

Development of Stress Relieving Nutritious Drink and Digestive Pill

Meena Mehta

Department of Food Science and Nutrition, Dr. BM Nanavati College of Home Science, 338, RA Kidwai Marg, Matunga (W) Mumbai – 400 019, Maharashtra, India.

Short Communication

Received: 22/03/2013
Revised: 09/05/2013
Accepted: 05/06/2013

***For Correspondence**

Department of Food Science and Nutrition, Dr. BM Nanavati College of Home Science, 338, R.A. Kidwai Marg, Matunga (W) Mumbai – 400 019, Maharashtra, India.

Keywords: stress, relieving, digestive, pill

ABSTRACT

The routine life style is full of stress and very hectic schedule wherein many educated people suffer due to lack of proper nutrition. It is essential to incorporate few highly nutritious food recopies in our daily diet, which can be conveniently consumed. An attempt was made to prepare nutritious and delicious drink out of Water melon, lemon, Cauliflower leaves and Mint along with various adjuncts. The pulp obtained after the extraction of the juices was used to formulate a digestive pill by incorporation of sugar, salt and powder of various fruit seeds like, Jamun, pomegranate and Amla. The nutritious drink was named as Emerlad drink and digestive pill was called Ruby Gola. Both these products were prepared and analyzed for their physico-chemical properties and microbiological status. The results were very much encouraging with respect to their aesthetic value. The panel members comprising of 25 selected subjects were used for the sensory evaluation of the products. The products have good nutritive value particularly with respect to Vitamin C and mineral iron. Clinically both these parameters play important role in relieving the stress and indicate better dietary value of the products.

INTRODUCTION

Over 2400 years ago hippo crates the father of medicine said, "Let food be the medicine". It was an attempt to explain that raw fruits and vegetables keep essential drug to control and fight human ailments most effectively. This is true even today since fresh fruits and vegetables contain vitamin and minerals essential for maintenance of optimal health ^[1].

Toxicity is also the primary root cause of the all diseases. Detoxification is necessary in order to escape from the attack of degenerative diseases. Consuming raw vegetables and fresh fruits and fruit juice ^[2]. can do proper detoxification of the whole body most effectively.

Stress, which is a hidden enemy and number one diseases of modern era. Stress is harmful because we consciously or unconsciously continuing to generate free radicals. To quench these free radicals antioxidants are required by the body. Fruits and vegetables are the proven rich source of such antioxidants ^[3]. An attempt was made to develop a nutritious drink from the fresh fruits and vegetables. The solid waste generated during the process of drink preparation also contain important nutrient like dietary fiber. The left over solid was used to prepare a tasty pill by improving its medicinal value using few fruits seed powder. The consumer, using sensory evaluation of the product, evaluated the newly developed products for its general acceptability.

Objectives

- To develop a nutritious drink using fresh fruits and vegetables.
- To utilize the by-product as digestive pill and make the process eco-friendly.
- To conduct the survey for sensory evaluation of the product.

- To analyze the product with respect to their physico-chemical properties.
- To correlate and establish the health benefits of the newly developed drink.

MATERIALS AND METHODOLOGY

Fresh fruits and vegetables are the best source of certain vitamins and minerals, which are essential for the health. The basic standard Emerald drink and Ruby gola was developed using following ingredients.

Emerald Drink

Ingredients	Quantity
Cauliflower leaves	50g
Carrot	70g
Celery leaves	20g
Mint leaves	30g
Neem leaves	5g
Watermelon	100g
Amla powder	10g
Jamun powder	10g
Ginger	20g
Garlic	5g
Clove	4no.
Sugar	25g
Salt	5g
Water	100mL

All the vegetables and fruits are washed. Chop all the fruits and vegetables. Extract the juice from the chopped material. Mix amla and jamun powder along with salt and sugar in a mixer to homogenize the drink concentrate. Serve the drink with ice.

Ruby Gola

Ingredients	Quantity
Solid left over from above preparation	50g
Amla powder	10g
Jamun powder	10g
Jeera powder	5g
Ova powder	5g
Chat masala	25g
Lemon juice	5mL
Sugar	25g
Salt	5g

Dehydrate the residue in sunlight or microwave oven. Powder all the ingredients. Sieve to fine mesh size. Add lemon juice and make small round balls of the semi moist paste. Roll it in powdered sugar and serve.

Both the products were analyzed for their mineral contents using atomic absorption spectroscopy and flame photometry [4,5]. The physico-chemical properties and mineral contents are tabulated in table 1. The results of sensory evaluation are summarized in table 2.

