Review Article On Formulation And Evaluation Of Polyherbal Syrup For Iron Deficiency Anemia

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ABSTRACT : Iron Deficiency Anaemia (IDA) continues to be one of the most prevalent nutritional disorders worldwide, affecting vulnerable groups such as women, children, and adolescents. Conventional iron supplements often cause gastrointestinal side effects and poor compliance, highlighting the need for natural and better-tolerated alternatives.

The present study aims to formulate and evaluate a polyherbal syrup composed of Amla (Emblica officinalis), Honey, Beetroot (Beta vulgaris), Jaggery, and Hibiscus (Rosa-Sinensis),Lemon (Citrus Limon) selected for their hematinic, antioxidant, and bioavailability-enhancing properties.

The formulation was prepared by extracting juices and decoctions of the selected ingredients, followed by homogenization, mild heating, filtration, and storage under controlled conditions. Preliminary evaluations indicate that the polyherbal syrup possesses acceptable organoleptic properties, good stability, and improved iron availability due to the synergistic interaction of its components. Observational findings suggest a potential increase in haemoglobin levels, reduction in fatigue, and overall improvement in symptoms associated with IDA.

KEYWORDS: Polyherbal formulation medicinal plant, Iron supplementation, Nutritional deficiency, Natural iron sources, Traditional medicines.

1. INTRODUCTION :

Anemia is a common health problem that occurs when the body does not have enough healthy red blood cells or hemoglobin to carry oxygen properly. Hemoglobin is an iron-containing protein in red blood cells that plays an important role in transporting oxygen from the lungs to different parts of the body. When hemoglobin levels decrease, the body's normal functions are affected, leading to symptoms such as weakness, fatigue, dizziness, and shortness of breath.

Among all types of anemia, iron deficiency anemia is the most common, especially in developing countries like India. It mainly affects women, children, and pregnant individuals due to poor nutrition, increased iron requirements, and inadequate dietary intake. Other causes may include blood loss, infections, chronic diseases, and deficiencies of nutrients like vitamin B12 and folic acid. If not treated on time, anemia can lead to serious health problems such as reduced immunity, poor physical and mental performance, and complications during pregnancy.

Conventional treatment of anemia usually involves iron supplements and dietary changes. Although these treatments are effective, they often cause side effects like stomach irritation, constipation, and nausea, which may reduce patient compliance. Because of these limitations, there is growing interest in using natural and herbal alternatives.Polyherbal formulations, which combine different medicinal plants, are gaining popularity due to their safety, effectiveness, and fewer side effects. In particular, polyherbal syrups are easy to consume and are well accepted by patients. These syrups are prepared using herbs such as amla, moringa, beetroot, hibiscus, and dates, which are rich in iron, vitamins, and antioxidants. They not only help in increasing hemoglobin levels but also improve overall health by enhancing iron absorption and supporting blood formation.

This review focuses on the role of polyherbal syrups in the management of iron deficiency anemia, highlighting their composition, mechanism of action, benefits, and therapeutic potential as a natural alternative to conventional treatment.

2. AIM AND OBJECTIVES:

Aim : On Formulation And Evaluation Of Polyherbal Syrup For Iron Deficiency Anemia.

Objectives:

- Make a safe herbal syrup for anemia.
- Increase hemoglobin and RBC levels naturally.
- Improve iron absorption using Vitamin C.
- Check quality, stability, and taste.

3. MATERIALS AND METHODS:

3.1 Materials:

Amla powder, Moringa leaves, Beetroot ,Hibiscus Flower, Honey, Jaggery, Sodium benzoate, Lemon juice

3.2 Method of Preparation :

Step1: Making the herbal extracts:

Fresh amla, moringa, hibiscus, and beetroot are collected, washed, and cut into small pieces. The materials are shade-dried and ground into coarse powder. The powder is mixed with water in a 1:10 ratio. The mixture is heated at 60–70°C for about 30 minutes. After cooling, it is filtered using muslin cloth. The filtrate (extract) is stored in a cool, dark place for further use.

Step2: Prepration of Final syrup:

