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"Studies on Preparation of Value-Added Amla Squash with Herbs"

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Abstract: Squash is a concentrate drink beverage, which must be diluted with water before consumption. Herbal extracts are added in the fruit extract as to enhance the sensory and therapeutic value ofthe product. Amla is one of the precious gifts of nature to mankind. Amla, has been used in Ayurveda, the ancient Indian system of medicine since ancient times. The benefits of Amla, Ginger, Tulsi and Mint which is having antibacterial, anticarcinogenic, antiemetic, antiviral, antitumor, anti-cardiotoxic properties which officious for treatment of diabetes, cancer arthrosclerosis, liver etc. Herbs have medicinal, aromatic, phototherapeutic properties. It is richsource of micro nutrient and phenolic compounds. The amla with herbs squash are taken in daily diet then it's helpful to remove the toxic elements from the body Utilization of the amla with herbs in the diet or by incorporation and optimizing their use in fruit beverages, an individual will get all the benefits related to health and also reduces the risk of serious diseases like cancer.
Keywords: Therapeutic, Anticarcinogenic, Phenolic compounds etc.

Introduction:

Squash is a concentratedrink beverage, which must be diluted with water before consumption. The main constituent of squash is sugar syrup mixed with fruit extract. Nowadays, herbal extracts are added so as to enhance the sensory and therapeutic value of the product. *Phyllanthus emblica*, commonly known as Indian Gooseberry (Amla) is a fruit with many therapeutic uses. It is one of the precious gifts of nature to mankind. Amla, has been used in Ayurveda, the ancient Indian system of medicine since ancient times. It has been used for treatment of several disorders such as common cold, scurvy, cancer and heart diseases. It is believed that the major constituent responsible for these activities is vitamin C (ascorbic acid). Not only it is a rich source ofVitamin C, 1 g of vitamin C per 100 ml fresh juice (Krishnaveni*etal.*,2011), but also the Vitamin is quite stable during processing when compared to the Vitamin C present in other citrus fruits(Khopde*etal.*, 2001)

Now a day's people are suffering from number of diseases like diabetic,Blood Pressure,cancer,obesity etc.due to their life style and food habits.Ready to serve beverages has made a place in the diet of people especially in today's world of, fast pace living. Ready to serve juices provides instant and quick serving beverages, which is hassle free, easy and quick to serve, as it overcome to strenuous method of preparing fresh juice. Understanding

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the benefits of Amla, Ginger, Tulsi and Mint which is having antibacterial, anticarcinogenic, antiemetic, antiviral, antitumor, anti-cardiotoxic properties which officious for treatment of diabetes, cancer arthrosclerosis, liver etc. Herbs have medicinal, aromatic, phototherapeutic properties. It is rich source of micro nutrient and phenolic compounds.

Amla:

The berry known as amla, or "Indian Gooseberry," is a member of the *Euphorbiaceae* family (*Emblica officinalis Gaertn*). One of the less important fruit crops with significant commercial value is aonla. Even without much care, it is quite hardy and incredibly lucrative. It is more well-known in Uttar Pradesh than in other states that are close by, such Rajasthan, Haryana, Punjab, Andhra Pradesh, Maharashtra, Madhya Pradesh, etc. It is employed in the Indian medical systems of Ayurveda and Unani. This fruit has laxative, diuretic, cooling, and bitter properties.It helps with haemorrhages, leucorrhea, jaundice, cough, diarrhoea, dysentery, dyspepsia, anaemia, and atherosclerosis (Tewari *et al*., 2021). It has properties that are cardiotonic, antibacterial, anticarcinogenic, antiemetic, antioxidative, antipyretic, antitumor, and antiviral. The fruit has roughly 20 times more vitamin C than citrus fruits and is a good source of ascorbic acid. The presence of polyphenols and leucoanthocyanins in anola fruit accounts for the stability of ascorbic acid and the fruit's astringency. Yet, due to its intense acidity and astringent flavour, it is rarely eaten as fresh fruit.As a result, before aonla juice can be drank, it must be transformed into certain beverages. This bitter fruit has been transformed into a number of high-value goods, including RTS, nectar murabba, pickles and candies, herbal squash, herbal jam, sauce chayvanprash, and triphala. According to (Chauhan et al. 2005), aonla has a great deal of potential for processing into a variety of high-quality products because of its excellent nutritional and therapeutic values. However, aonla fruits are astringent and lack an appetizingcolour and flavour, making them unsuitable for making ready-to-serve or other beverages.If aonla pulp is combined with guava, jamun, jackfruit, and mango pulp, there is a good chance that the resulting drinks will be of exceptional quality because guava has a nice flavour and is a good source of vitamin C, minerals, and antioxidants. Both mango and jackfruit are well renowned for their appealing colours, delectable flavours, and vitamin A content. In instance, iron, calcium, phosphorus, and vitamins A and C are abundant in jamun, which is also widely recognized for treating diabetes and diarrhoea.