RESULTS AND DISCUSSION

Fruits and vegetables form an essential component of the daily diet. They provide variety of tastes, flavor and widening the attractiveness in a nutritionally well balanced diet. The newly developed drink was named as Emerald drink and the digestive pill as Ruby gola. The mineral content and physical properties are listed in the Table 1.

Table 1: Analytical parameters of emerald drink

Parameters	Conc. (ppm)
Color	Dark green red
Appearance	Turbid
Fluidity	Viscous
pH	4.6
Taste	Mint-Sweet
Sodium	85.80
Potassium	346.60
Calcium	486.00
Magnesium	62.30
Iron	33.10
Copper	0.14
Zinc	0.64
Total Viable count	1×10^{-2}

It can be seen from the results that Emerald drink has aesthetic appearance with dark green red color. The turbid and colloidal nature of the drink concentrate can be diluted with water to increase its fluidity and easily acceptable healthy nutritious drink. All the content after dilution results into moderately acidic pH 4.6. Most of fruit juices are in acidic in nature with pH below 4, which may have acidic effect on the inner lining of the gastro-intestine tract. The overall appearance and little pungent taste are easily acceptable to any age group of consumer.

The analysis of mineral particularly, sodium, potassium, calcium, magnesium and other micronutrients like iron, copper and zinc has clinical beneficial value. One of the ingredients, in the emerald drink, Celery leaves are very rich source of potassium. Higher concentration of potassium and lower level of sodium makes it better drink for the hypertension patient. The higher amount of alkali mineral also helps in working of Na-K pump during metabolic process.

Another skeletal nutrients like calcium and magnesium also have better value in the drink. The consumption of drink can provide required amount of calcium and magnesium minerals, which are essential for the maintenance of bone structure. Poor absorption of calcium and calcium deficiency health disorder is a common complaint in the later part of the life. However, emerald drink can provide required amount of calcium, which can be easily absorbed by the body.

Similarly, amount of micronutrients like iron, copper and zinc is 33mg, 0.14mg and 0.64mg per 100g respectively. It is well documented that iron improves the blood as an oxygen carrier. The RDA for iron is approx. 30mg/day, while one glass of drink provide as high as 33mg/day. Thus emerald drink becomes the natural iron rich source in the diet. Moore et al.^[6] have shown that the iron mineral can help in maintaining the health during stress. The iron level in the body should be maintains during heavy physical work. An adequate intake of iron mineral from diet shows good correlation with the health of the worker. Copper is present in the biological system as a protein bound enzyme, which play important role in synthesis of various metabolites. Average 0.15mg of copper is essential for the proper functioning of central nervous system and emerald rink provides as high as 0.14mg copper in one serving. There are 130 enzymes containing zinc as a mineral component, which has a passive role to play in the metabolic system. One serving of emerald drink can provide 0.64mg of zinc mineral, which makes it unique source of micronutrient zinc.

Obviously, when fresh fruits and vegetables are mixed in such proportion the total microbial count is likely to be higher⁷. However, by maintaining proper hygienic condition during preparation, the total viable count can be restricted to as low as 10^{-2} . The food without preservatives has very short shelf life. The emerald drink is recommended for the daily consumption as a fresh fruit drink hence addition of any chemical preservative is avoided. It is ever increasing complaints about the side effect of the chemicals consumed through the food. Also it is reported that such preservatives are likely to change the overall taste of the drink. Hence it is recommended to preserve emerald drink concentrate at refrigerated temperature and can be considered safe to drink within one week. All such drink must be prepared in small batches and packed with care.

Fruits and vegetables are nutrient dense naturally occurring food, which helps in management of health. Fruits and vegetables have ability to fight many degenerative diseases. Carrots are well known for the remedies of nervous disorders and anemia^[7]. It is a concentrated source of β -carotene. Chlorophyll of green vegetable is known for its protective role on liver and gall bladder from harmful effects of other metabolites. Fresh fruits and vegetables are rich in vitamin and minerals along with other essential nutrients like antioxidants and phytochemicals. The antioxidants are essential for controlling malignancy of certain body cell. It protects the wall of

blood vessel against the development of plague and cardio vascular diseases. Sri Lakshmi [8] reported that significant reduction in serum cholesterol level after administration of mature neem leaves extract. Moore [6] has investigated the importance of celery leaves and found that the extract of these leaves can monitor the secretion of stress hormones.

