

Formulation and Evaluation of Multipurpose Cream from Berberis Aristata

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Submitted: 20-04-2024

Accepted: 30-04-2024

ABSTRACT

In the present study, an attempt was made to formulate and evaluate herbal cream of Berberis aristata (B. aristata) for the management of Psoriasis. The study is intended to be carried out because of low cost, lesser or no side effects of herbal formulations and its potent action than the allopathic medication. They therefore provide a viable alternative for psoriasis management. To prepare an herbal cream using an ethanolic extract of Berberis aristata and assess the anti-psoriatic effectiveness of the finished product. We were able to make cream by adding varying concentrations of bees wax and borax, liquid paraffin by learning about various formulation types, such as oil in water. The analysis of many factors, including pH, viscosity, spreadability, and stability, was used to evaluate all formulations. A formulation of ethanolic extract showed antipsoriatic action. No evidence of a separate phase or ease of removal was found in the formation, but it demonstrated good spreadability, consistency, appearance, and pH. Additionally, during irritancy trials, the formulation did not cause redness, oedema, erythema, or irritation. The use of this formulation on the skin is safe. As a result, the study implies that the extract's and the cream compositions are safer and more stable, however they might also have synergistic effects.

KEYWORDS – Anti psoriatic, Berberis aristata, Erythema, Skin Irritancy Test, ethanolic extract.

I. INTRODUCTION

Psoriasis is a very common, non-infectious, inflammatory skin disease characterized by well defined, distinctive erythematous plaques yielding adherent silvery white scales, which may manifest bleeding points when removed. Psoriasis may affect any cutaneous surface, but the commonest sites are the extensor surfaces of the elbow and knees, scalp (where scales may become extremely dense) and sacral areas. Psoriasis is

either benign and localized (hands and feet) or generalized or life threatening, with associated fever, leucocytosis, arthralgias, diffuse cutaneous and mucosal pustules, secondary infection and electrolyte disturbances. Certain European and oriental countries have been exploring use of herbs in practice since the countries.

Creams which are topical formulation are more well-liked by patients since they have higher patient compliance. The herbal cream is basically oil in water type of emulsion. An ointment are semi-solid dosage preparation intended for infected diseases which carries water, waxes, hydrocarbons and volatile oils as a semi-solid. Various plants were being used as medicine much before recorded history, according to a World Health Organization (WHO) report almost 25% of human prescription drugs are made from plants while 80% of people still use conventional medical system. Berberis aristata, (family-Berberidaceae) plant is intended to be used in the herbal formulations because of its potent anti psoriatic action (anti inflammatory) due to the presence of active compound berberine. It shows minimum risk of side effects and having great potential for health management. Herbal products have been applied to human healthcare for long-established time.

In some groups, psoriasis is infrequent or uncommon, probably because of genetic causes. In a survey at a teaching hospital in Nigeria, very few psoriatic patients were identified, and the condition is reportedly uncommon among Eskimos. Indians from North or South America hardly ever exhibit it. The prevalence of psoriasis is equal in males and females, according to the current consensus, despite numerous research in the past showing a varying sex incidence. The age of onset and mean age of affected males and females varied, according to Steinberg and colleagues; the clinical disease manifested in females at a younger age, and the mean age of statistically studied groups of females

with psoriasis was three to four years lower than that of comparable male.

Herbalism has traditionally been practised outside of the realm of mainstream medicine, but it is growing in popularity as new studies and research demonstrate how successful they are at diagnosing, treating, and preventing disease. Because of the skin's accessibility, size and exposure area medication delivery system through the skin has been considered a promising approach. The primary objective of this study was to formulate and evaluate anti-psoriatic by combining ethanol extract of *Berberis aristata* with additional components to provide a variety of skin advantages, including antibacterial and antiseptic properties.

❖ **BERBERIS ARISTATA**

1. synonyms: Daruhaldi
2. Chemical formula: $C_{20}H_{18}NO_4$
3. Molecular formula: 336.4g/mol.



Fig.1 : plant of *Berberis aristata*

❖ **Preparation of Extract from Root-barks**

The fresh root barks of *Berberis aristata* was collected.

The root barks was washed and dried at RT (Room temperature), then converted into a coarse powder by the help of grinder and passes through a sieve number 18 to get the uniform size.

To get rid of fat and other pigments, powdered root bark was defatted using petroleum ether (40–60%). Using a Soxhlet device, the defatted dry root barks were further extracted with ethyl acetate and subsequently with ethanol.

The extracts were dried completely in a vacuum oven until all traces of ethanol were eliminated.

In a refrigerator set between 2-8 °C, the extracts were stored

4. melting point: 204–206 degree celcius

5. Uses: Daruharidra is a definitive remedy for all sorts of hormonal problems. It plays a key role in regulating periods, treating postnatal ailments, and even helps to treat excessive abdominal pain/bleeding. The plant is used in skin diseases, ophthalmic disorders, in menorrhagia, as astringent, antiperiodic jaundice, for treatment of wounds, liver problems, and ear problems.

II. MATERIALS AND METHODS.

❖ **Identification, collection and authentication of plant material.**

Plants of the *Berberis aristata* Linn. species were harvested in March 2021 from the Garhwal district of Uttarakhand. The root bark was cleaned and allowed to air dry. The scientist In-charge of the Botanical Survey of India, Allahabad (Central region), India, performed the authentication.



