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GREEN SYNTHESIS AND CHARACTERIZATION OF NATURAL ANTISEPTIC SOAP USING NOVEL SEED FIXED OIL

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Abstract

The science of Ayurveda had utilized many herbs and floral to make cosmetics for beautification and protection from external affects the natural content of in the botanical do not cause any side effects on human body; instead enrich the body with nutrients and other useful minerals. The natural herbs and their products when used for their aromatic value in cosmetics preparation are termed as herbal cosmetics.

The skin is that the largest and one in all the foremost intriguing organs of the body, accounting for 7% of the whole weight. The skin is continually repairing and renewing itself. The skin has many functions including but not limited to production of keratin, sebum, sweat and melanin, heat exchange, protection, wound repair, perception of sensations and temperature regulation. It's composed two main structural layers with interdependent functions. Components within the skin regulate these functions and must be considered when analyzing abnormal conditions of the skin.

Keyword: Anti-Septic, Coriander seed, Anti-oxidant, Rejuvenating

1.INTRODUCTION

1.1. Soap

History

Soaps are the sodium salts or potassium salts of stearic acids or the opposite fatty acids. they're prepared by the saponification process, which is, reacting the oil which contain triglycerides with hydrated oxide (NaOH) to grant the soap. However different oils have different composition of fatty acids which are accountable for different properties of soaps made out of them. within this work 5 differing kinds of oils are taken. they're blended in various ratios to arrange 14 different samples of soap. Different properties of these samples were analyzed to see which soap is that the simplest one. The blend of oil and purgative at 3:1 ratio is discovered to be the only with 76.8% of TFM and 89.46% of yield. the only blend is analyzed for various properties which they were compared thereupon given within the literature. The saponification values, iodine values of oil and purgative were discovered and these values were also found for the blend. it absolutely was found that the blend was having SAP value of 230.4 and iodine value of 40 which are on top of the individual values.

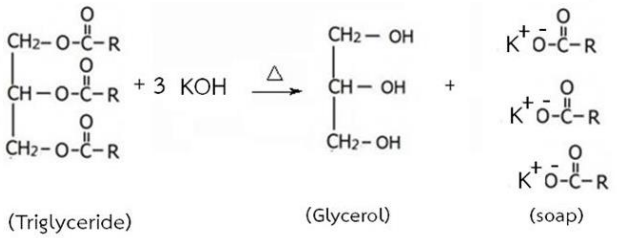

Fig1. Saponification Reaction

1.2 Anti Septic Soap

The maintenance of lovely skin and hair is that the desire of the many people everywhere the planet,thus,the application of safe cosmetic products is inevitable .Natural cosmetics containing bioactive phytochemical

compounds offer deal of beauty and pharmacological effect with less toxicity to users and therefore the environment.The principle of green chemistry was adopted for the preparation of herbal antiseptic soaps which were plant-based, biodegradable and freed from artificial colourings /preservatives. Phy- sicochemical parameters which include colour ,acid value ,free carboxylic acid values ,saponification values, hardness, pH, colour and foaming ability of the oil and soaps were determined as applicable

Fig 1.2 Soap

2. OBJECTIVES OF THE PRODUCT

- To prepare an Antiseptic soap using unutilized topical seeds.
- To form an Antiseptic soap.
- To Study characteristics of prepared Antiseptic soap.

2.1. Need of Product

- It contains beneficial ingredients essential for skin.
- Convenient to use

2.2. Active Ingredients

There are several herbs that are used in cosmetics. And herbal cosmetics are evergreen and most selling products in the cosmetic and pharmaceutical market as well. Herbal ingredients are natural and more effective than the other ingredients.

2.2.1. General uses of herbs in Cosmetics

- These give moisture on a high note.
- These also provide Antioxidant effect.
- Herbs may lighten the skin and give a glow.
- Some of also treat acne.
- Herbs also provide rejuvenating effect to the skin.

2.3. Coriander Seeds Extract

Biological Source-

Coriander consists of dried ripe fruits of Coriandrum sativum Linn., belonging to family Apiaceae.