Recently, a new trend of green technology indicates that every food production should be eco-friendly. It means during preparation solid waste should not generate in the form of garbage. After extracting all the nutrients from fruits and vegetables during the preparation of the drink, the solid waste generated was completely, dried using vacuum technology. The complete dehydration of wet garbage provides solid powder, which is rich in dietary fiber content. This powder is used to prepare a digestive pill named ruby gola with addition of new fruit seed powder and ingredients to develop taste. Ruby gola has a light brown color and little sticky appearance. The chemical analysis indicates that most of the minerals were extracted from fruits and vegetables during the emerald drink preparation. However, gola rich in dietary fiber is useful as a digestive pill. This by-product is eco-friendly and carries some medicinal value due to its fiber content. The vacuum dehydration and hygienic condition during its preparation keeps the total viable count as low as 10^{-2} .

The qualitative descriptive analysis (QDA) has been developed for the sensory evaluation of the foods. It is a routine practice to conduct sensory evaluation test for the newly developed food recipe. The test is designed by using semi trained control panel consisting of 25 subjects and consumer panel of 100 subjects. The score outcome of the test is encompassed in the Table 2.

Table 2: Score of sensory evaluation of the Food products

Quality factor	Semi trained panel (n=25)	Consumer panel (n=100)
Emerald drink		
Color (10)	6.20 ± 4.60	4.73 ± 15.00
Flavor (10)	6.16 ± 3.80	5.87 ± 13.70
Taste (20)	12.36 ± 2.50	12.80 ± 22.90
Consistency (30)	21.00 ± 2.80	21.23 ± 16.00
Absence of defects (30)	20.60 ± 3.90	23.24 ± 18.40
Ruby gola		
Color (10)	6.80 ± 4.30	8.03 ± 19.70
Flavor (20)	13.52 ± 4.20	14.55 ± 21.53
Taste (30)	20.32 ± 4.70	23.43 ± 12.08
Consistency (20)	13.72 ± 0.48	14.30 ± 20.42
Absence of defects (20)	14.72 ± 1.69	14.83 ± 19.94

Five different quality factors were considered with different score yardstick (in parenthesis) for each product. The results indicate that color and flavor has close relation between both the panelists. Similarly, the taste, consistency and absence of defects have similar resemblance between the subjects of both the panels. The mean value score of controlled panelists have minimum standard deviation from the mean score but that of consumer panel show large deviation. The acceptance of both the products can be rated around 60% on the basis of taste of the products. The color and flavor acceptability by the subject of consumer panel is also in favor of both the products.

CONCLUSION

Conclusively, it can be interpreted that emerald drink and ruby gola have better aesthetic value for the consumption. Any age group irrespective of gender easily accepts both the products. It is also felt that if the community is made aware about their clinical benefits, then the products will have further enhanced acceptability and market value. The emerald drink concentrate and ruby gola digestive pill are very healthy food, nutritionally beneficial, cost effective and very easy to prepare.

SUMMARY AND CONCLUSION

- The emerald drink concentrate has good aesthetic value.
- The drink is rich in mineral content.
- It is free from chemical preservatives and without any side effect.
- It has a very small shelf life hence must be consumed within week time.
- The product is eco-friendly and solid waste from its preparation can be best used to prepare ruby gola.
- Ruby gola are in rich in dietary fiber.
- It can be consumed as digestive pill.

- Sensory evaluation score of both products indicate that sweet, sour and little pungent taste is most liked by the consumer.
- The emerald drink should have better color to be accepted by the small child.
- Both the products have medicinal value due to use of fresh fruits and vegetables.
- It can be a refreshing drink along with the nutritional importance.
- Both the products are cost effective and easy to prepare.

ACKNOWLEDGEMENT

Author thanks Ms. Tapasia Desai who was the student of FSQC, a helping hand during the progress of work.

REFERENCES

1. Barker GH, Micheal H, Berman AJ. Good Housekeeping – Family health and medical guide, 1999, Hearst Books, New York.
2. Saha NN. Fruit and vegetable juice therapy” B. Jain publisher, 1996, New Delhi.
3. Gala D, Sanjay G, Niraj G. Juice for perfect health. Navneet Pub. 1999, Mumbai.
4. Pearson. Chemical Analysis– Composition and analysis of Food, 9th Edition, Churchill Livingstone publisher, (1999).
5. Sathye AY. Chemical Analysis– A first course in food analysis, New Age Int. Pub., (1999).
6. Moore RJ, Friedl KE, Tulley RT, Eldon A. Maintenance of iron status in healthy men during an extended period and physical activity. Am J Clin Nutr. 1993;58(6):923–926.
7. Sharma PD. Microbiology– A text book for university students, Rastogi & Co., (1989).
8. Sri Lakshmi. Food Science, New Age International publisher, (1999).