IARJSET ISSN (O) 2393-8021, ISSN (P) 2394-1588

International Advanced Research Journal in Science, Engineering and Technology

Impact Factor 8.066 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 13, Issue 8, August 2026

# Preparation and Evaluation of Herbal Elixir For Haemoglobin Enhancements

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**Abstract:** Anemia is one of the most common nutritional disorders caused mainly by iron deficiency and low hemoglobin levels. Conventional iron supplements often produce gastrointestinal side effects such as constipation, nausea, and metallic taste, leading to poor patient compliance. Herbal formulations are considered safer and more acceptable alternatives due to their natural origin and additional nutritional benefits act. Oral dosage forms are most popular among other dosage forms. In terms of bioavailability liquid dosage form is better than that of solid dosage form. Herbal preparation is mainly preferred due to their safety, cost effectiveness and fewer side effects as compared to the synthetic iron supplements. The present study focuses on the preparation and evaluation of herbal elixir for hemoglobin enhancement which containing the extract of pomegranate, beetroot, papaya, amla for increasing the level of hemoglobin or iron in to the blood.It serve as the natural hematinic preparation for hemoglobin enhancement. The prepare formulation evaluated by the organoleptic properties, viscosity, pH, stability and microbial contamination.

**Keywords**: Hemoglobin enhancement, papaya, pomegranate, amla, beetroot etc.

## INTRODUCTION

Haemoglobin is an iron containing protein present in the red blood cells responsible for the oxygen transport throughout the body. Deficiency which is produce due to lack of haemoglobin such as anemia, dizziness, fatigue, weakness, and poor immunity. The iron supplements which is available in the market is often produce the constipation, gastrointestinal problems, nausea, vommiting, and gastric irritation. Herbal medicines provide alternative therapy due to their natural origin for the better compliance of the patient. An elixir is a sweet liquid dosage form used for the medicinal purpose, to be taken orally an intended to cure illness. In the pharmaceutical preparation an elixir contains atleast one active ingridient designed to be taken orally. The haemoglobin deficiency is one of the most common deficiency affecting on the mankind. Iron is needed to for hemoglobin and mostly iron stored in the body in the form of haemoglobin.The healthy range of the haemoglobin is for men is 13.2 to 16.2 gram per deciliter and women it is 11.6 to 15 gram per deciliter. Haemoglobin is a protein in RBC is responsible for carries oxygen throughout. The body. Iron, folic acid, vitamin B6 and B12 are vital nutrient for development of RBC. The absence of these nutrient can leads to low of haemoglobin levels And further it reduces the carries of oxygen throughout the body. It causes the Sign and symptoms like fatigue, weakness, dizziness, mental fogginess, and Increased susceptibility to infection. In case of hematinic can be administered. The medical preparation ,supplements for the purpose of increase the level of the Haemoglobin.

**Ingredients:-**

**Herbs used for the preparation of elixir:**

1. **Pomegranate:-** Pomegranate is nutritious fruit widely used in the traditional medicine for improving blood health and supporting hemoglobin formation. It is rich in iron supportive nutrients, antioxidants, vitamins and minerals that help in the enhancement of haemoglobin.

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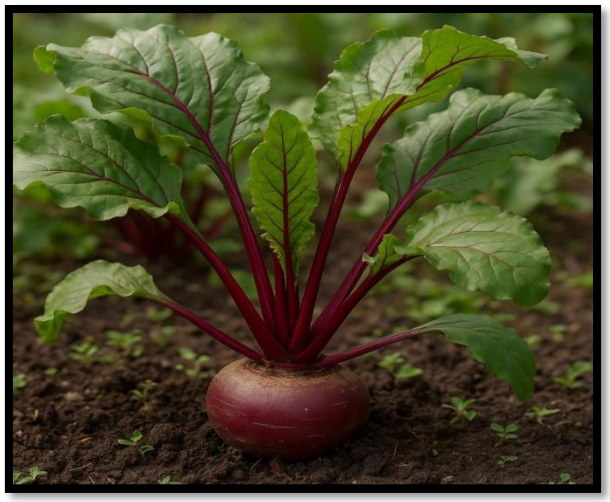
2. **Beetroot:-**

Beetroot (Beta vulgaris) is a highly nutritious root vegetable widely used in herbal and nutraceutical preparations for improving blood health and Enhancing hemoglobin levels. Due to its rich content of iron, folic acid, Vitamins, antioxidants, nitrates, and minerals, beetroot is considered an Effective natural hematinic agent. In pharmaceutical and herbal Formulations, beetroot is incorporated into syrups, tonics, and herbal .Elixirs to manage iron deficiency anemia and improve overall vitality.



3. **Papaya:-**

Papaya is a tropical fruit widely used in traditional medicine and nutritional therapy because of its rich content of vitamins, minerals, antioxidants, and digestive enzymes. In herbal formulations designed for hemoglobin enhancement, papaya acts as a supportive nutrient source that improves iron absorption, digestion, and blood formation.

4. **Amla:-**

It is widely used in traditional Ayurvedic medicine because of its High nutritional and medicinal value. Amla is one of the richest natural Sources of vitamin C and contains powerful antioxidants, minerals, amino Acids, and polyphenols that support blood formation and overall health. Amla contain the Important nutrients which are essential for the hemoglobin Enhancement and for blood health.

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**5. Honey:-**

Honey is a natural sweetening and therapeutic agent widely used in herbal formulations and elixirs. In a herbal elixir for hemoglobin enhancement, honey acts as a nutritive vehicle, flavoring agent, preservative, and bioavailability enhancer. It contains a small amount of iron and copper which helps in the Haemoglobin enhancement.