Fig.2 root barks of *Berberis aristata*

❖ **FORMULATION OF CREAM**

Formulation of Oil in water emulsion-based cream was formulated. The emulsifier (Beeswax) and other oil soluble components (Liquid paraffin) were dissolved in the oil phase (Part A) and heated to 75°C. The preservatives (Methyl paraben) and other water soluble components (Glycerin, Borax) were dissolved in the aqueous phase (Part B) and heated to 15°C. After heating, the aqueous phase was added in small portions to the oil phase slowly with constant stirring to the wax and oil mixture. Ethanolic extract of the root bark was added to this and thoroughly mixed to create a homogenous material. Continue this process for 2 minutes, stir all the time then remove from the heat and stir until it gets cold then smooth cream is formed.

The formula for the cream is given in Table no.

| Sr.No. | Ingredients | F1H | F2H | F3H |
|--------|---------------------------|-----------|-----------|-----------|
| 1. | Berberis aristata extract | 1ml | 2ml | 1ml |
| 2. | Beeswax | 3.5gm | 3gm | 4gm |
| 3. | Liquid paraffin | 15ml | 13ml | 13.5ml |
| 4. | Borax | 0.4gm | 0.3gm | 0.5gm |
| 5. | Methyl paraben | 1ml | 1ml | 1ml |
| 6. | Distilled water | q.s | q.s | q.s |
| 7. | Rose oil | 3-4 drops | 2-3 drops | 1-2 drops |



Fig 3: Prepared cream

Evaluation of cream

1). Physical evaluation

In this test, the cream was observed for color, odour, texture, state.

2). Irritancy

Mark the area (1 cm²) on the left-hand dorsal surface. Then the cream was applied to that area and the time was noted. Then it is checked for irritancy, erythema, and edema if any for an interval up to 24 h and reported

3). Wash ability

A small amount of cream was applied on the hand and it is then washed with tap water.

4). PH of the Cream

0.5 g cream was taken and dispersed in 50 ml distilled water and then PH was measured by using digital PH meter.

5). Phase separation

Prepared cream was kept in a closed container at a temperature of 25-100 °C away from light. Then phase separation was checked for 24 h for 30 d. Any change in the phase separation was observed/checked

6). Spread ability

The spreadability was expressed in terms of time in seconds taken by two slides to slip off from the cream, placed in between the slides, under certain load. Lesser the time taken for separation of the two slides better the spreadability. Two sets of glass slides of standard dimension were taken. Then one slide of suitable dimension was taken and the cream formulation was placed on that slide. Then other slide was placed on the top of the formulation. Then a weight or certain load was placed on the upper slide so that the cream between the two slides was pressed uniformly to form a thin layer. Then the weight was removed and excess of formulation adhering to the slides was scrapped off. The upper slide was allowed to slip off freely by the force of weight tied to it. The time taken by the upper slide to slip off was noted.

$$\text{Spread ability} = m \times l/t$$

Where,

m= Standard weight which is tied to or placed over the upper slide (30g)

l= length of a glass slide (5 cm)

t= time taken in seconds.

7] Greasiness

Here the cream was applied on the skin surface in the form of smear and checked if the smear was oily or grease-like.

8] Accelerated Stability Testing

The purpose of stability testing is to provide evidence on how the quality of drug substance or drug product varies with time under the influence of variety of environmental factors such as temperature, humidity and light and enables

to recommend storage condition and to predict the shelf life. Stability study for cream was performed at accelerated condition Le.40°C 2°C / 75%RH±5%RH. TH formulations were kept both at room and elevated temperature and observed on 0,5th, 10th, 15th and 20th day for the various parameters.

9] Homogeneity

The formulations were tested for the homogeneity by visual appearance and by touch.

III. RESULTS AND DISCUSSION

Evaluation results of all the three formulations are gives below.

1)Physical evaluation

In this test color, odour, texture and state of the three formulations were checked.

| Sr. no. | Parameter | Evolution |
|---------|-----------|-------------|
| 1 | Colour | Faint white |
| 2 | Odour | Pleasant |
| 3 | Texture | Smooth |
| 4 | State | Semi-solid |

Table 2: physical parameter of cream

| Sr. no. | Parameters | F1H | F2H | F3H |
|---------|------------------|---------------------|---------------------|---------------------|
| 1 | Irritancy | Nil | Nil | Nil |
| 2 | Washability | Easily Washable | Easily Washable | Easily Washable |
| 3 | pH of cream | 6.6 | 6.2 | 6.67 |
| 4 | Phase separation | No phase separation | No phase separation | No phase separation |
| 5 | Spreadability | 22.18 | 30.4 | 15.8 |
| 6 | Greasiness | Non-greasy | Non-greasy | Non-greasy |
| 7 | Homogeneity | Homogeneous | Homogeneous | Homogeneous |

Table 3: Observation and evaluation of parameters of cream

IV. CONCLUSION

By using barbaris aristata the cream showed a multipurpose effect and these herbal ingredients showed significant different activities. Based on results and discussion, the formulations F1H, F2H, F3H were stable at room temperature and can be safely used on the skin. The result of different tests of cream showed that the formation could be used topically in order to protect skin against damage. Natural remedies are more acceptable in the belief that they are safer with fewer side effects than the synthetic ones.

ACKNOWLEDGEMENT

We would like to express my sincere gratitude to Mrs. Neha Kadbane for their invaluable guidance and support throughout the course of this research project. Their expertise and encouragement have been instrumental in shaping

the direction and outcomes of this study. And Also we would like to thank the Principal, faculty and staff of Pravara College of Pharmacy Chincholi Nashik, Maharashtra, India for their unwavering support and resources that have facilitated this research end over.

ABBREVIATIONS

pH – Hydrogen ion Concentration
 O/W- oil in water
 F1H,F2H ,F3H- Formulation trial with different concentration of cream

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