2.4. Benefits in Product

- It is effective at killing germs while cleaning dirt, excess oil, odor, sweat, and makeup from your skin.
- It help the skin to fight against illness and infection.
- antiseptic soaps are designed to reduce or eliminate bacteria that can lead to skin infections or other commonly transmitted diseases.

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2.5. Chemical Constituents

1. Alcohols	**Linalool (60–80%), geraniol (1.2%–4.6%), terpinen-4-ol (3%), α-terpineol (0.5%)**
2. Hydrocarbons	γ-terpinene (1–8%), r-cymene (3.5%), limonene (0.5%–4.0%), a-pinene (0.2%–8.5%), camphene (1.4%), myrcene (0.2%–2.0%)
3. Esters	Geranyl acetate (0.1%–4.7%), linalyl acetate (0%–2.7%)

Fig(2.1) Dhana seeds

3.EXPERIMENTAL WORK

- The method or procedure to formulate a antiseptic soap
- But the main task in this formulation of Antiseptic soap using Dhana seed
- Another main task is to maintain the stability of the product and the activity of it.
- A proper and strict method has to be carried out while formulating the Soap such as –
  1. Selection of Actives
  2. Selection of Extraction Techniques
  3. Selection of Base
  4. Preparation of Soap
  5. Evaluation of Soap

3.1. Selection of Actives

Coriander Seeds (dhana) as it Herbal medicine is that the oldest variety of medicine known to mankind. it had been the mainstay of the numerous early civilizations and still the foremost widely practiced variety of medicine within the globe today. it contained oil, tannins, terpenoids, reducing sugars, alkaloids, phenolics, flavonoids, fatty acids, sterols and glycosides. It also contained high nutritional values including proteins, oils, carbohydrates, fibers and large choice of minerals, trace elements and vitamins. The preceding pharmacological studies revealed that it influenced anxiolytic, antidepressant, sedative-hypnotic, anticonvulsant, memory enhancement, improvement of orofacial dyskinesia, neuroprotective, antibacterial, antifungal, anthelmintic, insecticidal, antioxidant, cardiovascular, hypolipidemic, anti-inflammatory, analgesic, antidiabetic, mutagenic, antimutagenic, anticancer, gastrointestinal, deodorizing, dermatological, diuretic, reproductive, hepatoprotective, detoxification and plenty of other pharmacological effects. this review gives an summary on the chemical constituents and pharmacological effects of Coriandrum sativam

3.2. Selection of Extraction Techniques

- **Extraction:** Coriander seeds were dried at 60°C in hot air oven till constant weight was attained.
- Finely powdered coriander seeds were extracted with 80% methanol (1g/10ml) in a shaker at room temperature for 4 hrs. Residue was again extracted with 80% methanol for 2 hrs. Collected extract was filtered through double layered muslin followed by centrifugation at 5000xg for 5min in order to get clear supernatant. Extract was concentrated in a vacuum evaporator and stored at -20°C for further use. The extract was diluted appropriately for different experiments
- Extraction method of coriander seeds volatile oil by soaking in hexane at room temperature
- 50 g of grinded coriander seeds were weighed and soaked in 250 ml hexane for one week at room temperature. After filtration, the hexane was removed using rotating evaporator at 40oC and the percentage of remaining oil was calculated (the total oil of coriander seeds). After that, the total oil was solved in hexane again, and then the resulting product was distilled using rotating evaporator under low pressure at 40oC. The hexane was removed rotating evaporator to get the volatile oil.
- 50 g of fresh and dried coriander seeds were soaked in 250 ml hexane for one week at room temperature, and filtration of the extracted coriander seeds was repeated twice again in the same solvent (hexane).
- The extracts were collected then the solvent was removed using rotating evaporator at 40oC. The percentage of total oil to the weight of seeds was calculated. The previous steps were repeated for the solvents: petroleum ether (b.p.

40-60oC), methanol, ethanol, acetone, tetra chloromethane and dichloromethane.

3.3. Preparation of Soap

Soap is a combination of animal fat or plant oil and caustic soda. When dissolved in water, it breaks dirt away from surfaces. Through the ages soap has been used to cleanse, to cure skin sores, to dye hair, and as a salve or skin ointment. But today we generally use soap as a cleanser or perfume.

