

Research Article

A Noval Strategy to Develop a New Food Product from Tanners Cassia (*Senna auriculata*)

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Abstract

The *Senna auriculata* is a small perennial, branched under shrub plant and it is belonging to the Fabaceae family. It has a natural source of antioxidant. So, it is mainly used to cure diabetes, control cholesterol and it contains several medicinal uses. Then, the *Senna auriculata* flower is combined with the neera sugar to form a jelly. Because, the jellies are easy to eat and all age of people are like to take it. Neera is a sugar, which can be extracted from the inflorescence of varies spices of toddy before the fermentation process takes place. Neera has more medicinal values such as improve immune system, bone health, prevent anemia, cure liver disease etc. The refractometer is used to measure the TSS (total soluble solids). Lowry's method is conducted to determine the protein in neera. Then, sheet test is used to determine the consistency and refrigerator test is to detect the quality of neeragel. Carbohydrate test is used to detect the reducing sugar present in neeragel, using DNS method. Some preservatives and natural stabilizer are adding to improve the shelf life.

Keywords: *Senna auriculata*; Flower; Neera; Jelly; Total soluble solids; Neeragel.

Introduction

The *Senna auriculata* is a small perennial and branched shrub. It is mainly grown in dry region of India and srilanka. It is a state flower of Telangana. It is a leguminous tree in the subfamily of Caesalpinoioideae. It is commonly called as Matura tea tree. Grown up to 7m tall and 20cm in diameter. This plant is mainly cultivated in India, Ghana and Tanzania. It can tolerate the temperature of 16 to 27 ° Celsius. Saline rich soil is suited for this plant. It does not fix atmospheric nitrogen, but it has a symbiotic relationship with soil bacteria. During monsoon period the flowering rate is increased. Young leaves are eaten as a famine food and the leaves are dried to form tea. The dried flowers are used as a substitute for coffee powder [1,2].

The flowers are rich in iron, calcium, magnesium, manganese, potassium, sodium, copper, lead and phosphorous [3,4]. It treats excessive thirst by keeping the body hydrates and fight against food poisoning. Flower is mainly useful for relives urinary tract infection and painful urination [5] [6]. The flower of *Senna auriculata* contains components such as glycine, linoleic acid, oleic acid, fatty acid,

stigmasta, dimethoxyacetophenone, palmitic acid, α -tocopherol and stearic acid [7].

Kingdom: Plantae
Class : Angiosperm
Order : Fabales
Family : Fabaceae
Subfamily: Caesdpinioioideae
Tribe : Cassieae
Genus : Senna
Spices : auriculata

Neera is also called as nectar sap. It is mainly extracted from the inflorescence of varies parts of toddy and it is obtained before the sunrise. Because, at the time it should be fresh and it can be taken before fermentation takes place [8]. The neera is processed to form a sugar by using the drying process. It has low glycemic load so, it is good for diabetic patients [9,10]. Lots of medicinal values in neera are improves immune system, bone health, respiratory function, eye power, cure liver disease, prevent the risk of anemia, reduce blood pressure etc... Neera has an ability to form an alcohol content by natural fermentation process within the hour of extraction [11].

A specific filtration is introduced by National chemical laboratory in pune, India. This technique is used to improve the shelf life of the neera extract from the sap. Compare to the natural sugar, neera contain more amount of minerals and nutrient [12]. Instead of water, they prefer neera juice to get a more amount of nutrients and electrolytes for our body [13]. The sugar content in neera is measured by refractometer [14]. The agar agar is used for stabilizing purpose and maintains the consistency of the product. It is obtained from the sea weed. So, vegan can eat this product. It gives the smooth structure to the product and the quality also get increases when compare to the other stabilizers. Instead of using agar agar, we use gelatin. Gelatin is obtained from bones and it cannot use by the vegetarian people.

Materials and Methods

Take 1 litre of water in a vessel and add 150 g of agar agar. Then boil it until the agar get completely dissolve in water. Add 500 g of neera sugar into it and also add a cleaned *Senna auriculata* flower (either whole flower or into a grinded manner). Boiling temperature should be maintaining in between 65 to 75°C, so that it can retained its medicinal features, after boiling (Semi Liquid form) kept it in a room temperature for 45 min. Then add sodium benzoate as preservatives to increase the shelf life. Finally pour it into the jelly molds and refrigerate it. The prepared neeragel is shown in fig. 1.



Fig. 1. Neeragel

Quality Analysis

Sheet test

In the sheet test, detect the consistency of the product. So, the solution is pour at the back of the spoon and the solution flows slowly due to high viscous. The high viscous is formed due to

the addition of agar agar. It also determines the quality of the product [15].

