

Formulation And Evaluation of Multi Nutrition Herbal Tablet

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Abstract- *This study uses the wet granulation process to formulate and assess a multi nutrition herbal tablet containing amla, tulsi, cinnamon, licorice, mint, and ginger. The goal of the study is to evaluate the quality and qualities of the tablet using a variety of factors, such as thickness, hardness, weight variation, and friability. These strong herbs are used in the tablet's formulation because of their nutritional and therapeutic qualities. The contents are efficiently processed into a tablet form that may be consumed using wet granulation. Analysing the tablet's properties offers valuable information about its physical characteristics, which are essential for guaranteeing both its efficacy and user acceptability. The research findings offer potential benefits for dietary supplementing and health by advancing our understanding of the formulation process and quality assessment of multi nutrition herbal tablets.*

Keywords- multi nutrition herbal tablet, Amla, Tulsi, Cinnamon, Mint, Licorice, Ginger, Thickness, Hardness, Weight variation, Friability, Wet granulation.

I. INTRODUCTION

Nutrition, or the science of food and its effects on health, is critical to human health and illness prevention. The importance of healthy diet in preserving good health and vigour has been recognised since antiquity. In modern culture, with the rise of chronic diseases and lifestyle-related health concerns, the importance of a balanced diet rich in key nutrients is more obvious than ever. The use of herbal supplements for health promotion and dietary supplementation has gained popularity in recent years due to its purported therapeutic benefits and low negative effects. Amla (Indian Gooseberry), Tulsi (Holy Basil), Cinnamon, Licorice, Mint, and Ginger are among the many herbal treatments that are highly valued for their nutritional value and therapeutic qualities. Numerous civilizations have historically held these plants in high regard due to their wide range of health-promoting qualities, which include immune-stimulating, digestive, and antioxidant capabilities. Research on the formulation and assessment of herbal products, especially those in tablet form for easy consumption, has increased dramatically in response to the growing demand for natural

health remedies. Combining several herbal constituents into a single multi nutrition tablet offers a promising opportunity to improve general health and wellbeing. The goal of this study is to investigate the preparation and assessment of a multi nutrition herbal tablet that contains ginger, mint, amla, tulsi, cinnamon, and licorice. These botanicals have been turned into a cohesive tablet form using the reliable wet granulation procedure, which guarantees the end product's potency and homogeneity. The thorough evaluation of numerous factors that are essential to the effectiveness and quality of the herbal pill is at the heart of this inquiry. The physical characteristics of a tablet, such as its weight variation, hardness, thickness, and friability, are crucial indications that impact its effectiveness, stability, and consumer acceptance. This study intends to contribute to the developing field of herbal medicine and nutraceuticals by delving into the formulation process and evaluating the tablet's quality standards. The findings of this study hold promise for developing the development of multi nutrition herbal supplements that provide a natural and holistic approach to health maintenance and illness prevention. The idea of using food for health benefits beyond its nutritional value is gaining popularity in both the public and scientific communities. Nutraceuticals are natural compounds that provide health benefits to the body. A "nutraceutical" is a solid medicinal product that is purified or extracted from food. It is not commonly associated with food. Nutraceuticals are believed to provide physiological benefits or prevent chronic diseases. Dr. Stephen L De Felice, the founder and chairman of the Foundation for Innovation in Medicine in New Jersey, USA, originated the word. Nutraceuticals, often known as "functional foods," have sparked controversy as they blur the distinction between food and medicine. Improved public demand, demographic developments, and the socioeconomic condition. Research shows that approximately two-thirds of the world's 6.1 billion people use plant-based remedies for many reasons, including availability, safety, affordability, and belief in traditional affordability. Medical benefits of eating have been explored for thousands of years.

The reasons for shift towards nutraceuticals are:

1. Increasing numbers of consumers, concerned about healthcare costs.
2. Dissatisfied with pharmaceutical agents in promoting health, are turning to nutraceuticals to improve their health and prevent chronic disease.
3. Health care provider recognize the fact that our heavily processed food supply, coming from crops grown with chemical fertilizers, pesticides, herbicides, and often genetically modified seeds, lacks sufficient nutrients necessary for optimum Health.
4. People believing more in prevention than a cure.
5. People who have chronic diseases and have found no solution in allopathic medicines.
6. Economically challenged patients.

Benefits from the herbs that we used in our research:

1. Amla (Indian gooseberry)

- Blood sugar lowering effects, plays role in preventing and treating type 2 diabetes.
- Improves immunity, include antibacterial and astringent properties.
- Improve overall eye health and reducing risk of developing cataract and glaucoma.
- It reduces inflammation.
- Amla give you glowing skin and Helps in boosting collagen.



2. Tulsi

- Relieves cough and respiratory problems.
- Relieves fever.
- Protect against heart disorder.
- Reduce cholesterol.
- Treat stomach problems.
- Promote healthy liver function.
- Antioxidant properties.



