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Research Article

Formulation And Evaluation of Hibiscus Tea Granules Powder

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ABSTRACT

The present study aimed to formulate, develop, and evaluate a herbal tea granule preparation composed of Hibiscus rosa-sinensis (Java), Zingiber officinale (Ginger), Elettaria cardamomum (Cardamon), and Stevia rebaudiana (Stevia), targeting potential antidiabetic effects. Each of these herbs has been traditionally recognized for its antidiabetic properties, and their combination was hypothesized to exert enhanced synergistic effects. A total of nine formulation, differing in the properties of herbal components. Hibiscus rosa-sinensis has also been widely used in herbal teas and beverages. Several studies conducted using animal models have evaluated the antidiabetic and antioxidant potential of the Hibiscus flower petals and leaves. The optimized formulation was subjected to comprehensive evaluation, including phytochemical profiling, antioxidant assays, antidiabetic and organoleptic analysis (taste, color, aroma, and overall acceptability) and assessment of physical parameters (moisture content, bulk density, and particle size).

INTRODUCTION

Herbal Green Tea is a derivative formulation of herbal medicine, commonly consumed on a daily basis to promote a healthy and a fit lifestyle. The preparation of herbal formulations typically involves several processes such as a extraction, drying (using methods like a oven drying, sun drying, etc.) fermentation, and purification. These methods are vary depending on the type of herbal ingredient used. In the particular formulation, Hibiscus (Hibiscus rosa- sinensis) petals are used

for the Active Pharmaceutical Ingredient (API). Hibiscus is known for its numerous therapeutic benefits. Additionally, lemongrass is included due to its long-standing use in Indian teas, not only for its pleasant flavor but also for its self-preserving, antibacterial, and other beneficial properties. In essence, herbal teas are blend of various herbs, often made from dried flower petals and herbal spices. Hibiscus tea granules are a convenient , flavorful, and healthful way to enjoy the natural benefits of hibiscus flowers. Made from dried and

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finely processed hibiscus petals, these granules dissolve easily hot water or cold water, creating a rich, ruby – red beverage with a tangy, slightly sweet taste. Known for their high antioxidant content, hibiscus tea granules support heart health, aid digestion, and help regulate blood pressure. Whether served hot for a soothing drink or chilled for a refreshing iced tea, hibiscus tea granules often both wellness and indulgence in every sip.

❖ Uses of Herbal Tea

- It is used to supports of Heart health.
- It is used to Refreshing Beverage.
- It is used to help Menstrual Relief.
- It is used to weight Management.
- It is used to help of Boosts Immunity.
- It is contain of Antioxidant Properties.
- It is help to promote healthy digestion.
- It is used of various type of Skin Benefitis.
- It is used to Potential Anti-diabetic Effect.

3. Plant Profile:

Hibiscus flowers, belonging to the Hibiscus genus within the mallow family (Malvaceae), are known for their vibrant, showy blooms and are native to warm-temperate, subtropical, and tropical region. They can be shrubs or small trees, with large, trumpet-shaped flower in various colour. Hibiscus arnottii Griff. Ex Mast.; Hibiscus boryamus DC.; Hibiscus cooperi auct.; Hibiscus festalis Salisb Hibiscus liliiflorus Griff. Ex Mast., Hibiscus rosiflorus Stokes and Hibiscus storckii Seem.

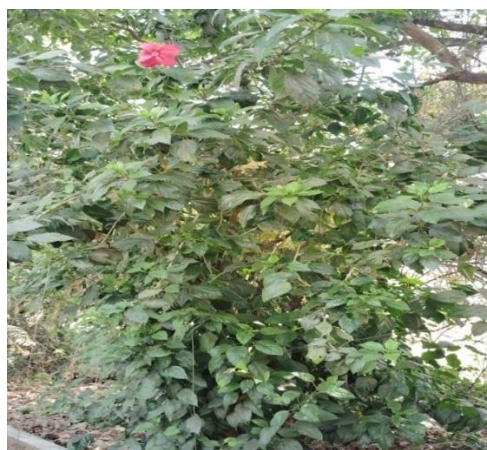


Fig.no. 1. Hibiscus Rosa Sinensis Plant

Synonyms: -

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Biological Name:-

- The biological name for the hibiscus flower, particularly in the context of phytochemistry, is Hibiscus rosa-sinensis and family belongs to the Malvaceae family (mallow family).

Phytoconstituents: -

Hibiscus flower contain various phytoconstituents, including anthocyanins, flavonoids, phenolic acids, organic acids, tannins, and glycosides, which contribute to their vibrant color and potential health benefits.

