

## FORMULATION AND EVALUATION OF POLYHERBAL CREAM

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Received: 15 Mar 2020, Revised and Accepted: 19 May 2020

### ABSTRACT

**Objective:** *Eugenia caryophyllus*, *Zingiber officinale* and *Nyctanthes arbor-tristis* are medicinal plants; these plants are used traditionally from ancient year in the various herbal medicinal system such as Ayurvedic, Homeopathic and Siddha. The clove buds of *Eugenia caryophyllus*, rhizomes of *Zingiber officinale* and dried leaves of *Nyctanthes arbor-tristis* have anti-inflammatory analgesic activity. The present research was focus on the formulation of polyherbal cream and their evaluation by using various evaluation parameters of the present research are to formulate polyherbal cream and to evaluate the polyherbal cream.

**Methods:** the slab method was used for the preparation of cream.

**Results:** The evaluation parameters are coming under this heading physical parameter like color was slightly white green, the odor was characteristics, consistency was smooth and the state was semisolid.  $P^H$  of the cream was 6.5; Spreadability was 7.4g. cm/sec time required for this test was 15 sec, Washability was easily washable, the cream was nonirritant, viscosity of the formulated cream was 39010 cps and no phase separation was observed during storage of polyherbal cream.

**Conclusion:** This cream formulation was used in rheumatoid arthritis to reduce joint pains. This cream formulation was o/w type of emulsion; hence this formulation was easily washed with plane water after application.

**Keywords:** *Eugenia caryophyllus*, *Zingiber officinale*, *Nyctanthes arbor-tristis* Polyherbal cream, Soxhlet apparatus, Maceration

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### INTRODUCTION

Cream formulation was semisolid formulations intended for topical application. The cream formulations were prepared by using various herbal extracts, herbal oils, and various excipients. There are two main types of cream formulation, such as oil in water (O/W) type of emulsion and water in oil (W/O) type of emulsion. The present formulation was oil in water (O/W) type of emulsion. The cream formulation was various other classes like foundation cream, cleansing cream, cold cream, pain-relieving cream, night and massage cream, head and body cream, vanishing cream and shaving cream [1].

The Ayurvedic system of medicine was one of the most important system that uses herbal plants and extracts for the treatment of management of various diseases and diseased states [2]. *Eugenia caryophyllus* was the aromatic plant, flower buds of the plants are used for various activities. The *Eugenia caryophyllus* belongs to family Myrtaceae. The tree of the clove is evergreen and grow up to 8-12 m. The flower buds are firstly pale in color and gradually become green after which they develop into dark brown or dusty red. *Eugenia caryophyllus* were traditionally used as anti-inflammatory and pain-relieving activity, also dental analgesic, used in the preparation of various marketed formulations like cream paste etc. clove oil specifically used as a pain reliving ingredient present in cream. This plants were show antibacterial, antimicrobial, antifungal and anticancer properties [3, 4].

*Zingiber officinale* (Ginger) is traditional medicinal plant belongs to family Zingiberaceae. The part of the plant roots and rhizomes having anti-inflammatory and pain reliving activity. The fresh rhizomes are used for the extraction purpose; extract were used for the preparation of cream. Ginger were used for various purposes like anti-oxidant, anti-cancer, antimicrobial, skin-nourishing properties. Ginger is primarily used to treat nausea, but it is also used as an anti-inflammatory, a pain remedy, a warming remedy and a cholesterol-lowering herb [5].

The extraction process was done by using soxhlet extraction. The soxhlet extraction method was invented in 1879 by Franz von Soxhlet. The soxhlet extractor setup consists of a round bottom flask, siphon tube, distillation path, expansion adapter, condenser, cooling water inlet, cooling water outlet, heat source and thimble. In this method, fresh slices of samples are enclosed in a porous bag or "thimble" made from a strong filter paper or cellulose, which is placed, is in the thimble chamber of the Soxhlet apparatus. The extraction solvent was taken in the RBF and heated by using a heating source like a heating mantle. Heating temperature was built on the solvent employed for the extraction. The heating of the solvent in the RBF vaporizes in the condenser and then back to thimble. The liquid content reaches the syphon arm at that time bottom flask emptied then again in flask, the cycle is continued and get clear solution in syphon tube. Further distillation was done to get fresh ginger oil, which is used for the formulation of polyherbal cream [6].

