



# Formulation And Evaluation Of Herbal Chocolate For Menstrual Harmonal Imbalance

1Mr.Shrikant Rushindar Katkade, 2Dr.Swsti S.Rawat, 3Dr.Sunil S.Jaybhaye, 4Mr.Avinash D.Hatkar, 5Ms.Sakshi O.Jaju

1Student

1Institute of pharmacy, Badnapur ,

2Institute of pharmacy, Badnapur ,

3Institute of pharmacy, Badnapur ,

4Institute of pharmacy, Badnapur ,

5Institute of pharmacy, Badnapur

## Abstract:

Individuals have a greater affinity for chocolate than for any other type of food, yet they often have a dislike for medications. Consequently, the objective of this study was to create a chocolate infused with herbal components, specifically designed to alleviate menstrual cramps. Primary dysmenorrhea (PD) is a common problem among women in their reproductive years that can negatively impact their quality of life. About 90% of women experience dysmenorrhea. One of the foods that can reduce menstrual pain is dark chocolate. Other herbal ingredients such as ginger, pumpkin seeds, fenugreek seeds, fennel, sesame, coconut oil, and honey are also known to reduce pain. However, research on the combination of dark chocolate with herbal ingredients has not been conducted. Therefore, this study aims to determine the effectiveness of dark chocolate with herbs in reducing menstrual pain. Dark chocolate can be used as an alternative to overcome pain during menstruation time because it contains many benefits in the health sector. Chocolate contains copper, which is used by the body to synthesize collagen and neurotransmitters called endorphins. Endorphin hormone would be an analgesic and natural sedative so as to reduce the intensity of pain such as menstrual pain. Dark chocolate contains more cocoa, making it the best choice to get the health benefits. A physicochemical analysis was conducted on herbal chocolate to identify the presence of proteins, carbohydrates, and glycosides, which indicate the existence of various biomolecular components within the chocolate. This makes chocolate a non-pharmacological alternative for alleviating dysmenorrhea. The purpose of this study was to investigate the influence of dark chocolate on reducing menstrual pain in primary dysmenorrhea.

## 1. INTRODUCTION

Menstrual pain, also known as dysmenorrhea, is a common gynecological condition that affects millions of women worldwide. Characterized by cramping, lower abdominal pain, fatigue, irritability, and other discomforts, it significantly impacts the quality of life during menstruation. While conventional treatments like non-steroidal anti-inflammatory drugs (NSAIDs) and hormonal contraceptives provide relief, they may also lead to side effects with long-term use. In recent years, there has been growing interest in alternative and natural remedies for managing menstrual pain. Herbal medicine, in particular, has gained popularity due to its holistic approach, safety profile, and minimal side effects. Herbs such as ginger, pumpkin seeds, Fenugreek seeds, Sesame seeds, have demonstrated analgesic, anti-inflammatory, antispasmodic, and mood-regulating properties, making them suitable for relieving menstrual discomfort, especially dark chocolate, is not only a popular comfort food but also a rich source of magnesium, antioxidants, and mood-enhancing compounds like theobromine and phenyl ethylamine. These components can help ease muscle cramps, reduce stress, and improve mood during m Combining the therapeutic benefits of medicinal herbs with the natural mood-lifting qualities of chocolate presents a novel, palatable, and functional approach to menstrual care. Herbal chocolate is emerging as an innovative delivery system for menstrual pain relief, offering both nutritional and therapeutic benefits in a convenient and enjoyable f This project aims to explore the formulation, benefits, and potential of herbal chocolate as a natural remedy for menstrual pain and hormonal imbalance, focusing on the integration of specific herbs known for their menstrual health-supportive.

