant, and characteristic (duetosafranal)

Taste- Bitter and aromatic (because of picrocrocin)

Shape-Thread-like, flattened, and slightly trumpet-shapedatoneend

Texture- Dry, fragile threads

Solubility -Water-soluble(formsyellow-orangesolutionduetocrocin)

2. Microscopic Characters:

Elongated stigmas with papillose epidermal cells. Presence of orange-red carotenoid pigments (crocin). Epidermal cells contain numerous oil droplets.

3. Result:

The sample shows characteristic color odor, and taste of genuine saffron. Positive identificati on tests (colorchangewithHSO→bluecolorduetocrocin). Hence, the sample is confirmed as pure saffron (Crocus sativus Linn.) and meets pharmacognostic standards.

4. Solubility:

Solubility is defined as a substance's capacity to dissolve in a solvent. One gramme of powder is precisely weighed and added to a beaker containing 100 milliliters of water. To boost the solubility, this was well shaken and warmed. The residue thus obtained is weighed and noted after it has been cooled and filtered.

5. ATR FTIR Spectra Analysis:

The spectrum was collected between the wavelengths of 4000 and 400 cm-1. After placinga sample directly into the cavity of the sample holder, an ATR-FTIR spectrophotometer was used to acquire an ATR-FTIR spectrum.

6. Studies on physical compatibility:

For a weak stability test, the physical mixture of drag and excipient was kept in a Petri dish and stored at normal and high temperatures in a stability chamber at 45 °C and 75 percent RH. Following a mediocre performance, any physical changes, such as discoloration or odour, are checked on the samples.

Compatibility studies:

The spectra was recorded in the wave number range of 4000 to 400 cm-1 for these compatibility investigations, which were conducted using an ATR-FTIR spectrophotometer. The natural oils and excipients were thoroughly combined in the mortar until they were completely mixed. The sample was then taken from the mortar and placed in the sample holder's cavity, where the spectrum was recorded. ATR-FTIR spectroscopy was fixed at the range of 4000- 400cm-1. There is no interaction between the drug sand excipients. To optimize formulation concentrations of excipients that affect foaming ability, soap base concentrations were altered to see how they affected foam ability. Five trials were prepared and carried out to investigate the influence of a single excipient in each formulation, with one formulation (F3) remaining optimized for multion.

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7.Determining of pH:

The pH of all of the created formulations was determined using a digital pH meter. The formulations were diluted in 100 mL of distilled water and kept for two hours in the refrigerator. The pH of the formulation was determined using a pH meter that had already been calibrated. The pH of all formulations is represented in the graph above, and it ranges from (5.1) to (10.0). (9.5). (5.6). The ideal pH level has been established to be 5.

8.Irritation of the skin:

The herbal soap formulation was evaluated for irritancy of the skin. The medication causes no irritation or redness. The situation was monitored for a total of 24 hours. One of the most important factors to consider while making soap is how to avoid skin discomfort. The above table displays the results of all formulations.

9.Wash ability Evaluation:

The herbal soap was put through a formulation test, as well as the simplicity with which it could be washed with water. Wool yarn was used to test the cleaning activity. Although the primary goal of a soap is to clean or remove dirt or sebum, standardizing experimental detergency evaluation has proven challenging due to a lack of consensus on a standard soil,a repeatable soiling technique, or the amount of soil a soap should remove. Foam-forming ability: For the purpose of determining its abilityto generate foam, approximately 1.0 gm of herbal soap was taken and diluted in distilled water (about 50 ml) in a 100 ml graduated measuring cup. It was shaken for around 10 minutes with the measurement cylinder. After10 minutes, the foam height was recorded. The mean was calculated after recording the observations for five experiments. Although foam formation has little to do with soap's cleansing function, it is extremely essential to consumers and thus an important criterion in soap evaluation. In distilled water, all five soaps had identical foaming qualities. The foaming qualities of all fivesoapswere similar.Thefoam abilityrange was discovered to be 16-17 cm. The foam abilityof the F3 formulation was determined to be 16.5 cm. (The result shown in the table.no:1)

10.Foam retention time:

Foam retention time refers to the amount of time that the soap's foam remains intact. The foam internal was measured for around 5–10 minutes after repeating the aforesaid process. All five composition of soap showed comparable the foam retension time. The foam retention time of herbal soap is listed in F3 was determine to be a 10minutes.

11.Moisture content:

The moisture content was calculated by drying the soap to a set weight and calculating the percentage of water in the soap. Before being dried in a dryer at temperatures ranging from 100 to 1150 degrees Celsius, the soap was weighed and recorded as the "wet weight of the sample." The sample was refrigerated and weighed to determine the "dry weight of the sample." The moisture content was calculated using the formula. % Moisture content = initial weight – final weight/final weight ×100 The moisture content of all five soap compositions was similar. The moisture level of herbal soap, which is specified in F3, was found to be 6%.

12.Stability studies:

Stability tests were carried out in accordance with ICH norms for accelerated testing, with the necessary changes. The sample formulation was taken and stored for one month at 30 °C ambienttemperatureand4+2°Cintherefrigerator.Physicalappearance,pH, viscosity,and percent cleaning effect were all assessed on the samples.

Table1:Physicochemicalpropertiesoftheformulatedherbalsoap

Color	Odor	Appearance	pH	Moisture content (%)	Foam height	Foam retention	free alkali	Alcohol-insoluble matter	Total fatty matter
Penny brown	Fragrant	Clear	8	5.3	9	7.5	0.25	21.4	77

SUMMARY&CONCLUSION

The formulated soap showed considerable antibacterial activity as the commercial standard and all the other parameters were good, and hence, it can be concluded that the formulated herbal soap must be standardized and can be used as apromising alternative to commercial chemical containing skin whitening soaps.

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