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# Formulation and Evaluation of Herbal Soap

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**Abstract**
*Crinum latifoliuma* - a well-known ornamental species, a well-known domestic herb in India, belonging to the Amaryllidaceae family. Crinum latifolium. The plant is Ayurveda known as "Sudarshana" or Sukhdarshan. It means that just looking at it brings peace and satisfaction (seeing it). The roots, stems, flowers and leaves of Crinum latifolium are used in herbal therapy and are also used as an ornamental plant. Qualitative analysis of different phytochemical components and evaluation of leaves, sieving in different solutions, preparation of leaf juice soap all available information from literature.

**Keywords:** Crinum Latifoliuma, Herbal Soap, Antibaterial, Sudarshana.

## Introduction Herbal Soap[1]

Herbal soap preparation is a medicinal substance that primarily uses plant parts such as seeds, rhizomes, nuts, and pulps to cure injuries, diseases, and promote health. It contains antibacterial, anti-aging, anti-oxidant, and anti-septic characteristics. Compared to commercial soap, herbal soap is free of artificial flavors, colors, and fluorides, among other ingredients. Herbs are natural products that are often used to treat a wide range of illnesses and skin issues because of their high medicinal value, affordability, accessibility, and compatibility.

**Figure 1: Crinum Latifolium**

**Plant Description**: *Crinum Latifolium*

- Synonyms: *Crinum longistylum Herb.*
- Common Name: Pink Stiped Trumpet Lily, Spider Lilly

- Hindi Name: Sukhdarshan, Sudarshan
- Sanskrit Name: Madhuparnika
- Family: Amaryllidaceae
- Genus*:* Crinum
- Species: *Latifolium*

*Crinum Latifolium Linn* is used as a tonic and to treat inflammation, tumor illnesses, and allergy problems. The leaf juice is applied directly to piles and skin conditions to lessen swelling and pain. Additionally, it is employed as a blood pressure, rheumatism, weakening, immune-stimulating, antineoplastic, analgesic, and antiviral agent. Many Ayurvedic medicines, like Mahasudarshan curna, which has long been used as an antiviral, antimalarial, and antipyretic, contain C. latifolium. There are many different kinds of medicinal Crinum latifolium plants throughout the world. Our surroundings are full of weeds that are extremely powerful medicinal plants that can help with a wide range of serious health problems. Ancient societies have long recognized India as a rich source of natural treatments. The genus Crinum has over 180 species, which form a varied family of beautiful perennial plants. They go by several names, including swamp lily, Trumpet flower, and spider lily, and are used for bouquets, gardens, and décor. In Ayurveda, this herb is mostly used to treat skin conditions, poisoning, painful swellings, and inexplicable fevers.

Part used -leaf, Rhizome

Dosage- Rhizome powder-1 to 3, Leaf juice- 5 to10ml

Habitat: South Asia, Southeast Asia - Caribbean countries, Australia, Fiji, Philippines Thailand, Singapore Malaysia, Louisiana, Florida and other tropical countries

**Material and method[6,7,8]**

1. **Material:** *Crinum latifolium* were collected from the Navneet Nursery, Wholesalers & Retailers, Navayard, Chhani Road, Vadodara. All chemicals and reagents were used in project work to collect from our pioneer pharmacy college lab.
2. **Method:** Take coconut oil in beaker and boil it for 5 minutes on water bath. Then add NaOH solution and stried continues for 8-10 minutes. Now add SLS and glycerine stried continues for 2-3 minutes. Then add extract of crinum latifolium, stearic acid, ethanol, soft paraffine and pinch of triethanolamine continues stried. After add perfume (rose oil/ orange oil). Solution with continues agitation for 30 minutes until molten mixture become homogenous. This semisolid mixture was poured into mould and allowed to solidify.

**Table 1: Formulation Table**

| Sr no. | Ingredients | Quantity | use |
|---|---|---|---|
| 1. | **Coconut oil** | 100g | Natural fat |
| 2. | **Glycerine** | 10ml | Moisturizing agent |
| 3. | **NaOH** | 20gm | Saponifying agent |
| 4. | **SLS** | 5gm | surfactant |
| 5. | **Triethanolamine** | Pinch of | Balance pH |
| 6. | **Crinum** | 5ml- 8ml | Antibacterial agent |

| | | | |
|---|---|---|---|
| | **latifolium extract** | | |
| **7.** | **Stearic acid** | 1gm | Hardner |
| **8.** | **Soft paraffin** | 0.7gm | Smoothing agent |
| **9.** | **Ethanol** | 5ml | solvent |
| **10.** | **Perfume** | Quantity sufficient | - |

**Figure 2: Herbal Soap**

**Evaluation**

**Preformulation study[9,10]**

Phytochemical screening is very important in identifying new sources of therapeutically and industrially important compounds like alkaloids, flavonoids, phenolic compounds, saponins, steroids, tannins, and terpenoids.

