



FORMULATION AND EVALUATION OF DRAGON FRUIT ENERGY BOOSTER CONTAINING MULTIVITAMINS AS AN ANTIDIABETIC

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ABSTRACT

Objective: To formulate a refreshing energy booster at low cost with good nutritional property containing antioxidants, antidiabetic, multivitamins with natural sugars.

Method: Extraction and filtration method are developed and formulated for dragon fruit by performing qualitative test at lab level.

Result: The formulation of dragon fruit energy booster for 10ml was evaluated and submitted successfully at lab level.

Conclusion: The simple extraction and filtration method was developed and validated for qualitative estimation of dragon fruit and hence, it can be used for routine intake of human body and usually used in pharmaceutical industry to fulfil the health quality of human being with natural extract of dragon fruit, beetroot, lemon, honey.

Keywords: Antioxidants, multivitamins, natural extract, extraction, filtration, phytochemical, nutritive value

1. INTRODUCTION:

Now a day's farmers of Karnataka and Maharashtra are gaining the much more knowledge about the cultivation of dragon fruit and the area under the

dragon fruit will go too increased in future days because of its low requirement of water and tillage practices [1].

Table 1: Phytochemicals present in dragon fruit

Component	Reagents	Note	Result
Protein	Biuret test	Purple blue	Positive
Carbohydrates	Molisch test Benedict test	Violet ring Orange ppt	positive
Alkaloids	Mayer's reagent Wagner's reagent	White ppt Brown ppt	positive
Phenolic compound	Ferric chloride test	Green ppt	positive
Tannin and flavonoids	Lead acetate	Yellow ppt	positive
saponins	Fast stirring	Dense foam for long time	positive
Steroids	Liebermann Burchard test	Yellow ppt	positive

PHARMACOLOGICAL ACTION OF DRAGON FRUIT:

- **Antioxidative activity:**

It contains more flavonoid than the flesh, ethanolic extract of peel and flesh which have different antioxidant capacity.

- **Anticancer activity:**

It has recently studied for its anticancer activity it has shown that polyphenol, flavonoid and betanin are responsible for anti-cancer property.

- **Anti-microbial activity:**

The anti-bacterial activity of peel extract in ethanol, chloroform was assayed, they were inhibited against gram positive and gram negative bacteria.

- **Hypocholesterolemia effect:**

Polyphenol found in flesh shows lower cholesterol level in body.

- **Cardioprotective effect:**

Polyphenol contain flesh passes antithrombotic effect and enhance cardioprotective activity.

- **Prebiotic effect:**

In the ethanolic extract of *H. undatus* meat, mixed oligosaccharides made up around 85% of the composition. These oligosaccharides have higher resistance to bacterial infection in people. Relative to salivary amylase, inulin This hasn't been absorbed yet. Yet, they act in the stomach as prebiotics, which facilitates digestion. Beneficial bacteria like lactobacilli and bifidobacteria are expanding. These microbes will support healthy digestion and immunological function [9].

