

Formulation And Evaluation of Gummy Contain Ginger and Vitamin B6

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ABSTRACT

Nowadays all the world fighting with different types of disease and we are show the example of covid-19, this is the best example of a dangerous disease because its virus are attack on the human immunity system so it is harmful for the child and old aged people. So human's immunity system is very important for the all living beings and this is dependent on the good health and a good health depends on the good food and nutrition. But nowadays this is impossible because today totally will be changed human lifestyle. Maximum generation today depend on the junk food and fast food which is not suitable for the stomach and body. And it's true that human body health depend on the stomach because digestive system is the part of stomach. If we are take the healthy food and nutrition then our stomach work properly and our digestive system also work properly. The requirement of a healthy body is different type's nutrients, minerals and vitamins. These are the very useful for the body. So we will discuss about the herbal nutrition and vitamin in this article. Ginger also an herbs and herbal nutrition or medicine Which is best for the stomach. Ginger has antioxidants and antibiotics qualities which are protect the body in all weather.

KEYWORDS

Ginger, Vitamin B6 (Banana), Sugar etc.

1. Introduction

Ginger is best herbal products which is very important for the human body because it's have antioxidants, antiviral and antiseptic properties. It's a biological source and it's used in food, cough, fever and stomach pain [1]. The flowering plant known as *Zingiber officinale*, or ginger, whose rhizome is also referred to as ginger root, is extensively and in human remedy. It is a perennial plant that grow slender leaf blades on one-meter-tall annual pseudostems, or artificial stems made from wrapped leaf bases. The inflorescences, which are perennial plants with pale yellow petals and purple margins, emerge instantly from the rhizome on distinct branches [2].

Vitamins are very important for the body because vitamins provide the many benefits for the good health, vitamins have a important role in brain function and nervous system. In this article we will discuss about the vitamin-b6 is formed by the many vegetables or fruit. Banana is the key spring of vitamin-b6 which is very useful for the human beings. Your body needs the water-soluble vitamin B6, for energy. It has physiological advantages that include enhancing mood and mental well-being [3].

It is essential for red blood cell formation. and neurotransmitters as well as for the metabolism of proteins, fats, and carbohydrates. Take it into the potion. More importantly, it can prevent and treat chronic diseases [4]. Gummy vitamins, being high in nutrients, may be advantageous for certain demographics. To confirm that they are receiving all the nutrients they require, a lot of people take vitamins.

Despite the widespread In general, studies show that most people who eat a balanced diet don't require multivitamins. However, some individuals, such those who:

- avoid certain foods or struggle to absorb specific nutrients
- have higher nutrient needs for proper bodily function, may find relief from supplements[5].

2. Objectives

The main Aim and purpose are below as.

- To formulated the different types of nutrients gummies.
- To formulated the herbal gummies with vitamins.

Some people could have trouble swallowing solid tablets or capsules, particularly if they are large and unpleasant in taste. As a result, the pharmaceutical regimen may not be followed as prescribed which may lessen its effectiveness. which can make it challenging to modify the dosage for people with different needs or tolerance. So gummies formulation is suitable for this type people because gummies have a good taste and its take easily.

Gummies formulation have a bright future because it's very popular for n the between younger. Because its have not any side effects because many herbal nutrition are used in formulation.

3. Methodology

In this side we will discuss about the materials and methods of the gummies vitamins. And we will check the parameter of all preparation and methods. Now you can see the materials information which are below as.

Materials Information-

Table 5.1. Ingredients Information

S.N	Ingredients to be used	Functional category
1.	Zingiber off, rhizome extract	Active ingredient
2.	Vitamin b6 powder	Active ingredient
3.	Liquid glucose	Binding agent
4.	Sugar	Sweetener
5.	Gelatin	Gelling agents
6.	Citric acid	Acidity regulator
7.	Ginger water	Flavor
8.	Colour caramel	color

Equipments used-

1. Manufacturing tank
2. Sugar Preparation tank
3. Glucose storage tank
4. Pectin tank
5. Vacuum cooker
6. Depositing Mold
7. Stirrer

The Procedure of Preparation-

- Take purified water into a main manufacturing (tank-1) and heat it up to 90°C - 100°C.
- Add Sugar to the main manufacturing tank under continued stirring and stir for 5- 15min or till cleared solution obtained.