**6. Preservatives ( citric acid and sodium benzoate):-**

In a herbal elixir for haemoglobin enhancement, citric acid and sodium benzoate are commonly used as preservatives and stabilizing agents to improve the quality, shelf life, and safety of the formulation.

**Role of citric acid:-**

- Acts as an acidifying agent to maintain acidic pH.
- Enhances the effectiveness of preservatives like sodium benzoate.
- Improves the taste and flavor of the herbal elixir.
- Prevents oxidation and deterioration of herbal constituents.
- Helps maintain stability and appearance of the formulation.

**Role of sodium benzoate:-**

- Acts as an antimicrobial preservative.
- Prevents growth of:

1. Bacteria
2. Yeasts
3. Molds

- Increases shelf life of the herbal elixir.

**Method of Preparation of herbal elixir:-**

- **Collection of ingredients:-**

Ingredients are collected from the grocery shop and from the farm for the preparation. Dirt on it is wash out and clean out it with the clean water.

- **Extract preparation:-**
  For the preparation of Extract first ingredients such as pomegranate beetroot papaya and amla are cut in to the small pieces and after that take it in to the container and add the sufficient or the half of container water or ethanol in it.
  After that kept it for heating at 50° to 60° C temperature for heating. For 30 minutes.
- **Filter the extract:-**
  After the extract Preparation filter the extract through the filter paper.
- **Preparation of syrup:-**
  For the syrup preparation sufficient amount of sucrose or the jaggery should be taken.
  Then add the water quantity sufficient for preparation in the sucrose.Then kept it for heating with continuous stirring and heat it still it not get the viscous as it mentioned.
  **Procedure:-**
- Take the 20 ml of syrup for the base of the herbal elixir.
- Take it in the clean and sterilized 100ml beaker.

- Take the prepare extract in to the another beaker such as extract of pomegranate beetroot papaya and amla in the given quantity.
- Add the extract in to the syrup with continuous stirring and mix it well.
- Now add the sweetening and flavoring agent in to the preparation.
- Then add the preservatives such as citric acid and sodium benzoate 0.2 g in it and mix it properly.
- Then make up the volume with distilled water.
- Herbal elixir is prepared.
- Now keep it in to the well closed container.

- **Formulation table:-**

| Sr.No | Ingredients | Quantity |
|---|---|---|
| 1. | Pomegranate | 20 ml |
| 2. | Beetroot | 15 ml |
| 3. | Papaya | 15 ml |
| 4. | Amla | 15 ml |
| 5. | Honey | 15 ml |
| 6. | Citric acid | 0.2 g |
| 7. | Sodium benzoate | 0.2 g |
| 8. | Distilled water | Q.S to 100 ml |
| 9. | Syrup | 20 ml |

**Evaluation of herbal elixir :-**

- **Organoleptic parameter:-**

| Sr. No. | Parameter | Observation |
|---|---|---|
| 1 | Colour | Dark red or reddish brown |
| 2 | Odour | Fruity |
| 3 | Taste | Pleasant |
| 4 | Appearance | Clear |
| 5 | Clarity | Clear |

- **Physicochemical evaluation:-**
- pH determination:-
  pH of the herbal elixir is determined by using pH determination paper and it is found in the between of 4 to 6 range.
- **Viscosity:-**
  Viscosity of the herbal elixir is determined by the using Brookfield viscometer. It determines the flow properties of the elixir.
- **Specific gravity:-**
  Measured by using the pycnometers.
  Formula:
  Specific gravity = weight of elixir / Weight of equal volume of water

- **Refractive index:-**

Refractive index is an important physical evaluation parameter used in the standardization and quality control of herbal elixirs. When a ray of light passes from one medium to another, its speed changes and the light bends. The refractive index is expressed as:

Formula:- RI= sin I / sin r
Sin i= angle of incidence sin
R= angle of refraction

**Observation table:-**

| Sr.No. | Sample reading | Refractive index |
|---|---|---|
| 1 | Trial 1 | 1.410 |
| 2 | Trial 2 | 1.412 |
| 3 | Trial 3 | 1.411 |

- **Stability Studies :-**
  The prepared formulation is stable at the room temperature and of the temperature of -40° or 2° C.

| Sr.No. | Parameter | Observation |
|---|---|---|
| 1 | Colour | No change |
| 2 | Odour | No change |
| 3 | pH | 4 to 6 |
| 4 | Clarity | Fine |
| 5 | Taste | No change |
| 6 | Texture | Smooth |

The prepared formulation is evaluated for the 1 month period and it is stable at different conditions and temperature.

**Advantages of herbal elixir:-**

- Natural and safe
- Better patient acceptability
- Reduced gastrointestinal side effects
- Nutritional supplementation
- Antioxidant benefits

**Limitation of herbal elixir:-**

- Stability issues
- Lack of standardization
- Possibility of contamination
- In the medical herbal formulations quality of the medicine is essential for the safety and efficacy of the patient.

**Future scope of the herbal elixir:-**

- Herbal elixir can be used as a natural medicine to increase haemoglobin levels.
- It may help people suffering from iron deficiency and anaemia.
- Future studies can improve its taste, stability, and effectiveness.
- The formulation can be produced on a large scale as a herbal health supplement.
- More nutrients like vitamin B12, folic acid, and honey can be added for better results.
- It may become popular because people prefer natural and herbal products.
- The elixir can also be used to improve overall health and immunity.
- Further research can discover new herbal combinations for better haemoglobin enhancement.

## CONCLUSION

Herbal formulations have growing demand in the world market. This herbal elixir help to boost the Haemoglobin in our blood and help in treatment of anaemia. This Formulation is prepared by using the natural extract of the beetroot, papaya, pomegranate and amla.These formulation possess the haemoglobin enhancing activity and fewer side effects than the other supplement available in the market. It's evaluation conclude that it is stable, safe, effective, economical and for better patients compliance.

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