

## Formulation and Evaluation of Herbal Bath Bomb by Using Beetroot Powder

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### ABSTRACT

Herbal cosmetics are the type of products which are mainly used to maintain and protect skin appearance. The bath bomb is a formulation containing many active ingredients and they offer many benefits. Most bath bombs available today are fair to the skin and are made from both synthetic and herbal remedies. But they also have several unwanted effects such as irritation and allergic reactions. The purpose of this research was to prepare and evaluate herbal bath bomb for avoiding pigmentation containing beetroot powder (*Beta vulgaris*) as key ingredients. The herbal bath bomb was evaluated for various parameters such as physical appearance, pH, effervescent time and skin irritation test. The result showed that all formulations produce satisfactory results, and the use of herbs in bath bombs will produce successful alternatives to other harmful chemical cosmetics.

**KEYWORD** : Beetroot powder (*Beta vulgaris*), non irritable, homogeneity.

### I. INTRODUCTION

Herbal cosmetics, called products are made from various approved cosmetics from a base, where one or more herbal ingredients are used only to obtain certain cosmetics are called herbal cosmetics. Plant products are mainly added to cosmetic products due to several related properties such as antioxidant, antiseptic, and anti-inflammatory properties.

Herbal preparations have received considerable attention because of their good efficacy and relatively few or no side effects of synthetic drugs. Herbal cosmetics product that are usually prepared and used for daily use include herbal facials, herbal shampoos, herbal soaps, herbal body washes eg: Herbal cosmetics are defined as beauty products with desirable physiological effects such as healing, smoothing

appearance, healing and conditioning properties because of the herbal ingredients.

Bath bombs are cosmetic products that penetrate deep in to the skin layers and release active ingredients. A high quality bath bomb soothes and reduces pigmentation on skin. All products have antioxidant and anti-inflammatory properties and ingredients used in the bath bomb should have these properties, suitable for all skin types. The largest and most protective organ of the body, the skin can sometimes appear under various conditions such as UV rays, pollution which have infected and cause pigmentation and other allergic reactions like inflammations. Aloe vera, Tulsi, Amla, and Neem have antioxidant property that can maintain the appearance of healthy skin. Vetiver can reduce inflammation, coconut oil can provide moisture to the skin and the main ingredient beetroot powder may improve skin appearance that reduce pigmentation to provide a natural glow to the skin. This is because the bath bomb consists of small particles that can penetrate deep in to the skin and carry the active ingredients in to the skin. Pharmaceutical companies produce medical products and cosmetic companies produce cosmetics. Cosmetic products and pharmaceutical products are combined. Cosmetic products can be defined as creams intended for use on external parts of the body such as nail, hair, skin etc. Cosmetic products also include massage oils, smoothing creams, etc.

### TYPES OF BATH BOMBS

- 1.OIL RICH BATH TRUFFLES
- 2.FOAMING BUBBLE BOMBS
- 3.HERBAL BATH BOMBS
- 1.OIL RICH BATH TRUFFLES

Oil rich bath truffles are smaller than the bath bombs, it also may feel a little softer. This type of bath bombs are used to dry skin and irritate skin,

because the oil is moisturising and soothing to the skin.

### 2.FOAMING BUBBLE BOMBS

The foaming bubble bombs are otherwise known as solid bubble baths. This type of bath bombs release fragrance and skin loving oils.

### 3.HERBAL BATH BOMBS

Herbal bath bombs are simple bath bombs. Its herbs used a combination of moist and dry elements moulded into different shapes and then dried.