Menstrual cramps, or dysmenorrhea, are a widespread concern for many women, often accompanied by fatigue, mood swings, bloating, and digestive discomfort. While over-the-counter medications can offer temporary relief, they frequently come with side effects and do not support long-term hormonal balance. As a result, there's a growing demand for natural, effective, and holistic alternatives that not only relieve pain but also nourish the body. Herbal chocolate for menstrual cramps combines the therapeutic properties of time-tested herbs and superfoods in a delicious, convenient form. This functional chocolate is thoughtfully formulated using a blend of coconut oil, ginger, pumpkin seeds, fenugreek seeds, fennel, and sesame—each selected for their unique benefits in supporting menstrual health. Coconut oil provides healthy fats that enhance nutrient absorption and balance hormones. Ginger is a natural anti-inflammatory that helps reduce menstrual pain and nausea. Pumpkin seeds are rich in magnesium, zinc, and essential fatty acids, which aid in muscle relaxation and mood regulation Fenugreek seeds have been traditionally used to ease menstrual discomfort and regulate hormonal cycles. Fennel offers antispasmodic properties that relieve cramping and support digestion .Sesame seeds are packed with calcium, iron, and lignans that promote hormonal balance and reduce PMS symptoms This herbal chocolate is not just a remedy—it's a holistic wellness treat that nourishes both body and mind. By merging the comforting appeal of chocolate with the healing power of traditional herbs, this product provides a natural, enjoyable approach to menstrual pain relief, supporting women through their cycle with warmth, flavor, and function.

### ADVANTAGES OF HERBAL CHOCOLATE

1. **Tasty Medicine** – Combines herbs with chocolate, making it easy and enjoyable to eat.
2. **Easy to Carry** – No need to mix or cook like herbal teas or powders.
3. **Better Compliance** – Young girls and women are more likely to use it because it tastes good.
4. **Works Together** – Chocolate and herbs together can improve results.
5. **Custom-Made** – You can change the herbs or sweeteners based on needs.

## **BENEFITS OF HERBAL CHOCOLATES**

### **1: Helps Balance Hormones**

Herbs like Fenugreek, Sesame, and Pumpkin seeds have natural compounds that support the balance of female hormones like estrogen and progesterone. This helps regulate the menstrual cycle.

### **2: Reduces Menstrual Cramps and Pain**

Fennel and Fenugreek seeds have anti-inflammatory and pain-relieving properties. When added to chocolate, they help reduce abdominal cramps, back pain, and discomfort during periods.

### **3: Improves Mood and Reduces Stress**

Dark chocolate naturally boosts serotonin (the “happy hormone”). Herbs like Ashwagandha (if added) also reduce stress and anxiety during PMS.

### **4: Boosts Energy Levels**

Periods often make you feel tired. Cocoa, Pumpkin seeds, and iron-rich herbs help improve blood flow and energy, reducing fatigue.

### **5: Aids Digestion and Reduces Bloating**

Fennel seeds help with digestion, reduce gas, and make you feel less bloated — a common problem during menstruation.

### **6: Provides Important Nutrients**

Herbal chocolate contains magnesium, iron, zinc, and fiber from herbs and seeds — all essential women’s health during their cycle.

### **7: Tastes Good and Easy to Eat**

Unlike bitter herbal teas or pills, herbal chocolate is delicious and easy to consume, especially for young girls and teens.

### **8: Natural and Gentle**

Made with natural herbs and plant-based ingredients, it’s a safer and milder alternative to chemical hormone treatments or painkillers.

### **9: Supports Skin and Hair Health**

Seeds like Sesame and Pumpkin also support glowing skin and healthy hair, which can get affected by hormonal imbalances.

### **10) Controls Sweet Cravings**

Dark chocolate with herbal sweetness can help satisfy cravings in a healthier way during PMS without overeating sugary snacks.

## STATEMENT OF PROBLEM & HYPOTHESIS:

- When there is mood swings During menstrual cycle due to Hormonal imbalance. Which causes menstrual Discomfort of menstrual cramps.
- Lack of blood during menstrual Cycle due to hormonal imbalance
- Flow of Heavy bleeding during period to abnormalities AUB – Abnormal uterine bleeding.

## HYPOTHESIS

- Difficult in Taste Masking of Herbal Chocolate
- Inconvenient to Taste
- Sometime herbal material is Incompatible

## AIM & OBJECTIVE :

**Aim :-** Formulation herbal chocolate for Menstrual hormonal imbalance

### Objective:-

1. The main objective of this research work was to formulate the herbal chocolate which is used in Menstrual cramps and does cause side effects or adverse reaction.
2. To study safety and efficacy of prepared herbal chocolate.