Morphological character:-

- **Colors :-** The flower come in a wide range of colors, include red, orange, yellow, pink, purple, and white.
- **Size:-** The flower can vary in size, ranging from 5 to 25 cm (2 to 10 inches) in diameter.
- **Petal Shape:-** Ovate to obovate : The petals are broader near the apex and taper towards the base.
- **Androecium (Stamens) :-** Numerous stamens, monadelphous (filaments fused into a stamina tube surrounding the style).
- **Gynoecium (Carpels):-** Pentacarpellary, syncarpous.
- **Inflorescence:-** Solitary axillary flower.
- **Corolla (petals):-** 5 petals, large, brightly colored (red, pink, yellow, white, etc.) free (polypetalous), overlapping (twisted aestivation).
- **Calyx (Sepals):-** 5 sepals, green, fused at the base (gamosepalous), forming a bellshaped calyx.

Vernacular Name:-

- **English-** Shoe-flower plant, Chinese Hibiscus.
- **Hindi-** Jasut, jasum, java, Odhul, Gurhal, Arahul.
- **Marathi-** Jasavanda, Jassvandi.
- **Sanskrita-** Japa, java, Rudrapuspa, Aundrapuspa, Trisandhya.
- **Bangali-** joba, Jiwa, Oru.
- **Gujrati-** Jasvua, Jasunt.
- **Kannada-** Dasavala.
- **Malayalam-** Hibaratthi, Ayamparatti, Chebarathi.
- **Punjabi-** Jasum, jaipushpa, Gurhal.
- **Tamil-** Sapattuu, Semparutti.

MATERIAL AND METHODS:

Each herbal tea preparation has its own unique taste, aroma, color, and appearance, depending on the specific herbs used. During the manufacturing process, it is essential to ensure that all herbs included in the herbal tea are thoroughly dried. Proper drying prevents the growth of fungus or bacteria, which could lead to spoilage. Fungal contamination can cause unwanted fermentation, compromising the quality of the tea both during production and up to the point of consumption.

Collection of Material

1. **Plucking:-** Plucking involves carefully harvesting the active parts of the plant. In the case of Hibiscus Herbal Tea, the active components are the freshly grown petals of the hibiscus flower. These petals must be delicately separated from the calyx and anthers, which contain pollen, to ensure purity and effectiveness.
2. **Washing:-** The Hibiscus petals should be thoroughly washed to remove any pollen, which can potentially cause irritation or allergic reaction upon consumption. The early rainy season is considered the ideal time to collect petals, as they tend to be richer in herbal properties during this period.
3. **Withering:-** It helps reduce the moisture content of the petals while allowing minimal oxidation. Petals are typically laid out under the sun to naturally draw out excess water. Other ingredient used in the blend such as ginger, cardamon, stevia leave those all should also be properly dried. Shaded drying is preferred, as it significantly reduces moisture and provides added benefits to the herbs.
4. **Drying:-** It can be done using various methods, including shaded during, air drying or baking



with baking the most commonly used technique. It's important to avoid over-drying or cooking the petals and herbs, as this step plays a crucial role in developing the tea's final flavor and texture.

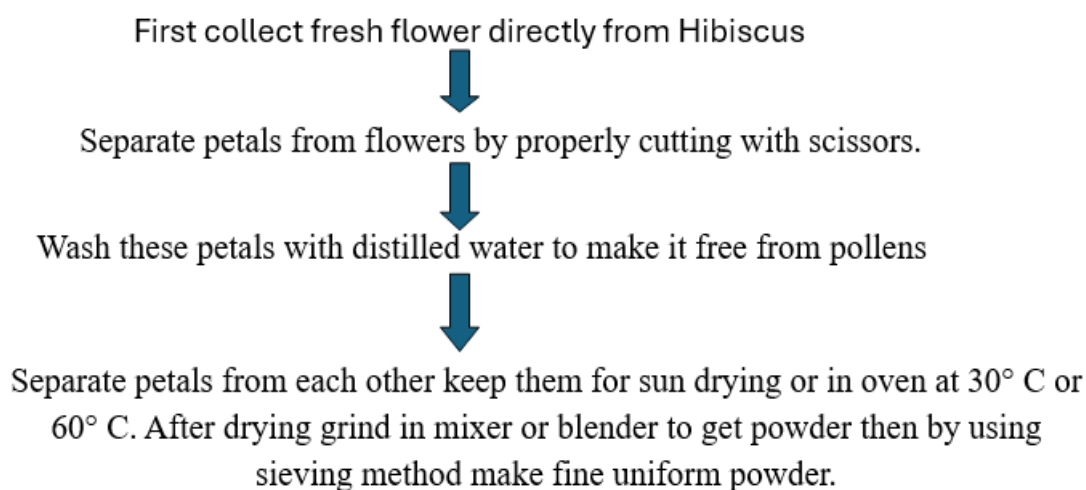
5. Sorting:- After drying, all ingredient must be sorted to remove any unwanted parts or

impurities. This includes any excess flower material or foreign particles that may have been unintentionally included. Proper sorting ensures a clean, high- quality final product ready for the manufacturing process.