### BENEFITS OF BATH BOMBS

- Its provide hydration
- Nourishment to the skin
- Moisturise to the skin
- Used for irritating skin
- Used for itching and dry skin
- Smoothing and protect to the skin
- Clean and repairing to the skin
- Great smell
- Completely organic
- Help detox

### MATERIALS AND METHODS

#### METHODOLOGY

1. Selection of ingredients
2. Collection of ingredients
3. Preparation of beetroot powder
4. Preparation of polyherbal oil
5. Preparation of fragrance oil
6. Preparation of bath bomb

### HERBAL MATERIALS USED IN THE FORMULATION

#### 1. TULSI (OCIMUM TENUIFLORUM)



Figure. No. 1

#### TAXONOMY

- Kingdom : Plantae
- Division : Magnoliophyta
- Class : Magnoliopsida

- Order : Lamiales
- Family : Lamiaceae
- Genus : Ocimum
- Species : O.tenuiflorum

#### Medicinal properties of Tulsi

- Fights acne
- Skin brightening
- Hyperpigmentation
- Deep cleansing
- Antioxidant

#### 2. NEEM (AZADIRACHTA INDICA )



Figure. No. 2

#### TAXONOMY

- Kingdom : Plantae
- Division : Magnoliophyta
- Class : Magnoliopsida
- Order : Sapindales
- Family : Meliaceae
- Genus : Azadirachta
- Species : A.indica

#### Medicinal properties of neem

- Treat fungal infection
- Reduce skin acne
- Nourishes the skin

#### 3. OLIVE OIL (OLEA EUROPAEA. L)



Figure. No. 3

**TAXONOMY**

- Kingdom : Plantae
- Division : Magnoliophyta
- Class : Magnoliopsida
- Order : Scrophulariales
- Family : Oleaceae
- Genus : Olea L
- Species : Olea europaea L

**Medicinal properties of olive oil**

- Remove pimples
- Brighten the skin
- Soothing the skin

**4. ORANGE PEEL (CITRUS SINENSIS)**



Figure. No. 4

**TAXONOMY**

- Kingdom : Plantae
- Division : Magnoliophyta
- Class : Magnoliopsida
- Order : Sapindales
- Family : Rutaceae
- Genus : Citrus L
- Species : Citrus x sinensis

**Medicinal properties of orange peel**

- Anti Aging

- Glowing skin
- Exfoliates skin

**5. BEETROOT (BETA VULGARIS)**



Figure. No. 5

**TAXONOMY**

- Kingdom : Plantae
- Division : Magnoliophyta
- Class : Magnoliopsida
- Order : Caryophyllales
- Family : Amaranthaceae
- Genus : Beta
- Species : Beta vulgaris

**Medicinal properties of beetroot**

- Make skin glow
- Keep skin hydrated and nourishes
- Fight against pimples

**6. ALOEVERA (ALOE BARBADENSIS MILLER)**



Figure. No. 6

**TAXONOMY**

- Kingdom : Plantae
- Division : Magnoliophyta
- Class : Liliopsida monocotyledons
- Order : Liliales



- Family : Aloaceae
- Genus : Aloe L
- Species : Aloe Vera L

Medicinal properties of Aloe Vera

- Treat skin infections
- Lighten dark spots
- Whitening skin

### 7.VETIVER (CHRYSOPOGON ZIZANIOIDES)



Figure. No. 7

#### TAXONOMY

- Kingdom : Plantae
- Division : Magnoliophyta
- Class : Liliopsida monocotyledons
- Order : Liliales
- Family : Aloaceae
- Genus : Aloe L
- Species : Aloe Vera L

Medicinal properties of Vetiver

- Reduce scars, blemishes and marks due to acne

### 8.COCONUT(COCOS NUCIFERA)



Figure. No. 8

#### TAXONOMY

- Kingdom : Plantae
- Division : Phanerogam

- Class : Liliopsida monocotyledons
- Order : Arecales
- Family : Areceae
- Genus : Cocos
- Species : Nucifera

Medicinal properties of coconut

- Moisturiser for dry and cracked skin
- Nourishes the skin

### 9.AMLA (PHYLLANTHUS EMBILICA )



Figure. No. 9

#### TAXONOMY

- Kingdom : Plantae
- Division : Flowering plant
- Class : Magnoliopsida
- Order : Malpighiales
- Family : Phyllanthaceae
- Genus : Phyllanthus
- Species : Phyllanthus