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4. PROCEDURE

4.1. Cold Process-

This process involves the treatment of fat or oil with an exact amount of alkali and no separation of waste lye. Although it's possible with lot care to provide neutral soap by this process the soap is extremely at risk of contain both free alkali and unsaponified fat. the method is typically supported the very fact that the glycerols of certain low fatty acids oils (nut oils like coconut and palm nut oils) readily combines with strong hydroxide solutions at low temperatures, and generate little heat to finish the saponification reaction. In this process, it's absolutely necessary to use high grade raw materials. Oils and fats should be free of excess acidity because hydroxide rapidly neutralizes the free fatty acids forming granules of soap which grain get in the presence of strong caustic solution, and since the grainy soap is extremely difficult to get rid of without heat increase, the soap tends to become thick and gritty and sometimes discolors. The hydroxide getting used should even be pure ,it must contain as little carbonate as possible, and therefore the water must be soft and every one other materials carefully free of all particles of dirt. The process involves stirring into the milled fat in a very tank, half its weight of hydroxide solution of at the temperature of 24°C for coconut and 38°C to 49°C for the blend. The assertive of the caustic solution into the oil must be done not only gently and nonstop When the answer is being run into the oil, the mixture must be stirred in mere one direction. When all the hydroxide solution had been run into the oil and therefore the mixture stirred for 30 to 45 minutes, chemical action takes place with lot of generation of warmth, finally leading to the saponification of the oil. The content of the tank looks thin, but after some few hours it becomes a solid mass. the sides of the soap becomes more transparent because the process advances further, and when the transparency has extended to the total mass, the soap is prepared, after perfuming to be poured into moulding boxes for hardening, cutting and stamping. a touch potash solution is employed to blend the hydroxide solution which greatly improves the looks of the given soap, making it smoother and milder.

5. FORMULATION TABLE

Sr.no	Ingredients	Oty.100%
1.	Stearic acid	**27**
2.	Coconut oil	**7**
3.	Castor oil	**5**
4.	Alcohol	**10**
5.	Sodium chloride	**6.20**
6.	Glycerin	**9**
7.	Active (Dhana seed oil)	**2-5**
8.	EDTA	**0.25**
9.	Water	**q.s**

6. EVALUATION PARAMETERS OF PRODUCT

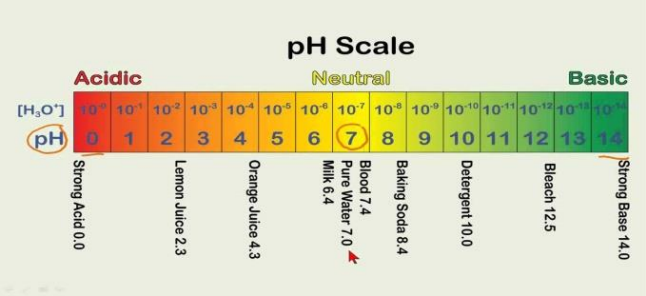
(6.1) Physical evaluation
(6.2) pH,
(6.3) Lathering power,
(6.4) Cleansing power,
(6.5) Total Fatty Matter
(6.6) Free Alkali Content
(6.7) Moisture

6.1. Physical evaluation

- Color and appearance: The color and appearance of the formulation was observed visually.
- Homogeneity: The formulation produced uniform distribution of extracts. This was confirmed by visual appearance and by touch.
- Foaming: it denotes the foaming ability of the soap.

6.2. pH Test

WHAT IS pH? pH may be a measure of the acidity or alkalinity of a water solution. The acidity or alkalinity of a water solution is decided by the relative number of hydrogen ions (H+) or hydroxyl ions (OH) present. Acidic solutions have the next relative number of hydrogen ions, while alkaline (also called basic) solutions have the next relative number of hydroxyl ions. Acids are substances which either dissociate to release hydrogen ions or react with water to create hydrogen ions.