## PHYTOCHEMISTRY OF HERBS USED IN FORMULATION

### 1) Pumpkin seed



**Fig.No.1: Pumkin seed**

**Biological Source:**

Pumpkin seeds are obtained from the seeds of pumpkin fruits, which are produced by the pumpkin plant

**Chemical Constituents:** Proteins, Fats, Zinc, Magnesium

- Botanical Name: Cucurbita
- Family: Cucurbitaceae
- Kingdom: Plantae
- Scientific Name: Cucurbita pepo
- Uses: Nutritive

**2) Fennel**

**Fig.No.2 : Fennel seed**

**Biological Source** - Fennel is obtained from the dried ripe fruits of *Foeniculum vulgare*.

**Family** - *Foeniculum vulgare* L.

### Medicinal Uses and Significance -

1. Fennel used as a natural remedy for primary dysmenorrhea that is both safe and effective.
2. Fennel also act as antimicrobial properties, antispasmodic, Stimulant, carminative and expectorant, Anti carcinogenic properties. Antioxidant activity, Muscle relaxant. Nausea and stress relaxer, Anti parasitic, Nausea and stress relaxer.

Moisture Balance

### 3) Fenugreek Seed



**Fig. No. 3 : Fenugreek seed**

**Biological Source** – It consist of seeds and leaves of *Trigonella foenum – graecum*,

**Family-** Fabaceae

### Medicinal Uses and Significance

1. It has traditional and functional uses in food preparation, nutraceuticals, and physiological applications.
2. Fenugreek was used as a tonic for the metabolism and to help with labor and menstrual cramps in ancient rome.
3. Patent medication for symptoms related to periods and menstrual cramps.
4. Fenugreek seeds reduce insulin resistance and enhance glucose regulation.

#### 4) Sesame seed



**Fig. No. 4 : Sesame seed**

**Biological Source:** Sesame seeds are the dried seeds of *Sesamum indicum* Linn.

**Family:** Pedaliaceae

**Medicinal Uses:**

1. **Rich in Antioxidants:** Contains sesamin and sesamol which help fight oxidative stress.
2. **Hormonal Balance:** Lignans in sesame may support estrogen balance, especially in women.
3. **Anti-inflammatory:** Helps reduce inflammation in chronic conditions.
4. **Heart Health:** Contains healthy fats and phytosterols that help lower cholesterol.
5. **Bone Health:** High in calcium, magnesium, and zinc, beneficial for bone strength.
6. **Skin and Hair Health:** Used in Ayurvedic and cosmetic formulations for nourishing skin and hair.
7. **Digestive Aid:** High fiber content supports bowel regularity.
8. **Immune Support:** Rich in essential nutrients like zinc, selenium, and vitamin B6.

## 5) Honey



**Fig. No. 5 : Honey**

**Biological Source :-** Honey is produced by both honey bees and stingless bees.

**Chemical constituents:-**

Glucose Fructose and Maltose

- Botanical Name :- Honey Bee
- Family :- Apidae
- Kingdom :- Animalia
- Scientific Name :- Arthropoda
- Uses :- Produce Sweet test reduce bitter taste

## LITERATURE REVIEW

### **Azizah R. et al. 2023.**

Approximately 55% of females suffer dysmenorrhea. Dark chocolate is one food that can reduce the pain associated with menstruation. It is also known that other herbal substances such as red ginger, turmeric, moringa, sambiloto, and honey might lessen pain. Nevertheless, studies on the pairing of dark chocolate with herbal components has not been studied. Consequently, the purpose of this study is to ascertain whether combining dark chocolate with herbs will lessen menstruation pain. Thirty respondents were used for this test, and they were split into three groups: dark chocolate (C), positive control group (K), and dark chocolate plus herbs (C+H). A 250 mL beverage was made by combining dark chocolate with herbal ingredients such as red ginger, turmeric, moringa, sambiloto extract, and honey. It is a quantitative research project.

### **Verma A. et al. 2019.**

An intense, painful, cramp experience in the lower abdomen that is often followed by additional symptoms, such as sweating, nausea, migraines, etc., all occurring soon before or during the periods is known as premenstrual pain (PMS), dysmenorrhea, or painful menstruation. Many medications, most notably non-steroidal anti-inflammatory medicines (NSAIDs), are used to relieve pain at this time. The goal of this study is to assess the claims made for dark chocolate as an NSAIDs substitute. Ninety nine selected students were split up into three groups and given 120 grammes of dark, milk, or no chocolate every day depending on their group. Pain was measured using the Numeric Rate Scale (NRS) both before and after the intervention. Following the use of, premenstrual and menstrual pain were greatly reduced.