*Nyctanthes arbor-tristis* was the oldest holistic, sacred and traditional medicinal plant belongs to family Oleaceae. The plant was mentioned in Vishnu Purana and having great importance to treat varieties of diseases, especially rheumatoid arthritis it reduces pain and inflammation [7]. The fresh leaves are collected and complete shade drying, further powdered by using the mixer. This formed powder was passed through the sieve. The extract was obtained by using a simple maceration process. Maceration was extractive technique and carried out at room temperature. Powdered herbal leaves of *Nyctanthes arbor-tristis* was immersed in alcohol and continuous shaking by using REMI RSB 12 mechanical shaker. After 3 d the concentrated extract was collected and filtered.

### MATERIALS AND METHODS

The *Eugenia caryophyllus* oil was taken from the market, fresh ginger rhizomes and fresh *Nyctanthes arbor-tristis* leaves are collected from local area of Solapur. The rhizomes of ginger were extracted by using soxhlet extraction method. The leaves of *Nyctanthes arbor-tristis* were dried at room temperature, further drying the leaves are crushed and make in to powder, the simple

maceration process was done for the preparation of extract by using methanol as a solvent.

### Method

#### Extraction

##### Extraction of zingiber officinale oil

Ginger was taken from market, cleansing them. Chopping of cleaned ginger and made into slices. Take 25 gm of chopped ginger and 100 ml of solvent (methanol). Ginger slices and methanol were transferred into Soxhlet apparatus, heat at 80°C for 8 h. Receiver collects the concentrated extract. Filtration of extract and further centrifuge extract. The distillation of centrifuged extract was done and ginger oil was obtained [8].

##### Maceration of nyctanthes arbor-tristis

Take 10 gm dried leaves powder and 50 ml of alcohol. Mix properly and pour into 100 ml of volumetric flask. The

volumetric flask was placed into REMI RSB 12 mechanical shaker. The shaking was continued up to three days. Concentrated extract was collected and filtered. This filtrate was used for the preparation of cream.

#### Formulation of cream

The present research was the formulation of polyherbal cream by using slab method. *Eugenia caryophyllus* oil, *Zingiber officinale* oil and beeswax were taken in first beaker. Then heat on a water bath for uniform mixing. After few minutes' oil phase was formed. *Nyctanthes arbor-tristis* extract, distilled water, white soft paraffin and borax was taken in the second beaker. Mixing all the ingredients by heating on a water bath, the aqueous phase was formed. Oil phase was added in to aqueous phase and continuous stirring was done until semisolid mass was formed. The formed mass was taken on slab and maintain its smooth consistency by rubbing spatula on the slab. The formed cream was further evaluated.

Table 1: Formula of cream formulation

S. No.	Ingredients	Quantity
1.	<i>Nyctanthes arbor-tristis</i>	1 ml
2.	<i>Eugenia caryophyllus</i>	0.4 ml
3.	<i>Zingiber officinale</i>	1 ml
4.	Bees wax	3.2 gm
5.	White soft paraffin	12 ml
6.	Borax	0.3 gm
7.	Methyl paraben	0.03 gm
8.	Distilled water	Q. S
9.	Menthol	Q. S

#### Evaluation of cream

The evaluation of herbal cream was following.

##### Physical evaluation

Formulated herbal cream was further evaluated by using the following physical parameters. Color, Odor, Consistency, and state of the formulation [9].

