

PHYSICO-CHEMICAL AND SENSORY PROPERTIES OF MUSKMELON BLENDED WITH INDIAN SARSAPARILLA ROOTS SQUASH

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ABSTRACT:

Fruits are not only delicious but also packed with essential nutrients that are beneficial for your health. They are a great source of vitamins, minerals, and antioxidants, which can help boost your immune system and overall well-being. This study to develop squash from muskmelon which is rich in vitamin C, A, potassium and good source of anti-oxidants like beta carotene, zeaxanthin, and lutein. By mixing with sarsaparilla roots. Which make health squash and which act as nutritional drink. Indian sarsaparilla roots help to for hydration, helps in stomach irritation, and helps for digestion. This study shows development of squash with muskmelon and sarsaparilla where sarsaparilla incorporated in different concentration (15%,20%,25%) in muskmelon squash which is made of sugar, cinnamon, muskmelon pure. Formulation and quality assessment of squash by conducting T1, T2, T3 trails. The trail T3 is Swell satisfied all the conditions

Keywords:

Muskmelon, sarsaparilla roots, Jaggery, sugar, cinnamon

INTRODUCTION:

Musk melon is a beautiful, juicy, tasty and delicious fruit popular for its nutritive and medicinal properties. The Cucurbitaceae family includes squash, pumpkins, cucumbers, Musk melons, watermelons, and gourds. Cucumis melo (Cantaloupe or Musk melon) is one

of the most important cultivated cucurbits, which is native to India and Africa. It is a spreading, annual, more or less hairy vine. It grows well in all the tropical and subtropical areas of the world, but prefers hot climate. Musk melon is recommended for the treatment of cardiovascular disorders, as a diuretic, stomachic, and as a vermifuge. Cantaloupe is normally eaten as a fresh fruit, as a salad, or as a dessert with ice cream or custard. In recent years, the seed kernels have been used as the basis for a number of soups and stews where they act as a thickening, emulsifying, fat binding and flavouring agents. The seed kernels are used as a dressing for breads, cakes, confectionary and snack foods, often instead of almonds and pistachios. (Milind et al., 2011)

Indian sarsaparilla, also known as *Hemidesmus indicus*, is a plant commonly used in traditional Ayurvedic medicine. It is known by various names such as Anantamul or Sugandhi. The roots of this plant are particularly prized for their medicinal properties and have been used for centuries in India and other parts of South Asia. Each root is 5-10 cm in diameter and 4-10 roots arise from the rootstock. A 2-3 years old plant produces 15-20kg of roots and one year old plant produces 1-2 kg of roots. Roots are harvested during summer months mostly. The roots are being used in Ayurveda, the ancient Indian system of medicine to stimulate appetite, relieve and as a general tonic. Indian sarsaparilla (*Hemidesmus indicus*) in ayurvedic It is also used as demulcent, diaphoretic, diuretic, and anticonvulsant, antidiabetic, antiatherosclerosis and in the treatment of epilepsy and central nervous system disorders. It is useful in the treatment for loss of appetite, fever, skin disease, diarrhea, bronchial asthma, intrinsic hemorrhage, poisoning, pediatric rejuvenative rasayana and in nutrition disorders(Akash et al 2022)

The demand for squashes and syrups goes up in summer and in winter it will be very less. Orange squash, mango squash, etc., will find a reasonably good market all-round the year for their nutritional quality. (Peter Akubor et al.,2017) This focus on development of muskmelon and sarsaparilla fruit squash. Which could be find importance of health and refreshing drink by adding blend of both muskmelon and sarsaparilla roots and we aim to assess the sensory properties and proximate analysis of the product. characteristic with a familiar lingering after taste and smell of vanillin, the substance that is in *Vanilla plantifolia* Andran orchid used in ice creams, chocolates, drinks, etc. The drink prepared from roots is locally called nannari or sugandhapala or sarsaparilla. (Indian Sarsaparilla) roots are also mixed to get cooling effect. The drink is medicinal, which cools the system, gives good appetite and act as blood purifier. The roots are being used in Ayurveda, the ancient Indian system of medicine to stimulate appetite, relieve and as a general tonic. Indian sarsaparilla(*Hemidesmus indicus*) in ayurvedic It is also used as demulcent, diaphoretic, diuretic, and anticonvulsant, antidiabetic, antiatherosclerosis and in the treatment of epilepsy and central nervous system disorders.It is useful in the treatment for loss of appetite, fever, skin disease, diarrhea, bronchial asthma, intrinsic hemorrhage, poisoning, pediatric rejuvenative rasayana and in nutrition disorders(Akash et al 2022)