The pH of soap was found to be 9

6.3. Lathering Foam

2 mL of deionized water was added to four large test tubes An equal amount of soap solution was added to at least one tubing of water and shaken vigorously by placing a stopper within the tube. this could provide a permanent lather that lasts for a minimum of 30sec. If the agitation doesn't last, add 10 droplets of soap solution was added and stunned vigorously. An equal amount of detergent solution was added to a different tubing of water and shaken vigorously. this could provide a permanent lather. If not, add additional 10 drops and shake vigorously. • 2 mL of fifty salt solution to every of the 2 remaining test tubes of water was added. • An equal amount of soap solution to at least one of the tubes containing clotting factor was added and shaken vigorously. it had been observed whether this solution forms a permanent lather and it had been noted whether there's any floculent precipitate within the tube.

6.4. Cleansing Power

A drop of used brake oil, was placed on four separate thin strips of paper. it's made sure that the strips of paper will slot in the test tubes utilized in the previous step. • One paper with oil spot within the tube containing soap in water. Another is placed within the tube containing detergent and water. a 3rd strip is placed within the tube containing soap in calcium solution. the fourth strip of oily paper was placed within the tube containing detergent and calcium solution. every one is shaken well and made sure that the paper is immersed within the solution. • After 2 min the paper was removed and rinsed with H2O. Did the oil get washed out of the paper strip? the solutions were thrown within the sink. the paper strips were thrown within the ashcan.

6.5. Total Fatty Matter:

Correctly evaluated 5 gm of soap and shifted into 250 ml beaker. • To completely dissolve the soap 100 ml predicament was added.40 ml of 0.5 N HNO3 was added to the mixture until contents were slightly acidic. • The mixture was heated over water bath until the fatty acids were floating as a layer above the answer. • Then the mixture is cooled suddenly in drinking water so as to solidify the fatty acids and separate them. • 50 ml of chloroform was additional to the residual solution and moved into a separating funnel. • the answer is shaken and allowed to separate into 2 layers and therefore the bottom layer was drained out.• 50 ml of chloroform was added to the remaining solution in the separating funnel. The fatty acid dissolved chloroform is again separated as in the previous case and it is transferred to the collected fatty matter.

6.6. Free Alkali Content:

A sample of the scrapped soap (10 g) was placed in a conical flask and 100 em3of neutralized alcohol was added. The flask and the content therein was placed on a water bath and heated until the soap dissolved. The 10

cm3 of 10% Barium chloride solution was added 2 to 3 drops of phenolphthalein indicator were added. The over-all contented was titrated against O.1N H2SO4until the solutions turn into colorless. The free alkali as Na20 was then' calculated

6.7. Moisture

A sample of the 10g scrapped soap was put into a petri dish and placed in an oven for 1 hour at 110°C. It was allowed to cool down and then weighed. The moisture content in percentage was calculated.

The properties analyzed for the best soap making blend are –

1) Saponification Number
2) Acid Value
3) Iodine Value

1. Saponification Number

Saponification value number represents the number of milligrams of potassium hydroxide required to saponify 1g of fat under the conditions specified. It is a measure of the average molecular weight of all the fatty acids present.

Formula- mLOF (S- B)x M g mol Mx56.1g/mol

WEIGHT OF SAMPLE (g)

1. Acid Value –

Acid value indicates the proportion of free fatty acid present in oil or fat and may be defined as the number of milligrams of caustic potash required to neutralize the acid in 1 g of
the sample

Acid value = (Volume of KOH x Normality of KOH x Eq. wt x 1000) / Weight of Oil sample.

7. RESULT

The formulated Antiseptic soap was using novel seed extract evaluated for several physicochemical tests and the results were shown. This was confirmed by visual examination and by evaluating the texture of skin. Even though there is no change in color reaction is observed when it was kept for a longer period of time in a room temperature which indicates the stability of the product. Green synthesis and characterization of natural antiseptic soap using novel seed Fixed oil (dhana) was studied.

8. CONCLUSION

The present work involves formulation, development and evaluation of Antiseptic soap with Coriander seeds. Coriander seed extract was used to get hydrated skin and prevent skin from microbial growth. Stability parameters of the formulations showed that there was no significant variation during stability study, thus the present study concluded that it is possible to develop Antiseptic Soap with coriander seed extract and can be used with more efficiency

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