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A REVIEW ON: FORMULATION AND EVALUATION OF HERBAL CANDY OF GILOY, AMLA AND BEETROOT FOR HEALTH PROMOTION

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ABSTRACT

The prevalence of decreased immunity is rising day by day due to the increasing incidence of various diseases like cancer, HIV, diabetes and other factors such as stressful life and lack of exercise. Herbal candies are considered to be instant source of high calories and energy. A combination of herbal extract includes giloy, Amla, beetroot and other ingredients with the antioxidant, anti- inflammatory and immunomodulatory properties. According to that point of view the present study deals with preparation of herbal candy as an immunobooster therapy for many disease conditions.

KEYWORDS: Giloy, Amla, Beetroot, herbal candy, immunomodulatory.

INTRODUCTION

Herbal candy is made with herbal natural ingredients is used to treat the disease and calming, restorative qualities Candies are come under category of sugar confectionery.[1] Looking at how candies have developed over time, it's clear that candy makers still need to find better ways to make their candies. This is because there's a lot of competition in the candy-making business today. To stay ahead, companies want to improve their candy recipes.[2] Herbs plays important role in treating various types of disorders. Therefore Giloy are show immunomodulatory action in Cancer.[3] Giloy candies are not only provide desired therapeutic effects but it also give good taste and look nice. creation new herbal candy formulation that content traditional herbal remedies with modern formulation to provide health benefits to public.[4] Amla have medicinal and curative properties and also the extract of amla is used in ayurveda and modern medicine. It is source of ascorbic acid and Vit C which 160 times greater than apple and 6 times greater than citrus fruits. Candies are unrestricted food made with the sugar syrup and paste with enrichment of the pulp and flavouring agents.[5]

Hard candy is a type of functional food known for its glossy appearance and firm texture. It is generally formulated using different proportions of sucrose (43–85% w/w), glucose syrup (15–57% w/w), along with sweeteners, flavoring substances, coloring agents, and organic acids. The product gained popularity due to its appealing taste, ease of preparation, and extended shelf life.[6]

Advantages

1) Herbal candies are greater consumer preference due to their great, elegant appearance and attractive colour.
2) Flavoured and sweetened candies help in masking bitter and unpleasant taste of active drug substance.
3) Herbal candies enhance patient compliance.
4) It has good efficacy and low side effects.[1]

Plant Profile

1) Amla

- **Biological source**: amla is the fruit of the Indian gooseberry tree ***know as*** *phyllantus emblica L.*
- ***Family:*** *Euphorbiaceae*
- ***Synonyms:*** *Indian grossberry*
- ***Chemical constituents:*** gallic acid, ascorbic acid and phenolic compounds, flavonoids, tannins, alkaloids.

- ***Uses***

1. Anti cancer,
2. digestive tract protector,
3. anti- diabetes,
4. anti – inflammatory,
5. anti- oxidant.[7]

2) Giloy

- **Biological source:** giloy is the plant *Tinospora cordifolia*, also known as Guduchi
- **Family:** *Menispermaceae*
- **Synonyms:** Giloy, Tinospora, Golancha, Gulvel
- **Chemical constituents:** alkaloids, steroids, diterpenoid lactones, aliphatics, and glycosides.

- **Uses**

1. immunity enhancer,
2. In digestion,
3. diabetes,
4. asthma,
5. treat arthritis.[8]

3) Beetroot

- **Biological source:** Red beetroot belongs to the *Beta vulgaris ssp.*
- **Family:** *Betoideae*
- **Synonyms:** beetroot, beet, Garden beet
- **Chemical constituents:** betalin, organic nitrates, polyphenols, folates, minerals, vitamins.

- **Uses**

1. Antioxidant,
2. immunomodulatory property,
3. anti- cancer,
4. Haematopoetic,
5. anti- hyperglycemic.[9]

Method for Preparation of Herbal Candy

1. Sugar syrup preparation

Mix sugar (or honey) with a measured amount of water in a deep pan. Heat gently while stirring until the sugar dissolves completely.

2. Boiling and mixing

Bring the syrup to a boil, then add butter and a pinch of salt to improve taste and texture. Stir continuously with a wooden spoon to avoid burning.

3. Addition of herbal extracts

Once the syrup reaches the desired temperature (around 140–150°C, hard-crack stage), slowly add herbal extracts or powders (e.g., giloy, amla, beetroot) while stirring evenly.

4. Flavor and preservative addition

Add natural flavoring agents and preservatives just before removing the mixture from heat.

5. Molding

Pour the hot mixture carefully into pre-greased molds or onto an oiled stainless-steel plate. Allow it to cool at room temperature until it hardens.

6. Storage

Remove the candies from molds, wrap them in butter paper, and store in airtight containers at room temperature to prevent moisture absorption.[10,11]

Evaluation Tests for Herbal Candy

The evaluation of herbal candy involves checking its physical, chemical, and microbiological properties to ensure its safety, quality, and effectiveness.

Sr. No	Evaluation test	Purpose	Procedure
1).	Physical and sensory evaluation : Parameters: Color, appearance, taste, texture, flavor, mouthfeel, and overall acceptability.	To ensure the candy has an appealing taste, uniform color, and pleasant aroma suitable for consumption.	A group of evaluators rates each parameter on a 5-point scale (excellent to poor).
2**).**	pH Determination	To check the acidity or alkalinity of the product, which affects taste and stability.	Dissolve 1 g of candy in 100 mL of distilled water (1% w/v solution). Measure pH using a digital pH meter.
3).	Ash Values	To estimate the amount of inorganic content (minerals or impurities) in the sample.	Weigh about 3 g of the powdered candy sample and heat in a muffle furnace until white ash is obtained. **Calculation:** Ash Value (%)} = (Weight of ash÷Weight of sample) × 100
4).	Moiture content	To determine the moisture level that can affect shelf life and microbial growth.	Weigh a known quantity of candy, dry it at 105°C until constant weight.
5).	Microbial Evaluation (a).Serial Dilution Method:	This method estimate the total viable count (colony forming unit per ml – CFU/ml). It helps to determine whether the candy formulation is contaminated during preparation or storage.	Prepare serial dilutions (10^{-2} to 10^{-6}) of candy extract in sterile saline. Plate 1 mL from each dilution onto nutrient agar and incubate at 37°C for 24– 48 hours. Count the colonies (CFU/mL) to check for contamination.
	(b).cup plate method	This method is used to evaluate the antibacterial activity	Prepare agar plates inoculated with standard bacterial cultures.
		of the herbal candy extract by measuring the zone of inhibition (ZOI) against selected bacterial strains such as Staphylococcus aureus or E. coli.	Make wells (6–8 mm) in agar and fill with candy extract. After incubation (37°C for 18 hours), measure the zone of inhibition (ZOI) to assess antibacterial activity.
6).	Shelf life determination Parameters observed: Change in color, taste, texture, or odor.	To determine stability and longevity under different conditions.	Store the candy at room temperature and in refrigeration for 4 weeks.

Fig. Evaluation test for herbal candy.[12,13]

Future scope

Future scope includes clinical validation of immunomodulatory activity, optimization of formulation with sugar-free alternatives, standardization for large-scale production, and evaluation of long-term stability. This herbal candy can serve as a convenient, safe, and innovative approach to promote immune health through natural ingredients.

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