Squash is non-alcoholic concentrated syrup made from fruit juice, water and sugar or sugar substitute. Squash is mixed with certain amount of water before drinking. Fruit squashes are becoming popular relative to synthetic beverages because of their taste, flavour, nutritive value and storage stability. Among all beverages, squash is popular all over the world as nutritious soft drink [. Fruit squash could be consumed by older infants, children and adults to meet nutrient needs particularly those of micronutrients. Fruit beverages are relished very much when served in chilled condition especially during summer, which are nutritious and

healthy. Orange squash, mango squash, etc., will find a reasonably good market all-round the year for their nutritional quality. (Peter Akubor et al.,2017). Focus on the development of muskmelon and sarsaparilla fruit squash which could be find importance of health and refreshing drink by adding blend of both muskmelon and sarsaparilla roots and we aim to assess the sensory properties and proximate analysis of the product.

MATERIALS AND METHODS:

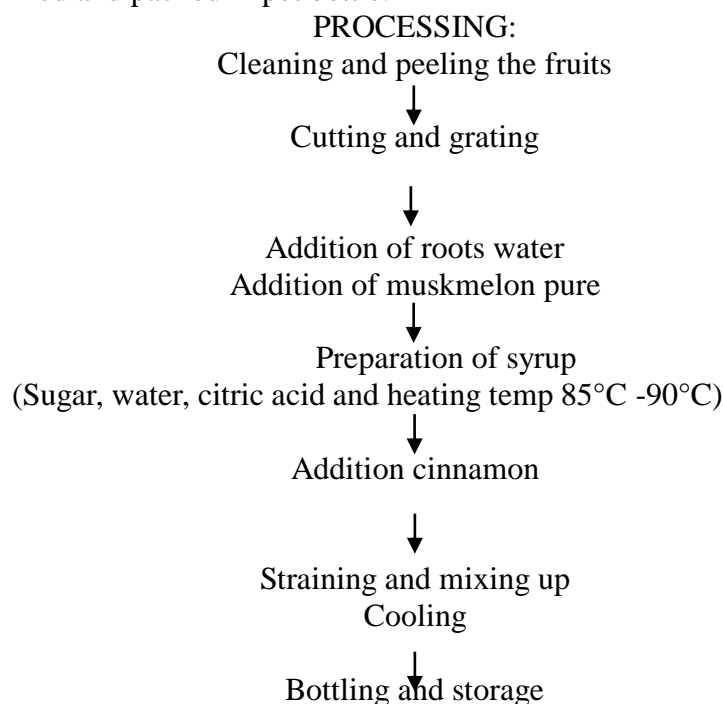
The preparation of squash which is rich anti-oxidants by incorporating sarsaparilla roots. The squash was prepared by the combination of musk melon with sarsaparilla. sarsaparilla was used in different percentage for making fruit squash. This sample was subjected to the further chemical and nutritional analysis

RAW MATERIALS:

- ✓ Muskmelon fruit.
- ✓ sarsaparilla roots.
- ✓ Jaggery powder.
- ✓ cinnamon.

Methods:

Extraction of muskmelon: Fresh and fully ripe musk melon was used for squash. Muskmelon was washed thoroughly and peeled. Collected by cutting out the flesh of muskmelon after removing seeds. The slices are blanched by boiling in water for 3 minutes and cooled. (Jothi et al.,2014)Preparation and processing: Cleaning and properly washing muskmelon and sarsaparilla roots and peeling off muskmelon and cutting the pulp and weigh it. Cleaned roots are crushed and soaked in water for 12 hours and stained the water. The stained water is taken add with jaggery powder and boiled at temperature of 85 °C to 90 °C. slowly its forms into syrup. In syrup muskmelon slices and cinnamon are added and mixed well. And 3g citric acid is added. After adding citric acid. Sugar is added 50g and stirred well. The squash is formed as thick formation and cooled at temperature 30 °C. The squash kept at mixer and grinded then squash is filled and packed in pet bottle.



RESULT AND DISCUSSION:

Preparation of the sample as seen in table 1. Composition of ingredients used in preparation of the sample squash.

TABLE -1 Different variations of sample with measured ingredients

Ingredients	Trail 1	Trail 2	Trail 3
Musk melon	200 g	200g	200g
Sarsaparilla root	30g	45g	55g
Jaggery powder	200g	200g	200g
Cinnamon	2g	2g	2g
Sugar	50g	50g	50g
Citric acid	3g	3g	3g

Moisture: The moisture content of the sample was determined by using the method of (AOAC 2007)

Procedure:

Ash: The sample (5 g) was kept in a muffle furnace and asked at a temperature not exceeding 525 C for 6 hours. The ash was then cooled in a desiccator and weighed. The ash content was recorded as g per 100 g-fresh weights (g/100 g-fw). (Marshall et al.,2010)

protein: Biuret method

Brix:

The refractometer shows a set of lines with numbers on the edges, which correspond to a Brixnumber. It shows a distinct line, usually a split between blue or grey and white, which is the Brix number of the sample (Martínez-Manuel et al., 2016).