### **Satriawati A. et al. 2020.**

Adolescent reproductive health is still a problem that requires attention. One of the many women who experience discomfort at the onset of menstruation is dysmenorrhea. This study aims to determine the effect of a combination of warm compress and chocolate to decrease menstruation pain (dysmenorrhea) on raja in SMP Negeri 1 Bangkalan. The population in this study consisted of female students of SMP Negeri 1 Bangkalan who had dysmenorrhea. The sample technique used for this research was simple random sampling with an inclusion and exclusion criteria of 54 respondents divided into two groups, each with 27 respondents. Data analysis was done using the chisquare test and logistic regression. The combination of warm and chocolate compresses was found to have an impact on the reduction of menstrual discomfort (p-value = 0.050). Additionally, additional factors influence the IMT (p-value 0.032) decrease in menstruation discomfort. If teenage girls continue to have pain during their periods, it is advised that they get their reproductive organs checked.

## Material & Method

### Material:

Fennel seeds, sesame seeds, Fenugreek seeds, pumpkin seeds, jaggery & Honey, coconut oil, Dark Chocalate

### Step 1 : Preparation of dark Chocalate



Fig.. 6 : Crush the seeds



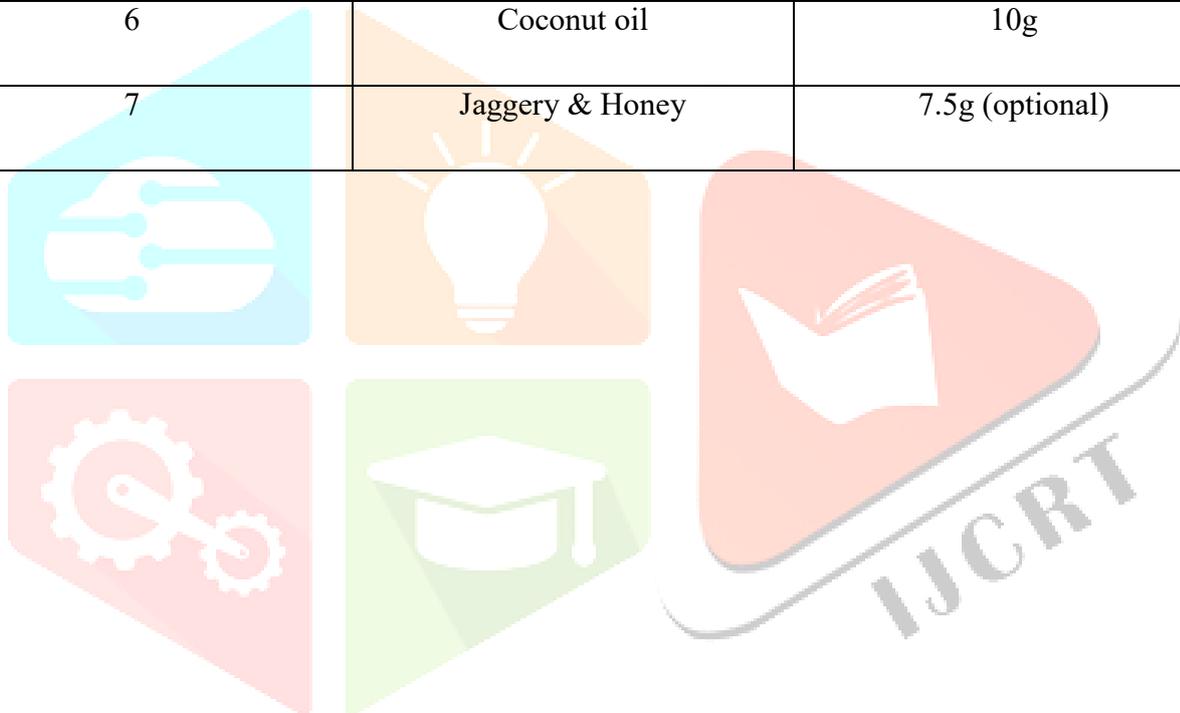
Fig. 8 : Pour chocolate



Fig. 7 : Melt the Chocolate

**Step 2 : Formulation Of Herbal Chocolate****Formulation Table**

<b>Sr. No</b>	<b>Ingredient</b>	<b>Quantity</b>
1	Dark Chocolate	60g
2	Pumpkin seed	5g
3	Fenugreek seed	5g
4	Fennel seed	2.5g
5	Sesame seed	5g
6	Coconut oil	10g
7	Jaggery & Honey	7.5g (optional)