- Add glucose in the main manufacturing tank under continued stirring and stir for 5- 20min or till a cleared solution obtained.
- Take purified water into a main manufacturing tank-2 and heat it up to 90°C - 110°C.
- Take purified water in tank 2 and heat it up to 90°C - 110°C.
- Add gelatin in main manufacturing tank -2 under continued stirring and stir for 510 min or till lumps free solution obtained.
- Transfer both tank1-2 to the vacuum cooker.
- Check the pH above the solution it should be within the range (3.5 to 4.9).
- Cool down the above solution temperature from 65°C to 70°C.
- Add flavor in the main manufacturing tank under continued stirring and stir for 510min.
- Add colour in hot water mix properly and filter it and then directly mix it into the manufacturing tank-l.
- Add citric acid in the main manufacturing tank under continuous stirring and stir for 5-10 minutes or till translucent paste is obtained.
- Continue slow stirring until the solution is filled in molds.
- Now pour the solution into molds.
- Demoulding the gummy and transferring the gummy to the drying area temp25±20C, then collecting finished sample.

3.1. Table 5.2. Composition of different-formulations

Ingrediecents (mg)	F1	F2	F3	F4	F5	F6	F7	F8	F9
Zingiber off, rhizome extract	16.12	16.12	16.12	16.12	16.12	16.12	16.12	16.12	16.12
Vitamin B6 powder	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
Liquid glucose	1700	1800	1800	1400	1600	1200	1000	1700	1700
Sugar	1600	1500	1500	1900	1700	2000	2200	1600	1600
Gelatin	168	165	168	168	160	190	190	150	165
Citric acid	58.36	58.32	65.5	58.36	40	80	80	55	58
Colour caramel	28.94	29	29	28.94	20	28	28	20	28
Total weight in gm	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5

4. Literature Review

Edite TeixeiraLemos, et.al. (2023) Development and explanation of a nutritious gummy candy made with real fruits Thanks to the addition of nutrients that support wellbeing and the reduction of sugar, gummy jellies—which previously had no health benefits—now do. The aim of project is to manufacture two type of gummy with puree prepared from various berries (BEM) and orange juice and honey for a light sweetening, using only natural components and no added sugar or sweeteners. Sensory, microbiological, and physicochemical investigations were performed on them. According to EU standards, microbiological testing proved that both gummies were safe to eat. The physical-chemical examinations allowed for a nutritional assessment, and The results for The results for ORH and BEM were, respectively, five and nine times lower at BEM and ORH: Proteins supply 21.7 and 33% of energy, whereas carbohydrates supply 78.0 and 67%. The antioxidant capabilities of ORH ,BEM were respectively, with regard to Despite being far less popular than their commercial counterparts, a sensory investigation revealed that panelists like the produced gummy jellies. In particular, the ORH received ratings that were nearly identical to the commercial sample. Additionally, the created sweets had higher antioxidant capacity and less calories.and less calories[6].

Ehsan Moghaddas Kia, et.al. (2023) Application of *Salix aegyptiaca* distillate is used as a flavoring component in gummy candy formulations that use red beet extract and gelatin/gellan. Nowadays, it's increasingly common to functionalize food products using natural, health-promoting substances. Naturally occurring in red beets are betalains, which are widely recognized for their positive effects on health. This study set out to assess gummy candies that were colored and flavored with red and The gelling agents contained 0.1 or 0.3 percent beetroot extract. Samples of the created gummy candy underwent color analysis. DPPH assay, texture profile analysis, and sensory evaluation. As the amount of Gellan gum's hardness (60 N) and gumminess (15 N) enhanced in the gummy candy recipe of the candy decreased. A statistical study revealed that the addition of red beetroot extract considerably enhanced the samples' capacity $p < 0.05$). Additionally, samples prepared with gellan gum created a glossy red color and were lighter than gelatin-based gummy candy. *Salix aegyptiaca* improved the gummy candy's sensory attributes, according to judges who discussed sensory evaluation (overall acceptability increased out of 9, from 7.4 to 8.2. Our findings suggest that ingredient possess a multitude of possible uses in the food sector[7].