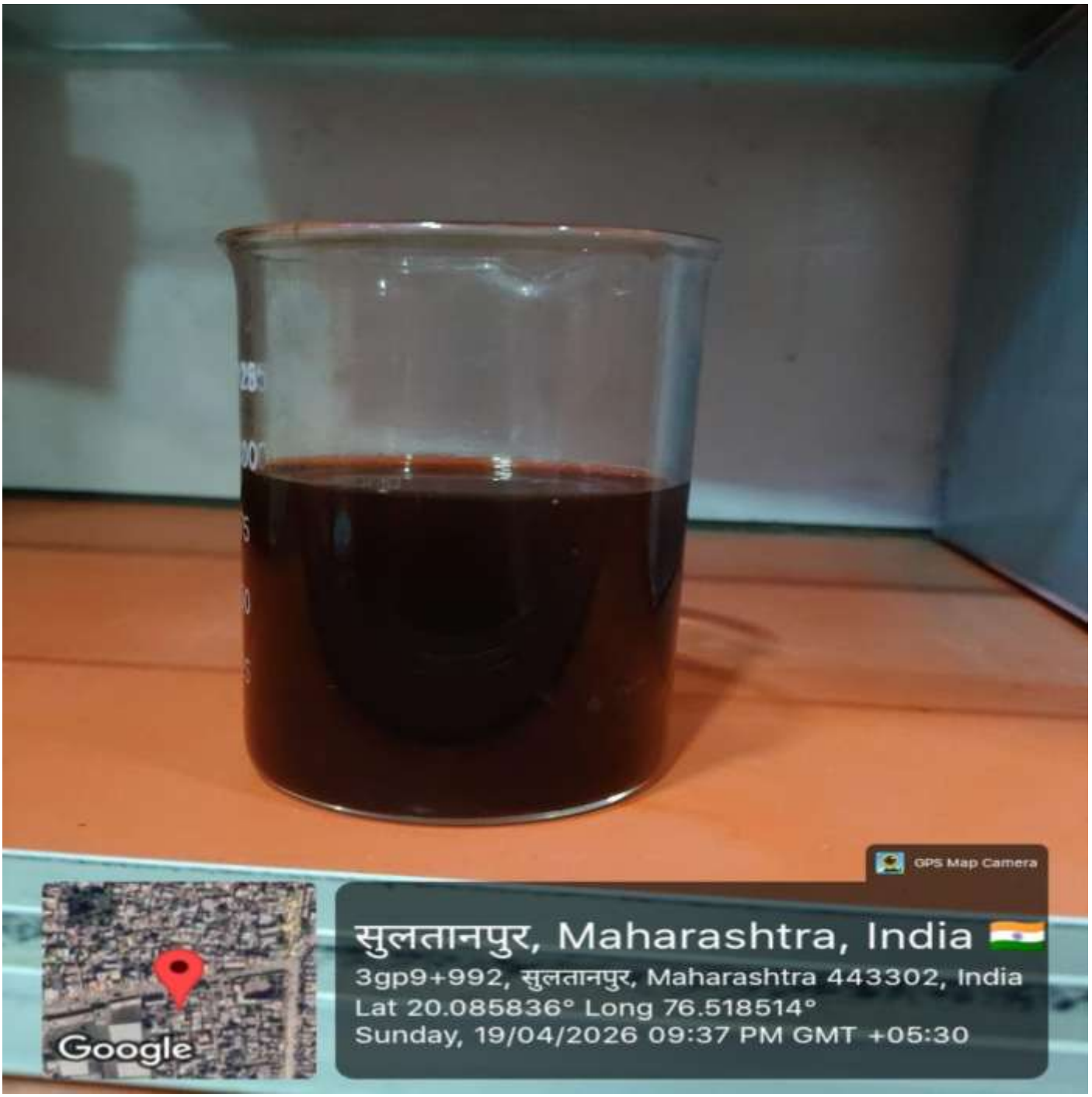
A syrup base is prepared separately using jaggery and water, followed by filtration. The herbal extract is mixed with the syrup base, and honey and lemon juice are added for taste and therapeutic value**.**

Step3: Preservatives:

Sodium benzoate is added as a preservative at a concentration of about 0.1% w/v to prevent microbial growth and enhance the stability and shelf life of the herbal syrup.

Step4: pH adjustment :

Citric acid was used to adjust the pH to 4.10.



Formulation Of Polyherbal Syrup For Iron Deficiency Anemia

4. FORMULATION TABLE:

Sr.No	Content	Formulation (F1)	Formulation (F2)	Formulation (F3)
1.	Amla	15ml	20ml	25ml
2.	Moringa Leves	15ml	10ml	10ml
3.	Beetroot	10ml	15ml	20ml
4.	Hibiscus Flower	5ml	10ml	15ml
5.	Honey	10ml	8ml	15ml
6.	Jaggery	20ml	25ml	20ml
7.	Sodium benzoate	0.1(0.1%)	0.1(0.1%)	0.1(0.1%)
8.	Lemon Juice	5ml	3ml	7ml
9.	Purified water	q.s to 100ml	q.s to 100ml	q.s to 100ml

5. Evaluation parameters of Herbal Syrup:

1. Physical appearance:

- **Colour :** Characteristic reddish-brown colour.
- **Odour:** Sweet smell with a mild herbal scent.
- **Taste:** Sweet -sour, palatable

2. pH:

The pH of the syrup is maintained between 4.5 – 5.5 to ensure stability, effectiveness, and suitability for oral use.

3. Viscosity:

The viscosity of the syrup is measured using a viscometer to assess its thickness and flow property. It should be optimum to ensure easy pouring and uniform dosing.

6. Conclusion: The formulated polyherbal syrup for iron deficiency management of anemia was successfully developed and evaluated, and the results demonstrated that the formulation meets acceptable quality standards. The syrup showed desirable organoleptic properties such as pleasant taste, characteristic odor, and uniform appearance, which are important for patient acceptability and compliance. The physicochemical parameters, including pH, viscosity, specific gravity, and total solid content, were found to be within suitable limits, ensuring stability, consistency, and ease of administration.The presence of adequate iron content confirms its therapeutic potential in improving hemoglobin levels and managing anemia. The herbal ingredients used in the formulation, such as amla, moringa, beetroot, and hibiscus, contribute synergistically by enhancing iron

absorption and providing additional nutritional benefits. Microbiological evaluation confirmed that the syrup is safe for consumption, as no harmful microorganisms were detected.

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