All the ingredients were weight accurately



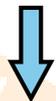
Melt the dark chocolate using double boiling method



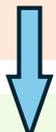
Addition of all herbal ingredients into the melted chocolate



Addition of chocolate essence into the melted chocolate as flavouring agent



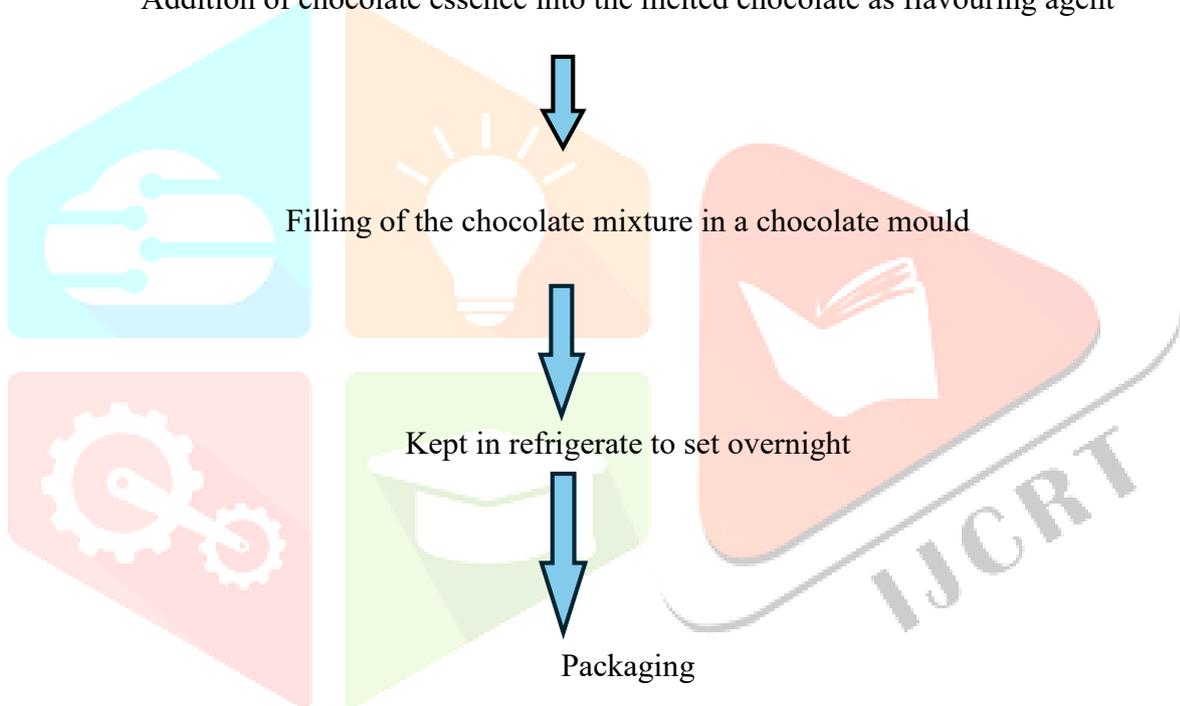
Filling of the chocolate mixture in a chocolate mould