Xing-yu Zhou, et.al. (2022) The impact of gummy jelly's For the purpose of examining the factors influencing Four amounts of gelatin—3%, 6%, 9%, and 12%—were chosen to test the process by which gummy jelly releases its vitamin C (VC) during oral digestion. Bionic chewing gums were used during the chewing test. A research on textural characteristics discovered that When the amount of gelatin was raised from 3 to 12%. A single factor chewing experiment (Vsaliva) revealed that VC release correlated negatively with saliva volume and chewing speed (SPchew), but positively with chewing frequency (Fchew), chewing strain (STchew), and gelatin content. According to significance, an orthogonal chewing experiment showed that VC release changed the following factors:A model was proposed to forecast the amount of venture were combined. A gelatin addition of 6% was the optimal amount. This study provided a helpful framework for formula development and optimized chewing modes for gummy jelly [8].

5. Result

Preformulation Studies for Gummy- This marks the beginning of the logical evolution of a Gummy's dose form. This is the procedure for maximizing nutrient delivery by identifying the physiochemical characteristics of excipients that influence performance and creating a dosage form that is safe, effective, and stable. It also provides a framework for the active ingredient combination with excipients in the dosage form.

Description

Take 5 gummies in a petri dish and observe for color and physical appearance shall be randomly checked to ensure that gummies are similar to each other.

Thickness

Vernier calipers must be used to measure thickness. Ten gummy pieces in each recipe will be checked for thickness to determine the thickness.

pH measure

Cut the gummies into small pieces, Transfer about 15.0g of cut gummies into a 50 ml beaker add 15 ml hot water and stir for about 15 minutes at 60°C temperature and cool, Adjust the temperature of the solution to 25.0°C ± 0.2°C, Immerse the electrodes in the solution and measure the pH.

Average Weight

By using an analytical weighing balance weigh 20 gummies from composite sample and calculate the average weight. The drug samples obtained were examined for its appearance, color, and results are recorded.

Average weight = weight of 20 gummies (sum of all individual gummies)/20

Assay of Vitamin B6

Assay of vitamin B6 analyzed by HPLC by using standard solution and diluents.

6. Evaluation**6.1. Table 6.1. Evaluation of different formulation**

Batches	Parameters		
	Thickness (mm)	pH	Average weight (mg)
F1	0.063±0.009	5.4±0.124	3575.22±0.632
F2	0.052±0.005	5.4±0.163	3572±0.632
F3	0.062±0.005	5.6±0.081	3582±0.054
F4	0.055±0.009	5.6±0.188	3575±0.885
F5	0.067±0.009	6.0±0.081	3539±0.942
F6	0.052±0.005	5.5±0.094	3517±0.942
F7	0.063±0.009	5.7±0.124	3517±0.160
F8	0.065±0.009	5.5±0.169	3544±0.471
F9	0.053±0.009	5.4±0.216	3570±0.160

6.1. Table 6.2. Evaluation of Description and Assay vitamin b6% for different formulation

Batches	Vit-B6 (Active content) % in different formulations	
	Description	Assay claim 3.8mg
F1	Dark brown colored, bear shape, soft gummy with a characteristic odour	3.52 mg

F2	Dark brown colored, bear shape, soft gummy with a characteristic odour	3.16 mg
F3	Dark brown colored, bear shape, soft gummy with a characteristic odour	3.52 mg
F4	Dark brown colored, bear shape, soft gummy with a characteristic odour	3.38 mg
F5	Light brown colored, bear shape, soft gummy with a characteristic odour	3.16 mg
F6	Dark brown colored, bear shape, soft gummy with a characteristic odour	3.42 mg
F7	Dark brown colored, bear shape, soft gummy with a characteristic odour	3.28 mg
F8	Light brown colored, bear shape, soft gummy with a characteristic odour	3.22 mg
F9	Dark brown colored, bear shape, soft gummy with a characteristic odour	3.80 mg