(ii) Sugar test (Refractometer)

This test is used to determine the sugar ratio. Its unit is brix. The total brix value is divided by 2 and we can have calculated the total sucrose present in the particular product [16].

(iii) Protein determination

Lowry's method is used to determine the protein content in the neera sugar. It also measures the protein concentration in the sample. Copper is mainly present in the Lowry's reagent and it can react with the peptide bond present in the protein. Then, the copper is reduced to blue colour to indicate the presence of protein in that sample. Reagents involved in Lowry's method are reagent A-2% sodium carbonate in 0.1N sodium hydroxide, reagent B-0.5% cupric sulphate in 1% potassium tartarate, reagent c-1 ml reagent B is added to 50 ml of reagent A and BSA standard-1 mg/ml [17].

Refrigerator testing

In refrigeration testing, pour a little amount of boiling sample in a freezer for some time and it can be removed. At that time, the jelly can be easily removed from the plate. So, it confirmed the quality of the product [18].

Carbohydrate test

The carbohydrate test is done by DNS method, the alkaline solution of 3, 5-dinitro salicylic acid react with reducing sugar (glucose and fructose present in neera sugar) and convert into 3-amino-5-nitrosalicylic acid. The solution is turn into orange colour that indicates the presence of reducing sugar. Reagents involved in DNS method are glucose working standard-10 mg/ 10 ml, DNS reagent (3 ml) and 40% potassium sodium tartarate [19].

Sensory analysis

- (1) Sheet test - The spoon is dipped into the boiling syrup. After taking the spoon out the syrup is flow off along the side of the spoon as a flake.
- (2) Refrigerator test - Little drop of syrup is pour into the mould and refrigerate for half an hour.
- (3) Drop test - A little drop is pour into bowl with water and the drop is not mixed with water. So, it has a better consistency [20].

Results and discussion

The amount of protein, carbohydrate and sugars are mentioned in a table 1. The tanner's cassia jelly with neera sugar is used to reduce the blood glucose level, cholesterol content, prevent anemia, controls blood pressure, cure liver disease and improves immune system and it rich in minerals and vitamins.

The normal white sugars are causing various diseases such as diabetes mellitus, gum disease, obesity. So, natural sweeteners are produced largely to overcome this defect. In future, the production will get larger. By current scenario, production of neera is largely in Indonesia, Philippines, and Thailand. North eastern states like west Bengal, Assam, Bihar, Odisha are developed the natural sweeteners.

Instead of neera sugar, sugar is used in neeragel, all the nutrient value got degraded and it cannot be consumed by the diabetic patients. The normal white sugar gives more taste than neera sugar but the nutritive values are low and the white sugar doesn't have a mineral like neera sugar. So, neera sugar is better for consumption, mentioned in fig. 2.

Table 1. Auality analysis of food product from tanners cassia (*Senna auriculata*)

S. No.	QUALITY ANALYSIS	RESULTS
1	Sugar test	23.46%
2	Protein determination	5.26%
3	Carbohydrate test	31.62%

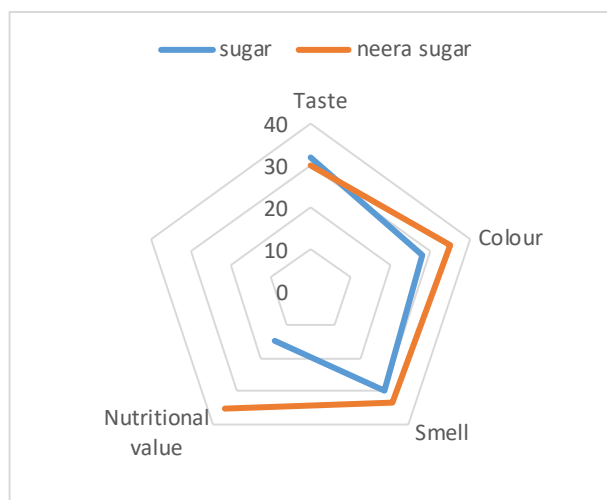


Fig. 2. Comparison chart of different Sugars

Conclusions

Diabetes mellitus and blood pressure are common in now-a-days. So, people are changing their habits to take tablets and some other drugs. It will affect our health in a slow manner and later it will turn into poison. Treat the disease by changing our food habits to leads a healthy life and a disease-free lifestyle. It also helpful for relive the urinary tract infection and painful urine. *Senna auriculata* has a natural source of antioxidant and it also improves our immune system. In future scope, we can eat our favorite foods without any side effects and in a healthier way. Diabetic patients are eager to eat sweets. So, this kind of food products is more beneficial for them without causing any disease. Therefore, it concluded that the jelly is an easier to eat to all kind of people and to get a more nutritive to them. Neera is more benefit than mineral water so, it is more useful.

Conflict of interest

Authors declare no competing interest.

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