Kept in refrigerator to set overnight



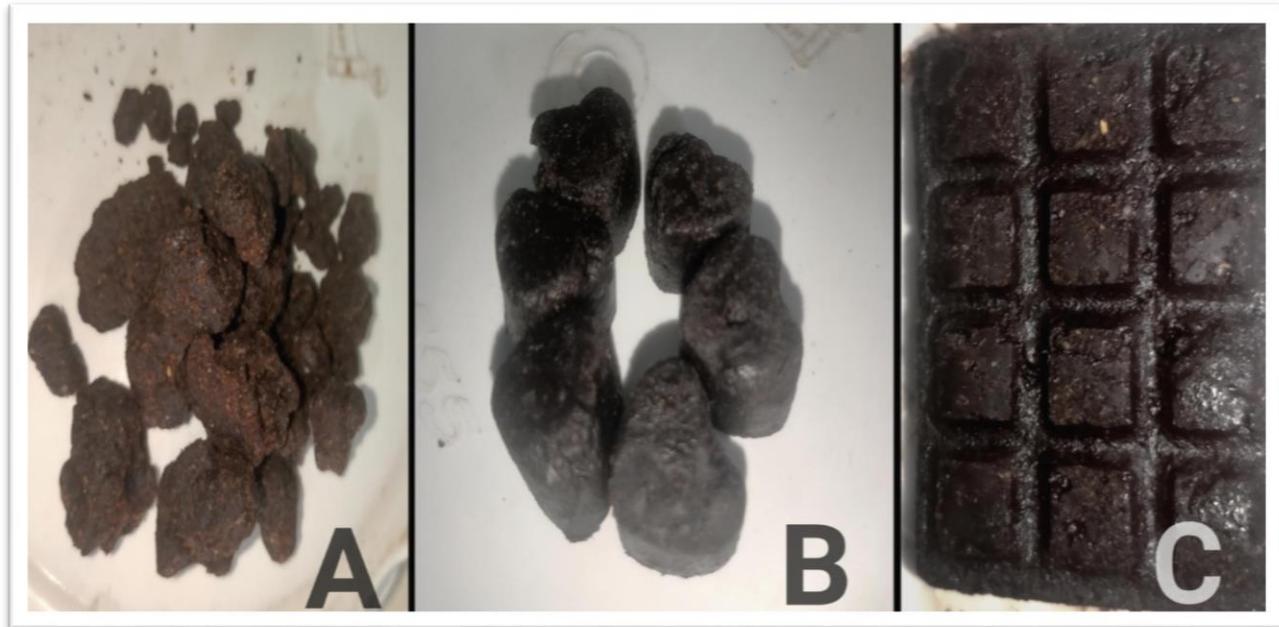
Packaging



**Fig. 9 Melting The Chocalate**



**Fig 10 Add the herbs powder**



**Fig 11 : Batch A,B,C, Formulation of herbal Chocalate**



**Fig 12 : Final Batch Product Of herbal chocolate**

## EVALUATION TEST OF HERBAL CHOCOLATE:

### Evaluation test

#### 1. Organoleptic Property

- Colour
- Odour
- Taste

#### 2. Preliminary Phytochemical Screening

- Test for carbohydrate
- Test for protein
- Test for saponins glycoside

#### 3. pH

- Blooming Test
- Fat blooming
- Sugar blooming

### RESULT AND DISCUSSION :

#### ❖ **Organoleptic properties:-** (Evaluation of taste, texture, and mouthfeel)

The properties of prepared chocolate formulation in terms of taste, texture, and mouthfeel.

- Colour :- Brown
- Odour :- Chocalate
- Teste :- Slightly bitter
- Mouth feel :- Smooth and pleasant
- Appearance :- Glossy, even shine, no dots,and cracks

#### ❖ **Initial phytochemical screening:**

Initial phytochemical screening of the chocolate method, as displayed in the table below.

Phytoconstituent	Backside extract	Scopolatine extract	Chocalate formulation
Carbohydrates	Positive	Positive	Positive
Protein	Positive	Positive	Positive
Glycoside	Positive	Positive	Positive

**❖ PH**

Using a pH meter, the PH of the chocolate formulation was determined to be  
pH =5

**❖ Blooming test**

- Fat bloom :- No
- Sugar bloom :- No



**Fig 13 : The actual photograph of formulated herbal chocolate**

**CONCLUSION :**

Based on the study's result, dark chocolate combined with herbal substances includes Fennel, sesame, Pumpkin seeds and Fenugreek seeds may have the ability to reduce menstruation Discomfort, so it could be as alternative therapy for menstrual cramps. Physiochemical studies revealed The presence of protein, carbs, and glycoside in the chocolate. The chocolate was assessed for Appearance, stability, and moisture content. Based on the above discussion, we assumed that the Chocolates provide a silky, smooth surface to the details and are excellent at masking the unpleasant Taste associated with the drugs and treatments that are used in the dosage range are safe to ingest and do Not carry a risk of side effects.

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