Extract about 50 g of the air-dried powdered plant material successively with the following solvents. Like; Petroleum ether, Chloroform, Methanol, Water (aqueous)

Each time before extracting with the next solvent, dry the powdered material below 70°C.

Keep the solution for 24 hours to obtain to aqueous extract. After 24 hours filter the solution.

After the Filtration, boil the filtered solution for 1 hour. After boiling for 1 hour, the solution was poured into a china dish. Weight the extract obtained with each solvent and calculate its percentage in terms of the air- dried weight of the plant material. Also note the consistency and colour of the extract.

**Table 2: Chemical Test**

| Sr no. | Constituent | Test |
|---|---|---|
| 1. | **Alkaloids:** | Mayer's reagent<br>Dragendorff's Reagent<br>Hager's reagent<br>Wagner's reagent |
| 2. | **Carbohydrates & glycosides:** | Molisch's reagent<br>Fehling solution<br>Barfoed's test<br>Benedict's reagent<br>Liebermann-Burchard's test |
| 3. | **Phytosterols:** | Liebermann-Burchard's test |
| **4.** | **Fixed oils & fats:** | Spot test<br>Saponification test |
| **5.** | **Phenolic compound and tannins:** | Ferric chloride solution<br>Gelatin solution<br>Lead acetate solution |
| **6.** | **Proteins and amino acids:** | Millon's reagent<br>Biuret test<br>Ninhydrin reagent |

**Physicochemical study (13-14)**

1. Total Ash value: Weigh accurately about 2gm of the powdered drug in a tared China dish. Then heat with a burner using flame and heat till vapours almost powder strongly until all the carbon is burnt off (Reddish ash/white ash appeared and Cool in a desiccator.
   Total Ash Value of Sample = 100(z-x)/y % w/w
   Where; x= Weight. of the empty dish
   Y= Weight. of the drug taken
   Z= Weight. of the China dish + ash
2. Acid insoluble ash: Using 25 ml. of dilute hydrochloric acid (water soluble ash: take 25 ml water), wash the ash from the dish used for total ash into 100 ml beaker. Place a beaker on water bath/Place a wire gauze over a Bunsen burner and boil for five minutes. Filter through an ashless' filter paper. Ignite a China dish in the flame, cool and weigh. Put the filter-paper and residue together into the china dish, heat gently until vapours and then more strongly until all carbon has been removed. Cool and weigh the residue. calculate acid-insoluble ash (Water soluble ash).

3. Water soluble ash: This is determined in a similar way to acid insoluble ash, using 25 ml of water, in place of dilute hydrochloric acid.
   Acid-insoluble ash/Water Soluble Ash value of the sample = 100 x a /y%
   Where: 'a' g = weight of the residue
   'y' g= weight of the air-dried drug
4. Moisture Content (Loss on Drying): Weight about 5g of the powered drug into a weighed petri dish. Dry in the oven at 105°C. Cool in a desiccator and watch. The loss in weight is usually recorded as moisture.

Moisture content= $(W_1\text{-}D)/W*100$
Where, $W_1$= weight of before petri dish +drug
D= weight after drying, W= Total drug taken

**Evaluation of Formulation[15,16,17]**

1. Organoleptic evaluation: Colour, Odour and Appearance
2. Physical evaluation: The herbal soap formulated was evaluated for the following properties:

2.1 pH: the pH was determined by using pH paper.
2.2 Foam retention: 25ml of the one percent soap solution was taken into a 100ml graduated measuring cylinder the cylinder was covered with hand and shaken 10 times. The volume of foam at 1 minute's interval for 4 minutes was recorded.
2.3 Foam height: Measure the foam height.
2.4 Irritation of the skin test: The herbal soap composition was subjected to a skin irritancy test. The condition was observed for a period of 24 hours.
2.5 Washing Capability**:** The herbal soap was put through a formulation test, as well as the simplicity with which it could be washed with water.

**Antibacterial Activity [19-20]:** Antimicrobial susceptibility testing methods was adopted by **Cup plate method.**

Prepared agar medium: The standard cup plate technique was used to determine the antimicrobial activity by using Nutrient agar. Sterile all apparatus in autoclave. Nutrient agar is melted in water and pour in the conical flask.

The melted media were seeded with the suspension of microorganisms [E.COLI] and allowed to solidify. The formulations were aseptically transferred to the media in Petri-dish with the help of sterile forceps. The medicated soap was kept for incubation in an incubator at 30˚C for24 hours. Observation: The assessment of antimicrobial activity was based on the measurement of the diameter of the zone of inhibition in mm.