❖ Drying and Grinding



Fig.No.2. Hibiscus Flower Dry Petals and Powder.



Granulation Method.

1. Preparation of Herbal Powder:

- Dry the Hibiscus rosa-sinensis petals under shade.
- Grind into fine powder and sieve through 60 mesh.

- Do the same for other herbal ingredients (stevia, ginger, lemon).

2. Mixing:

- Weigh all dry ingredients (except binder and preservative).
- Mix uniformly in a clean dry blender or mixer.

3. Binder Solution Preparation:

- Dissolve gum acacia in warm water.
- Add preservative if used.

4. Wet Massing:

- Add the binder solution slowly into the powder mix with continuous mixing until a damp mass forms.

5. Granulation:

- Pass the damp mass through a sieve (mesh #10-16) to form granules.

6. Drying:

- Dry the granules in an oven at 40 – 50 C until moisture content is below 5%.

7. Sizing:

- Pass dried granules through a finer sieve (16-20) to obtain uniform size .

8. Packaging:

- Pack in air- tight, moisture-resistant pouches or jars.
- Store in a cool, dry place.

5. Formulation of Hibiscus tea granule powder.

- Mixing:- Blend all powdered and dry ingredient together in the specified properties to ensure uniformity.

- Adding Moisturizer:- Slowly add the granulating fluid while continuously mixing, until the desired consistency is achieved.
- Incorporating Disintegrating Agent:- Introduce the disintegrating agent to promote proper dissolution during use.
- Granulation:- Add a lubricant to minimize friction during the granulation process and enhance flowability.
- Drying:- Evenly spread the mixture and dry it thoroughly to maintain appropriate moisture levels.
- Sieving:- Pass the dried material through a sieve to achieve consistent granule size.
- Packaging:- Store the finished product in airtight containers to preserve freshness and prevent contamination.

Table 1: Role of Hibiscus Tea Granules Powder Ingredient.

Sr.no	Ingredients	Role
1.	Hibiscus powder	Rich in antioxidant.
2.	Ginger powder	Helps relive indigestion ,bloating and gas.
3.	Stevia powder	Blood Sugar Management.
4.	Gum acacia	Hypoglycemic properties.
5.	Glycerine	Moisture retention.
6.	Magnesium stearate	Prevent sticking during granulation.
7.	Starch	Facilitates quick dissolution in water.
8.	Water and Glycerine	Helps in granule formation and stability.
9.	Citric acid	Also enhances flavor and antioxidant properties.

Table: Formulation of Hibiscus Herbal Tea Granules.

SR No	Ingredient	F1	F2	F3
1.	Hibiscus powder	6g	6g	6g
2.	Stevia powder(Natural Sweetners)	2 g	2g	2g



3.	Ginger powder(Flavouring agent)	0.5g	0.7g	1g
4.	Gum Acacia(Binding agent)	0.3g	0.5g	0.7g
5.	Glycerin (Moisturizer)	0.5ml	1ml	1.5ml
6.	Magnesium stearate(Lubricant)	0.5g	0.25g	0.3g
7.	Starch (Disintegrant agent)	0.10g	0.20g	0.30g
8.	water (Granulating fluid)	q.s	q.s	q.s
9.	Citric acid (Preservative)	0.02g	0.03g	0.04g



Fig.3. Hibiscus Tea Granules

6. Evaluation Test:

1. Organoleptic Parameters.

- **Color:** Deep red to reddish-brown.
- **Odor:** Characteristic, floral, slightly tangy.
- **Taste:** Tart taste.
- **Appearance:** Fine granules or powder, free-flowing uniform

2. Physiochemical Parameters.

- **Total Ash Content:** It is a parameter used in the quality control of herbal and pharmaceutical substances. It represents the total amount of inorganic residue that remains after the complete incineration so, the total ash value of Hibiscus herbal tea granules is 0.75 %.

- **Moisture content:** It refers to the amount of water present in a material, usually expressed as a percentage of a material total weight or volume, so the moisture content of Hibiscus tea granules is 5 %.
- **Dispersibility :** The dispersibility of hibiscus tea granules quickly dissolves or distributes evenly in water or hot water.
- **pH:** Dissolve 1g of granules in 10ml distilled water and measure pH using a calibrated pH meter. The pH of hibiscus tea granules powder was found to be 6.06.