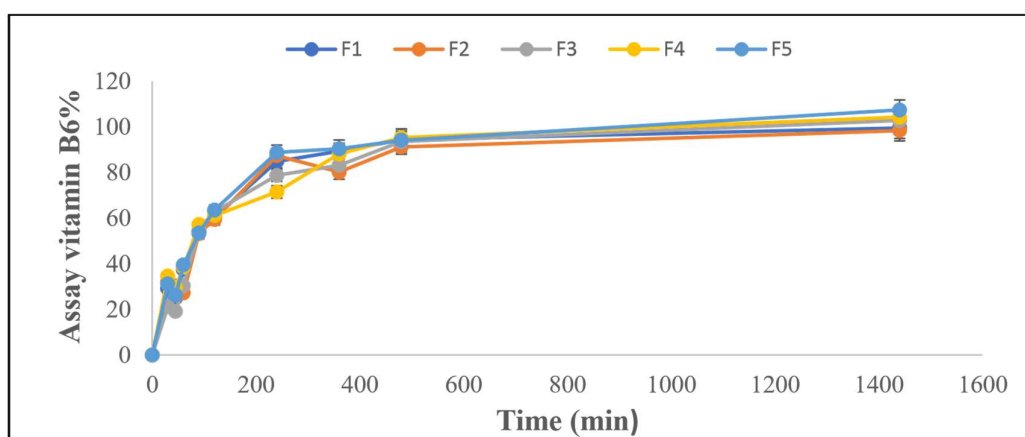


Figure 6.1 Assay (%) of formulations F1, F2, F3, F4, F5

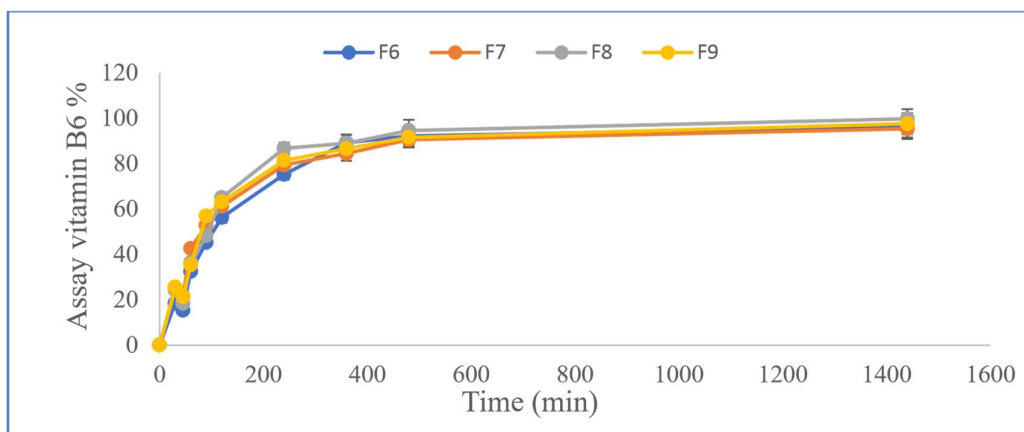


Figure 6.2 Assay (%) of formulations F6, F7, F8, and F9

7. Discussion

In the study in this article of ginger containing gummies with vitamin b6 is very important for the in present time because gummies are safe for all the person after many tests and pre-formulation studies , we can sure that gummies are suitable for the human. The big advantage of gummies formulation that is we are used herbal product for the gummies preparation like as ginger, banana, orange peel and many herbal plants roots or leafs. So we can say that gummies are safe for the entire age group person.

Formulation: The resulting gummy form is useful & excellent for both adults and kids; it has a potent, non-toxic dosage of therapeutic natural substances, and several recopies were examined to investigate the stability and quality control of the finished goods

8. Conclusion

This manuscript aims to formulate various gummy recopies as a dietary supplement of a diet based on natural products, with quality control & stability testing, & recommended for the improvement of digestive diseases as well as general health & wellbeing. Opuntia ficus-indica (OFI) and turmeric are traditional and local natural products that are known for their beneficial properties but are not exploited enough. The plant extract was prepared using an ancient extraction technique called cold enzymatic extraction, which focused on thermosensitive secondary metabolites and enhanced their solubility, bioavailability, and reactive form. To assess the organoleptic properties and stability, several recopies with ideal nontoxic dosage of plant pulp & crud were tested in a variety of ways, including added or without sugar and preservatives.

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