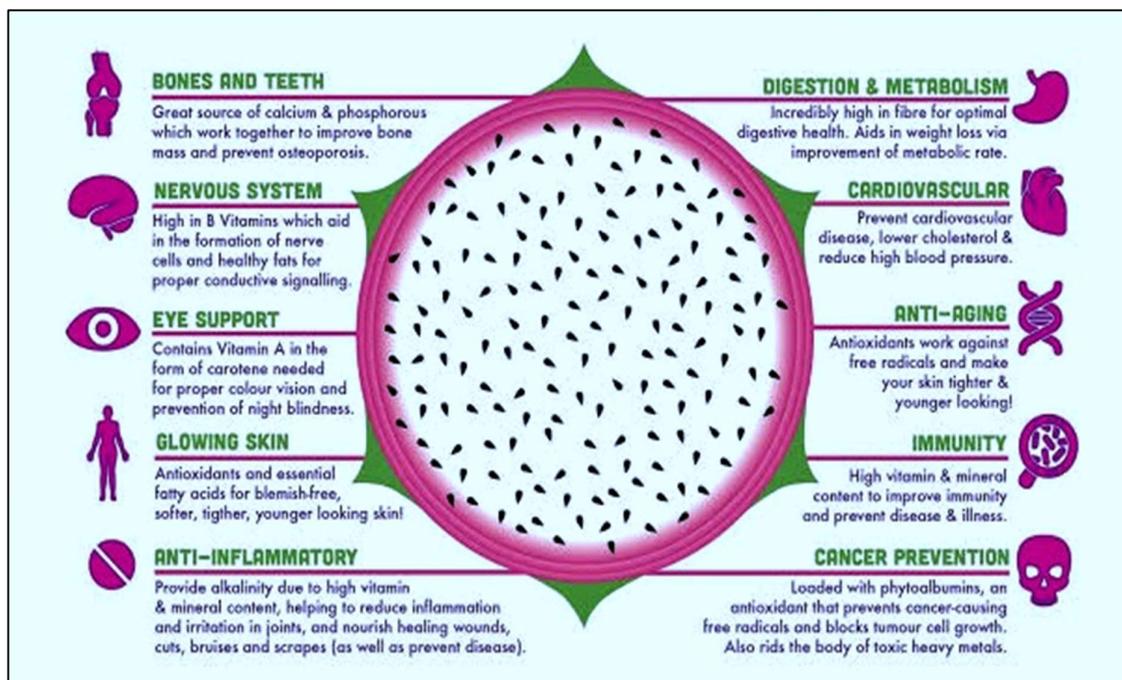
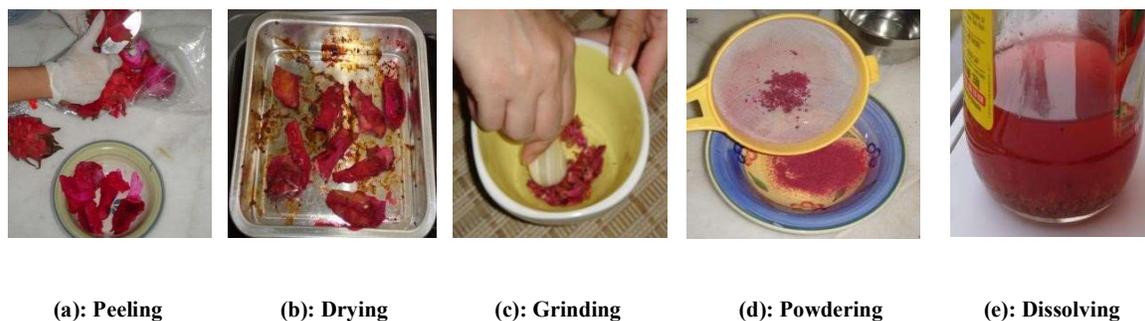


Figure 1: Image of benefit of Dragon fruit health

2. **Drug Profile:** Dragon fruit contain high vitamin c and antioxidants, carotenoid and flavonoid property, which are good for immune system. It helps to boost iron level in body. Iron is important for moving oxygen through body and provides energy. These antioxidants activities helps to maintain cells from damage and reduce risk of chronic diseases.

3. **MATERIAL AND METHODS:** For the project work we purchased dragon fruit from Nehru Bhaji Market, Kopargaon. Beet root and Lemon also purchased from Nehru Bhaji Market, Kopargaon. Honey was obtained from natural sources i.e. honey comb and it was processed for project work.

Table 2: List of Instruments used



(a): Peeling

(b): Drying

(c): Grinding

(d): Powdering

(e): Dissolving

(Moshfeghi, 2013) [11]¹¹

4. EXPERIMENTAL WORK:

4.1.Preliminary Characterization

Identification of drug:

4.1.1. Colour, odour and appearance:

Dragaon fruits extract are evaluated for various preliminary parameters like colour, odour and appearance and confirmed that they complied with official standards and are shown in the result.

4.1.2. Determination of Solubility: It is soluble in solvent such as water, Beetroot juice and lemon juice.

4.1.3. Selection of solvent:

The selected ingredients were water, sweetener, preservative, vitamin source.