Fig.no.4. pH Meter

1. Phytochemical Screening

• Detection of alkaloids:

- Mayer's test: Filtrates were treated with Mayer's reagent (Potassium Mercuric Iodide). Formation of a creamy white colored precipitate indicates the presence of alkaloids.

• Detection of terpenoids.

- Salkowski test: Extract 5ml was mixed with 2ml chloroform and concentrated sulphuric acid 3ml was carefully added to form a layer. A reddish brown coloration of the inter face was formed to show positive result for the presence of terpenol.

• Detection of Tannins:

- Ferric chloride test: take a 2 ml extract and mixed with few drop of ferric chloride and than blue – black or blue-green coloration.

• Detection of Flavonoids:

- Ammonia test: take a 2ml extract and mixed with 1% of ammonia solution and than yellow color are found.

• Detection of Anthocynin

- Anthocyanin test: To test tube 1, add a few drops of dilute HCL(acidic) the extract will become deep red or pink. This indicates the acidic form of anthocyanins. To test tube2, add a few drop of dilute NaOH (base) the extract will change to blue, green, or yellowish. This confirms anthocyanins, as they change color in different pH levels.



Fig.no.5. Phytochemical Screening Test

7. RESULT

1. Organoleptic Parameters.

- Organoleptic parameters refer to the aspects of substance as experienced by the senses, including taste, color, odor, and texture. For Hibiscus rosa-sinensis herbal tea granules, the organoleptic evaluation F1, F2 and F3 would typically include the following.

Sr. No	Parameters.	F1	F2	F3
1.	Color	Deep red	Deep red	Deep red.
2.	Odor	Floral	Floral	Floral
3.	Taste	Tart	Slightly sweet	Tangy
4.	Appearance	Fine granules	Fine granules	Fine granules

2. Physiochemical Parameters.

- The physiological parameters of hibiscus tea granules including the total ash content,

moisture content, dispersibility, and pH., those are included by F1, F2, and F3 would typically include the following

Sr.no	Physiochemical Parameters	F1	F2	F3
1.	Total Ash Content	0.60%	0.70%	0.75%
2.	Moisture Content	5%	6%	7%
3.	Dispersibility	Hot water	Hot water	Hot water
4.	pH	5.07	6.06	6.65

CONCLUSION:

Hibiscus tea is a flavorful and nutritious herbal drink known for its tart, cranberry-like taste and vibrant red color. It offers numerous health benefits ,including lowering blood pressure ,supporting heart health ,and providing antioxidant that help combat inflammation. Additionally, it may aid in weight management and boost liver health. While generally safe for most people, it should be consumed in moderation , especially by individuals with low blood pressure or those taking medications that might interact with it. Overall, hibiscus tea is a refreshing and health-boosting beverage with a range of potential benefits

REFERENCES

- Jenkins AJ, Llosa T, Montoya I, Cone EJ(1996). “ Idendification and quantitation of alkaloids in coca tea”.
- Boullata JI, Nace AM(2000). Safety issues with herbal medicine”.Pharmacotherapy.
- Journal of Pumori ST. Vitamin C in dermatology; Indian Dermatol Online J.(2013)
- .Padma SV, Jyoti S. Evaluation of Anthocyanin Content in Red and Blue Flowers; International Journal of Food Engineering.(2010;)
- . Pharmacognosy and Phytochemistry (2017)
- Practical pharmacognosy by Dr.K.L.Khandelwal and Dr.VrundaSethi by NiraliPrakashan .
- Kumar et al. (2018). Herbal remedies for diabetes management: A systematic review. Journal of Ethnopharmacology,
- Sharma et al. (2019). Phytochemical analysis and anti-diabetic activity of Stevia rebaudiana. Journal of Pharmaceutical Analysis,
- Singh et al. (2020). Evaluation of anti-diabetic activity of polyherbal formulation containing Gymnema, Guduchi, and Turmeric. Journal of Pharmaceutical Sciences and Research.
- National diabetes statistics report, 2022. Centers for Disease Control and Prevention. Updated January 18,(2022.)
- Methods. National diabetes statistics report, 2022. Centers for Disease Control and Prevention. Updated September 30, (2022).
- American Diabetes Association. (2020). "Standards of Medical Care in Diabetes.
- Sahoo, S. et al. (2021). Antidiabetic potential of Tinospora cordifolia. Phytomedicine.
- Bhaskar, L. V., et al. (2019). Antidiabetic effect of Aegle marmelos and its mechanism.

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