**a) Color:** The color of the cream was observed by visual examination. The result was shown in table 2.

**b) Odor:** The odor of cream was found to be characteristics.

**c) Consistency:** The formulation was examined by rubbing cream on hand manually. The cream having smooth consistency. Cream did not leave greasy substances on skin surface after application.

**d) State:** The state of cream was examined visually. The cream having a semisolid state. Results were shown in table 2.

##### pH

pH of prepared herbal cream was measured by using digital pH meter. The solution of cream was prepared by using 100 ml of distilled water and set aside for 2 h. pH was determined in three times for the solution and the average value was calculated. Results were shown in table 2.

#### Spreadability

Spreadability of formulated cream was measured by placing sample in between two slides then compressed to uniform thickness by placing a definite weight for a definite time. The specified time required to separate the two slides was measured as Spreadability. Lesser the time taken for separation of two slides result shown better Spreadability. Spreadability was calculated by the following formula:

$$\text{Spreadability (S)} = \frac{\text{Weight tide to upper slide (W)} \times \text{Length of glass slide (L)}}{\text{Time taken to separate slide (T)}}$$

Where S= Spreadability M= Weight tide to the upper slide L= Length of glass slide T= Time taken to separate the slides [10]. Results were shown in table 2

#### Washability

Formulation was applied on the skin and then ease extends of washing with water was checked. Results were shown in table 2

#### Non-irritancy test

Herbal cream formulation was evaluated for the non-irritancy test. Observation of the sites was done for 24 h 28 [11]. Results were shown in table 2.

Table 2: Results of polyherbal cream

S. No.	Parameters	Results
1.	Color	Slightly white green
2.	Odor	Characteristics
3.	Consistency	Smooth
4.	State	Semisolid
5.	pH	6.5
6.	Spreadability	7.4 g. cm/sec
7.	Washability	Easily washable
8.	Non irritancy test	Non irritant
9.	Viscosity	39010 cps
10.	Phase separation	No phase separation

**Viscosity**

Viscosity of cream was done by using Brooke field viscometer at the temp of 25 °C using spindle no. 63 at 5rpm. Results were shown in table 2.

**Phase separation**

The prepared cream was transferred in a suitable wide mouth container. Set aside for storage, the oil phase and aqueous phase separation were visualizing after 24h. Results were shown in table 2.

**RESULTS**

The present research was the formulation and evaluation of polyherbal cream. The evaluation parameters were coming under results, like the physical evaluation of polyherbal cream, PH of the cream, Spreadability, Washability, non-irritancy test, viscosity and phase separation of the polyherbal pain relieving cream was shown in table 2

**DISCUSSION**

The present work was the formulation and evaluation of polyherbal cream. The present work was focus on the revealing pain activity of herbal extracts or herbal oils. This cream formulation was used in rheumatoid arthritis to reduce joint pains. This cream formulation was o/w type of emulsion; hence this formulation was easily washed with plain water after application. The prepared formulation was good Spreadability. Viscosity and P<sup>H</sup> of the cream was good. Cream does not show any type of phase separation during storage. The cream was non-grassy in nature and easily removable after application. The formulation was Nonirritant and not harm to the skin.

**CONCLUSION**

The *Eugenia caryophyllus* oil, *Zingiber officinale* oil and *Nyctanthes arbor-tristis* leaves extracts having pain relieving property and prepared in polyherbal cream formulation. Formulation of cream was done by slab method and further evaluated by various evaluation parameters such as physical properties, P<sup>H</sup>, Spreadability, Washability, non-irritancy test, viscosity and phase separation of cream and gives good results.

**ACKNOWLEDGEMENT**

The Authors are thankful to Principal Dr. R. Y. Patil and Dr. M. S. Kalshetti, Assistant Professor, D. S. T. S. Mandal's College of Pharmacy Solapur, Maharashtra, India for his guidance and support.

**FUNDING**

Nil

**AUTHORS CONTRIBUTIONS**

All the authors have contributed equally.

**CONFLICT OF INTERESTS**

Declare none

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