4.1.4. Extraction and filtration

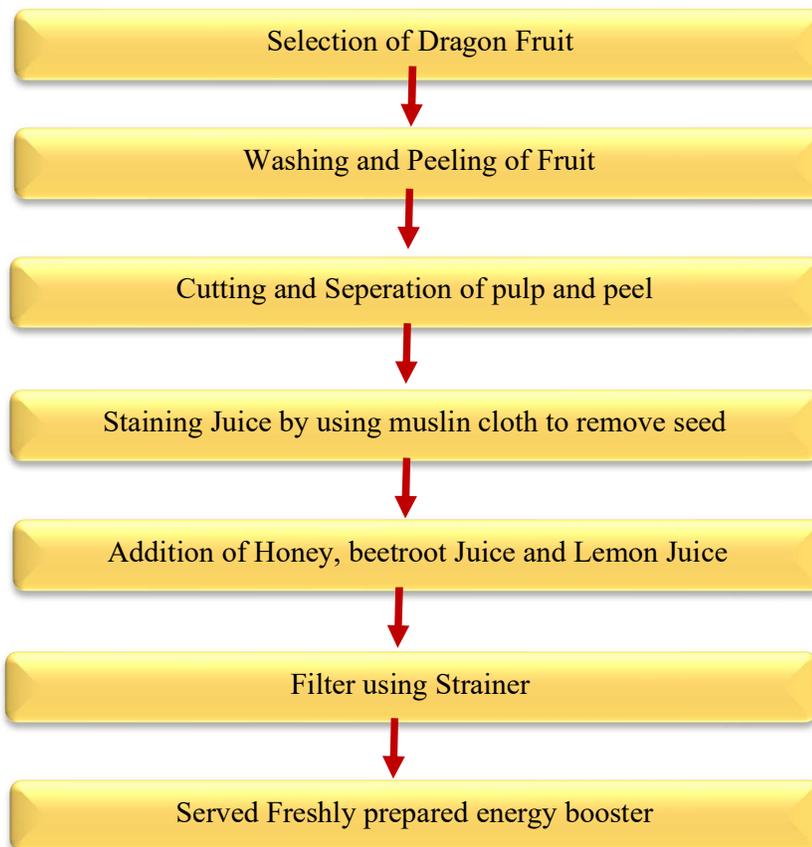
method use for Dragaon fruit drink:

- Wash
- Cut into fine piceses
- Heat and draying
- Collect the sample and triturate it
- Collect the powder and satin it
- Transfer it into a countanier and dissole it

4.1.5. Formulation of energy drink for 10 ml:

Table 3: Formulation

Name of ingredient	Quantity taken
Dragon fruit extract	7.5 ml
Lemon juice	0.5 ml
Beetroot juice	1 ml
honey	1ml



4.1.6. Evaluation:

For evaluation of ingredient to determine the presence of nutritive value formula was to be use is:

Formula:

$$\text{Nutrient value of the ingredient taken} = \frac{\text{Nutrient content per 100 g} \times \text{amount of ingredient taken}}{100}$$

Nutrient value testing to determine presence of protein, carbohydrates, fats, fibres, vitamins etc by doing Qualitative as well as Quantitative test [4].

 **Test for Carbohydrates:**

Carbohydrates can be tested by using the following methods:

a) **Tollen's Test**

Take the given food sample and prepare its extract. Add the Tollen's reagent to the prepared food extract. A silver mirror formed on the wall of the test tube confirms the presence of carbohydrates in the Energy Booster.

b) **Molisch's Test**

Take the given food sample and prepare its extract. Add the Molisch's reagent to the prepared food extract. A purple-violet ring formed in the test tube confirms the presence of carbohydrates in the Energy Booster.

c) **Benedict's Test**

Take the given food sample and prepare its extract. Add Benedict's reagent to the prepared food extract.

A red precipitate formed in the test tube confirms the presence of carbohydrates in the Energy Booster.

d) **Fehling's Test**

Take the given food sample and prepare its extract. Add Fehling's A and Fehling's B reagent to the prepared food extract. A red precipitate formed in the test tube confirms the presence of carbohydrates in the Energy Booster.

e) **Iodine Test**

This test is used to identify starch. Starch is a type of carbohydrate. Take the given food sample, prepare the extract of the given food sample. Then add an iodine solution to the prepared food extract. A solution will turn blue in colour to confirm the presence of starch (carbohydrate) in the Energy Booster.

 **Test for Proteins**

Proteins can be tested by using the following methods.