Titrateable acidity

The titrateable acidity is often expressed in terms of a specific acid, such as tartaric acid in wine or citric acid in fruit juices. Use the following formula to calculate the titrateable acidity (Sadler, G.D et al.,2010)

Titrateable Acidity (g/L) = (Volume of sample (L)Volume of NaOH used (L)×Normality of NaOH×Equivalent weight of acid)

Quality Evaluation:

Appearance: Assess the colour, texture, and overall appearance of the squash. They should have a vibrant colour and a smooth texture.

Flavour: Taste the squash to evaluate the flavour profile. They should have a balanced sweetness with noticeable muskmelon and sarsaparilla flavour.

Texture: Check the texture of the squash for thickness. They should have a pleasing mouth feel. Overall satisfaction
Enjoyment: Solicit feedback from testers to gauge overall enjoyment and with the squash

Sensory evaluation:

Sensory evaluation is one of the important criteria for analysing and accepting of any food product by means of sense, taste, and touch. The sensory evaluation for formulation and quality evaluation of muskmelon squash is carried to evaluate the acceptability on the basis of texture, appearance, taste, smell, and overall acceptability by using nine – point hedonic scale method by 10 trained panel members. Based on the results of the sensory evaluation any one of the variations will be selected for further analysis. (Jenny joseph et al., 2015)

Sensory Evaluation of Formulated squash: The results of sensory evaluation of formulated two variation is exhibited in the Table 2

Table - 2 Sensory Evaluation of Formulated squash

S.No	Trails	Colour	Appearance	Texture	Smell	Taste	Over All Acceptability
1.	T1	6	7	8	6	5	6
2.	T2	7	8	9	7	7	7
3.	T3	9	8	9	9	8	9

The mean score of the sensory evaluation is obtained for the trails (**T3**) by overall acceptability. Therefore, from the results it is concluded that the Squash formulated with muskmelon and sarsaparilla scored maximum score so it was further subjected to quality analysis.

Physico- Chemical Analysis:

The squash sample and musk melon squash incorporated with sarsaparilla roots the acceptance squash are subjected to chemical analysis i.e. Moisture, ash, brix, Acidity.

Table - 3 Physiochemical Properties of Selected squash (T2)

S.no	Physical properties	Trail 2 Squash
1.	pH	5.3
2.	Moisture	55
3.	Titrateable Acidity (%)	0.25
4.	Ash	0.22
5.	Tss Brix	49

In this current investigation Composition analysis of musk melon squash incorporated with Indian sarsaparilla roots is required calculate the sugar and water requirements. From Table 3 it is seen musk melon is very much rich in terms of TSS (55%) and Ash (0.22%), moisture (55%), brix (49%) and. The acidity of the food products is a consequence of their formulation, including the amount and type of ingredients, additives and preservatives used. (Hamid salari et al.,2012)

Nutritional Analysis:

Nutritional analysis of the ice popsicles such as energy, carbohydrates, fat and vitamin c were performed and the results are exhibited in the table 4.

Table – 4 Nutritional analysis of Squash

S.NO	Parameters	Value
1.	Energy (kcal)	48
2.	Carbohydrates (gm)	10
3.	Sugar (gm)	7
4.	Protein (gm)	2
5.	Vitamin c (mg)	36

The results of the study concludes that trail t3 product with acceptable sensory properties were mostly rated, high antioxidant, vitamin c, (jai Prakash Singh et al., 2013). Enhance the nutritional quality of squash and addition of jaggery provides essential minerals like iron, calcium, magnesium, and potassium, the natural sweetness of jaggery complements the refreshing taste of muskmelon and the unique flavour of sarsaparilla, creating a delicious taste. The energy content of the squash was found to be 48 ± 0.70 kcal per 100g and the (Martins et al., 2018).

CONCLUSION:

Based on overall statistical analysis of all attributes T3 was mostly preferred by sensory panel. Result of muskmelon squash incorporated with sarsaparilla roots has proven to be a successful and promising endeavour. The resulting beverage offers a unique combination of taste and health benefits, making it an attractive option for health-conscious consumers. This developed formulation is analysed physiochemical properties and quality Assessment. Innovative product has the potential to make a significant impact in the functional beverage market, providing a delicious and nutritious choice for consumers seeking to enhance their well-being through their dietary choices.

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