Medicinal properties of Amla

- Reduce pigmentation
- Reduce skin dullness and dark spots

### CHEMICAL INGREDIENTS USED IN THE FORMULATION

#### 10.CITRIC ACID



Figure. No. 10

IUPAC Name : 2-Hydroxypropane-1,2,3-tricarboxylic acid

Molecular formula : C<sub>6</sub>H<sub>8</sub>O<sub>7</sub>

Odour : odourless

Boiling point : 310 °C (590 °F; 583 K) decomposes from 175°C

Melting point :156 °C (313 °F; 429 K)

Use: Protective antioxidant, and corrective anti ageing effects

### 11.SODIUM BICARBONATE



Figure. No. 11

IUPAC Name: Sodium hydrogen carbonate

Chemical formula:  $\text{NaHCO}_3$

Odour: Odourless

Density: 2.20 g/cm<sup>3</sup>

Melting point: Decomposes to sodium carbonate starting at 50 °C

Use: Helps to remove dirt and dead skin cells from skin surface



Figure. No. 13

IUPACName:(2R,3S,4S,5R,6R)-2-(hydroxymethyl)-6-[(2R,3S,4R,5R,6S)-4,5,6-trihydroxy-2-(hydroxymethyl)oxan-3-yl]oxy-oxane-3,4,5-triol

Molecular formula :  $(\text{C}_6\text{H}_{10}\text{O}_5)_n$ .

Density: 1.5g/cm<sup>3</sup>

Melting Point: 256-258°C

Use: Detoxifying agent and helps to remove impurities from skin

### 12.SODIUM LAURYL SULPHATE



Figure. No. 12

IUPAC Name: Sodium dodecyl sulphate or SDS

Molecular formula:  $\text{C}_{12}\text{H}_{25}\text{OSO}_3\text{Na}$

Melting point : 204-207 °C

Molecular weight : 288.38 g mol<sup>-1</sup>

Use: Wetting agent and detergent

### 13.STARCH

### HERBAL BATH BOMB FORMULATION

Sl. No	INGREDIEN TS	F1	F2	F3
1	ALOEVERA	10g	10g	10g
2	NEEM	0.5g	0.5g	0.5g
3	VETIVER	5g	5g	5g
4	AMLA	10g	10g	10g
5	TULSI	0.25g	0.25g	0.25g
6	COCONUT OIL	55ml	55ml	55ml
7	STARCH	2g	1g	1g
8	SODIUM LAURYL SULFOACETATE (SLSA)	1g	13g	8g
9	CITRIC ACID	5g	5g	7g
10	SODIUM BICARBONATE	5g	5g	4g
11	FRAGRANCE OIL	2.5ml	5.5ml	10ml
	<b>Total</b>	105g	105g	105g

Table. No. 1

#### PREPARATION OF BATH BOMB

##### PREPARATION OF BEETROOT POWDER

Take beetroot and clean, slice it into small pieces and then spread it into a tissue paper then allow it for 4-5 days in sunlight to make them dry and grind it into powder.

##### PREPARATION OF FRAGRANCE OIL

Take orange peel and then slice into small pieces and the orange peel mix with accurately weighed olive oil, and allow it to 4-5 days at room temperature in a glass container.

##### PREPARATION OF POLYHERBAL OIL

Fresh leaves of Neem and sparkling roots of Vetiver alongside pulp of Aloe vera and Amla became combined with 200ml coconut oil. The oil containing those herbs are then boiled for 20 min, oil is stored for cooling after which it is strained.

##### PREPARATION OF BATH BOMB

Accurately weigh sodium bicarbonate, starch, SLS, citric acid into a cleaned mortar and then triturate it with a pistol and add the polyherbal oil and mix then add the beetroot powder and fragrance oil. Mix the contents and put it into a mould and then after 1 min unmould it properly and stored in room temperature.