1. Biuret Test

Take the given food sample and prepare its extract. Add the aqueous copper sulphate to the prepared food extract. A solution that turns violet in colour confirms the presence of protein in the Energy Booster.

2. Ninhydrin Test

Take the given food sample and prepare its extract. Add the pyridine ninhydrin solution to the prepared food extract. A solution that turns violet in colour confirms the presence of protein in the Energy Booster.

3. Xanthoproteic Test

Take the given food sample and prepare its extract. Add the nitric acid solution to the prepared food extract. A solution that turns yellow in colour confirms the presence of protein in the Energy Booster.

4. Millon's Test

Take the given food sample and prepare its extract. Add sodium nitrite

and sulfuric acid to the above extract followed by Mercuric sulfate. A solution will turn brick-red in colour. This confirms the presence of protein in the Energy Booster.

🚩 Food Test For Fats

1. Acrolein Test

Take the given food sample and prepare its extract. Add potassium bisulphite to the above extract. A pungent and irritating odour coming from the solution confirms the presence of fats in the food.

2. Translucent Spot Test

Take the food sample place it between the folds of filter paper and rub it lightly. The presence of translucent spots on the filter paper confirms the presence of fats in the foodstuff.

🚩 Test for pH

🚩 Test for Steroids

5. RESULT AND DISCUSSION:

Table 4: Result of Qualitative test performed

TEST	PROCEDURE	OBSERVATION	INFERENCE
<u>Carbohydrates</u>	Fehlings test 2ml of Fehlings A + 2ml Fehlings B, boil for few minutes + 2-3 ml of sample solution +boil again.	Brick red colour	Carbohydrates are present
<u>Protein</u>	Biuret test 2ml of the sample solution+ 2ml 40%NAOH and 1% CuSO_4 solution,2-5 drop	Pink colour	Protein are present
steroid	Liebermann burchard test Take 2 ml of chloroform solution in dry test tube. Add 10 drop of acetic anhydride and a few drops of concentrated sulphuric acid and mix well.	No Appearance of reddish violet colour which rapidly changes to deep blue and then emerald green.	Steroids are absent
pH	Check the pH of sample	6.5 – 6.7	neutral

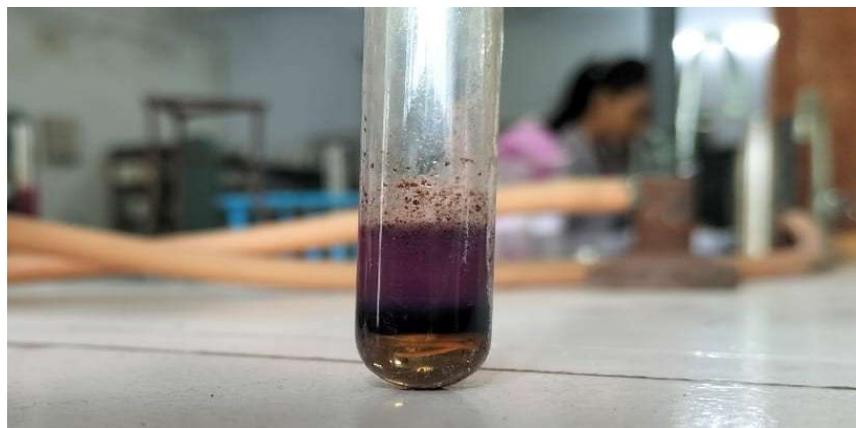


Figure 2: Image of Carbohydrates test (Molish test)



Figure 3: Image of pH test



Figure 4: Image of steroid test (Liebermann Burchard test)



Figure 5: Image of protein (biuret test)

6. CONCLUSION:

A literature survey revealed that very less methods have been reported for the determination of dragon fruit energy drink or pharmaceutical dosage forms, but no one method was developed for estimation of dragon fruit energy drink by using extraction and filtration method. Developed extraction and filtration method, by its own self emitting property such as antioxidant, multivitamins and antidiabetic. This formulation has several advantages, which promotes wakefulness, maintaining alertness by enhancing mood at low cost with good nutritive property. Since the formulation was developed and also less time consuming, it can be performed for routine intake of human body and can be sold in the pharmaceutical industry for the bulk energy booster of dragon fruit and also in the pharmaceutical dosage form.

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