3. Cinnamon

- Manage blood sugars.
- Reduce inflammation.
- Protect against heart disease.
- Supporting digestive health.
- Potent anticancer properties.
- Lowering LDL cholesterol



4. Mint

- Treats irritable bowel syndrome.
- Helps in indigestion.
- Relives asthma and cough.
- Handle stress and depression.
- Prevents cancer symptoms.
- Aids weight loss process.



5. Licorice

- Anti-diabetic.
- Anti-oxidant.
- Memory enhancer. Anti-allergic.
- Oral health disorders.
- Anti-obesity.



6. Ginger

- Relieves menstrual cramps.
- Relieve digestive issues.
- Low blood pressure.
- Relieve tooth ache.
- Promote detoxification.
- Speeds up metabolism



II. MATERIALS AND METHODS

Materials: The herbs used are Amla, Tulsi, Licorice, mint, ginger, Cinnamon. Starch powder, lactose and magnesium stearate were used as excipients.

All these herbs were dried and blended to form powder.

Methods:

- Take 175mg Amla powder, 20mg Cinnamon powder, 25mg Ginger powder, Licorice powder 40mg, Tulsi powder 80mg, mint powder 10mg, lactose 100mg, starch 40mg and magnesium stearate 5mg.
- This powder was blended and mixed well.
- The mixture was converted into granules by wet granulation method.
- The granules were evaluated for pre evaluation parameters like tapped density, bulk density, Hausner's ratio, angle of repose and compressibility index (Carr's index).

- Nutraceutical herbal tablets were prepared by compression method using single punch tablet press machine.
- Yellowish brown tablets were obtained and the post evaluation parameters were performed for the formulation that i.e. Weight variation test, hardness test, friability testing.

Evaluation of pre-compressional blend:

Angle of repose: The angle of repose was measured using the fixed funnel method. The fixed funnel method involves securing a funnel with its tip at a specific height (h) above graph paper set on a level horizontal platform. Granules were gently transferred through the funnel until the apex of the conical pile touched the funnel tip.

$$\tan \theta = h/r.$$

In this equation, r represents the radius of the conical pile's base, while θ represents the angle of repose.

Bulk density: The bulk density is defined as the granule's bulk mass divided by its bulk volume. And it is denoted by ρ_b . The bulk density is used to determine the homogeneity of the sample to be found.

Bulk density (ρ_b) equals M/V_b . Where M is the sample's mass, and V_b is the bulk volume.

Tapped density: The tapped density is the weight of the granules divided by the minimum volume of the measurement cylinder. To determine the volume of a powder bed, a graduated cylinder containing a known mass of medicine or formulation is placed on a mechanical tapper equipment and operated at a given number of taps (100) until the minimum volume is reached. Tapped density (ρ_t) is the weight of the powder blend divided by the minimum volume of the cylinder.

Carr's index: The powder mixture's % compressibility was calculated using a formula based on its apparent bulk density and tapped density.

Carr's index = $\frac{\text{Tapped density} - \text{Bulk density}}{\text{Tapped Density}} \times 100$

Hausner's ratio: Lower Hausner's ratio (<1.25) indicates better flow qualities compared to higher ratios (>1.25). It is determined by the formula. (Aulton ME 2002; Lachman L, 2009). Hausner's ratio = $\frac{\text{tap density}}{\text{bulk density}}$

Evaluation parameters of tablets:

Weight variation: Twenty tablets were selected at random from the formulation. Tablets were weighed individually, and the average weight was computed. The variation of each tablet from the average weight was calculated, followed by the percentage deviation.

Hardness tester: The hardness was being evaluated by using hardness tester.

Friability test: Friability tests are performed using a Friability apparatus. Weighted tablets are placed in an instrument and rotated at 25 rpm for 5 minutes. After an interval, tablets are removed from the equipment and weighed again. The friability is calculated using the provided formula.

III. RESULTS AND DISCUSSION

Tablets were prepared containing the crude drugs like amla, cinnamon, ginger, liquorice, tulsi, mint, etc.



Evaluation of granules:

Sr.No.	Evaluation parameters	Results
1	Angle of repose (Θ)	20.5
2	Bulk density (g/ml)	0.50
3	Tapped density (g/ml)	0.41
4	Carr's index	11.7
5	Hausner's ratio	1.111

Evaluation of tablets:

Sr.No.	Evaluation parameters	Results
1	Thickness(mm)	5.4

2	Hardness kg/cm ²	5.9
3	weight variation (%)	2
4	Friability (%)	0.4

IV. CONCLUSION

This study investigated the formulation and evaluation of a multi nutrition herbal tablet containing Amla, Tulsi, Cinnamon, Licorice, Mint, and Ginger utilising the wet granulation process. To assess the tablet's quality and appropriateness, critical factors such as weight variation, hardness, thickness, and friability were carefully measured and analysed. Furthermore, the wet granulation method has proven to be effective in manufacturing homogeneous and stable herbal tablets, ensuring the end product's uniformity and potency. This robust formulation approach has implications for the pharmaceutical and nutraceutical industries, allowing for the generation of high-quality herbal formulations with improved bioavailability and efficacy.

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