### PACKAGING AND LABELLING

The prepared herbal bath bombs use a clear wrap to seal your bath bombs and place labels on each one.

### EVALUATION

#### PREFORMULATION STUDIES

##### 1. Physical appearance:-

Bath Bombs are fizzy, foamy, soapy colourful balls that look tempting, like a desert. They are fragrant and can vary in terms of what ingredients are used to make them.

Sl.No.	Formulation	Physical Appearance
1	F1	Good
2	F2	Good
3	F3	Good

Table. No. 2

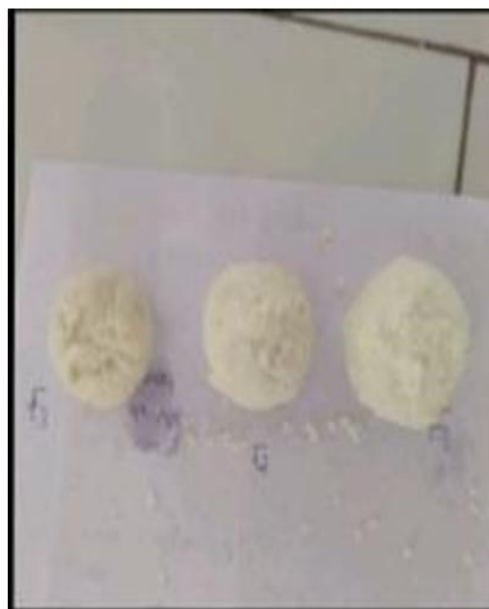


Figure. No. 14

##### 2. pH determination:-

The pH of solution containing bath bombs is measured and results as follows.

Sl No.	Formulation	pH
1	F1	7.46
2	F2	5.39
3	F3	5.29

Table. No. 3



Figure. No. 15

### 3. Effervescent time:-

Prepared formulation of bath bomb has been evaluated for effervescent time the obtained data is as below;

SI No.	Formulation	Effervescent time
1	F1	35sec
2	F2	45sec
3	F3	60 sec

Table. No. 4

### 4. Skin Irritation Test

SI No.	Formulation	Result
1	F1	None
2	F2	None
3	F3	None

Table. No. 5

## II. RESULTS

### 1. PHYSICAL EVALUATION.

The appearance, odour and colour of the three formulations F1, F2 and F3 was evaluated and the results are shown in table

### 2. DETERMINATION OF pH.

The pH of the bathbomb was found to be in the range of 7- 7.5 , which is good for the skin .All the prepared formulation of the bathbomb are nearer to the skin pH, pH of F1 was 7.46, F2 was 5.39 ,and F3 was 5.29.

## III. DISCUSSION

The present study was conducted and evaluated on an herbal bath bomb using beetroot powder. The bathbomb was evaluated to the physical appearance manually. Formulation F1 was selected as the best among the preparation of bath bombs. The formulation has good foamability. The pH of the bathbomb was up to the standard values as specified. The bathbomb was non-irritant and did not cause any harm to the skin

## IV. CONCLUSION

The aim of the study was to prepare an herbal bath bomb by using beetroot powder for the skin. Beetroot powder, which is the main ingredient in this formula, has anti-pigmentation properties. Aloe, Neem, Amla, Tulsi and Vetiver are other important ingredients with antioxidant, anti-inflammatory properties. Sodium lauryl sulphate is a cleansing agent and starch is beneficial for acne - prone skin because it absorbs excess oil from the skin. Citric acid may gently exfoliate and cleanse our skin deeply while providing a natural healthy glow. The coconut oil provided skin moisturization. A total of three formulations (1,2 & 3) were prepared by varying proportions of all ingredients. Among three formulations prepared, formula 1 was found to be the superior formulation based on pH, production of effervescence, non irritable nature and physical appearances.

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