Preparation of solution:

Solution : Take 1gm of soap and dissolve in 50ml of distilled water. Take solution in different concentration :1. Take 3ml of solution 1 and up to 50 ml distilled water.

2. Take 5 ml of solution 1 and up to 50 ml distilled water.
3. Take 10ml of solution 1 and up to 50 ml distilled water.
4. Take 15ml of solution 1 and up to 50 ml distilled water.

## Results

**Table 3: Successive Solvent Extraction of Air-Dried *Crinum Latifolium***

| Sr No. | Solvent | Colour Of Extract | Consistency | %Yield (w/w) |
|---|---|---|---|---|
| **1** | **Petroleum ether** | Green | Sticky and thick | 0.95 |
| **2** | **Chloroform** | Brownish green | Sticky and thick | 2.14 |
| **3** | **Methanol** | Green | Sticky and thick | 4.5 |
| **4** | **Water** | Brown | Thin | 7.8 |

**Table 4: Chemical Test for Extract**

| Sr No: | Constituent | Petroleum ether | Chloroform | Methanol | Water |
|---|---|---|---|---|---|
| **1.** | **Alkaloids:** | | | | |
| | Mayer's reagent | **-** | **+ve** | -ve | **-ve** |
| | Dragendorff's Reagent | **-** | **+ve** | +ve | **-ve** |
| | Hager's reagent | **-** | **+ve** | -ve | **-** |
| | Wagner's reagent | **-** | **+ve** | +ve | **-ve** |
| **2.** | **Carbohydrate & glycosides:** | | | | |
| | Molisch's reagent | **-** | **-** | **-** | **-ve** |
| | Fehling solution | **-** | **-** | **-** | **+ve** |
| | Barfoed's test | **-** | **-** | **-** | **+ve** |
| | Benedict's reagent | **-** | **-** | **+ve** | **+ve** |
| | Liebermann-Burchard's test | **-** | **-** | **+ve** | **-ve** |
| **3.** | **Phytosterols:** | | | | |
| | Liebermann-Burchard's test | **+ve** | **-** | **+ve** | **-** |
| **4.** | **Fixed oils & fats:** | | | | |
| | Spot test | **+ve** | **-** | **+ve** | **-** |
| | Saponification test | **+ve** | **-** | **+ve** | **-** |
| **5.** | **Phenolic compound and tannin** | | | | |
| | Ferric chloride solution | **-** | **-** | **-** | **+ve** |
| | Gelatin solution | **-** | **-** | **-** | **+ve** |
| | Lead acetate solution | **-** | **-** | **-** | **+ve** |
| 6. | Proteins and amino acids: | | | | |
| | Millon's reagent | - | - | - | +ve |
| | Biuret test | - | - | - | +ve |
| | Ninhydrin reagent | - | | - | +ve |

**Table 5: Physico Chemical Parameter of Crinum Latifolium Leave**

| Sr No. | Name of Method | Result (%) |
|---|---|---|
| 1. | Total Ash value | 11.30 % w/w |
| 2. | Acid insoluble Ash value | 0.48%w/w |
| 3. | Water soluble Ash value | 5.5%w/w |
| 4. | Moisture Content | 14.60%w/w |

**Table 6: Evaluation of Formulation**

| Sr.no. | Evaluation | Result |
|---|---|---|
| 1. | Colour | Transparent Yellow |
| 2. | Odour | Aromatic |
| 3. | Appearance | Good |
| 4. | Size | 8cm×2cm |
| 5. | Shape | Round |
| 6. | Foam Height (cm) | 2cm |
| 7. | Foam Retention (Minute) | 3 |
| 8. | pH | 6.5 |
| 9. | High Temperature | Soap Melt Above 45°C. |

**Table 6: Antibacterial Activity**

| Sr No: | Formulation Code | E. Coli Bacteria (Zone Of Inhibition) |
|---|---|---|
| 1. | F1 | 10.45 ± 1.23 |
| 2. | F2 | 11.8 ±1.0 |
| 3. | F3 | 12.3 ± 3.10 |
| 4. | F4 | 26.05 ± 2.03 |

**Figure 3: Antibacterial activity**

**Conclusion:**

*Crinum Latifolium* extract can be used to prepare antibacterial soap with standard evaluation and can impact on market value in future. In the present work, antimicrobial herbal soaps were prepared, with

suitable size and shape, thickness, weight, and with good foam producing ability. The formulations were characterized for different evaluation parameters like clarity, colour, and odour, size, and shape, thickness, weight, pH in which they exhibited satisfactory results. The herbal soap showed a good appearance with yellow colour and with a pleasant aromatic smell and showed good anti-bacterial properties. Based on the study it can be concluded that herbal products can be effectively formulated in the form of medicated herbal soaps by using Cup plate technique with excellent anti-bacterial properties.

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