Herbs-

Herbs are valuable for medicine and aromatic property. Thousands of year knowledge of herbs has been handed down from generation to generation as a natural treatment of diseases different herbs are used. Herbs are used as flavoring, culinary, cosmetic, beauty and body care. It gives pharmaceutical effect due to alkaloids and glycosides also rich in volatile oil gives pleasurable aroma. Oil effective against storage fungi, bacteria, insects and other harmful microorganism.

People's and communities' health depends heavily on medicinal plants. Because these plants contain chemical active compounds that affect the human body in certain ways, they are

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considered medicinally important. Alkaloids, tannins, flavonoids, and phenolic chemicals are at the top of the list of plants' chemically active (bioactive) ingredients. In many cases, these indigenous medicinal plants may also be employed for therapeutic reason.

Ginger

Ginger is native to Southeast Asia. Plants in the family *Zingiberaceae*, which includes ginger (Zingier officinal Roscoe), are rhizognatous, monocotyledonous plants. For this reason, it has a fragrant scent and a very strong flavor. Gingerol (ginger oil) and zingiberene (ginger essentialoil) are both pleasant and spicy. It comprises 80.9 percent moisture, 2.3% protein, 0.9 percent lipids, 1.2 percent mineral content, 2.4 percent fibre and 12.3 percent carbohydrate in fresh ginger rhizome (zadch and kor, 2014).

Young ginger rhizomes have a very mild flavour and are luscious and meaty. They are frequently prepared as an ingredient in numerous cuisines or pickled in sherry or vinegar as a snack. Moreover, they can be brewed in hot water to make ginger tea, which frequently includes honey. There is evidence to support the use of ginger as a food preservative for killing dangerous germs.

Mint

A member of the Labiatae family is often referred to as mint leaves (*Mentha spicataL*.) (*Laminaceae* Family). Everywhere in the globe, it is cultivated for its unique herbal qualities, making it one of the most popular herbs in cultivation. Quadrangular green or purple stalks are produced by these herbaceous rhizome plants. There are a number of studies (Dattatreya *et al*., 2011).

The importance of micronutrients cannot be overstated. calcium and iodine are essential for bone and tooth growth and thyroid development respectively. In order to keep the heart healthy, magnesium regulates the frequency and intensity of heartbeats as well as the activity of the heart's muscles.

Materials and Methods

The experiments related to Process **“**Development ofRTS Powder by Admixing Selected Fruit and Herbs.” will be carried out in the research laboratory of Food science and Technology, Warner college of Dairy Technology, Sam Higginbottom University of Agriculture, Technology & Sciences, Prayagraj. (U.P.)

Procurement of raw material

For preparation of powder for RTS, the raw ingredients like Amla, Herbs and Sugar will be purchased from local market of Prayagraj.

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FSSAI Specification for Squash

Parameters	Percentage (%)
Juice content	25
TSS	40
Acidity	1

Standardized the different recipe for preparation of Squash

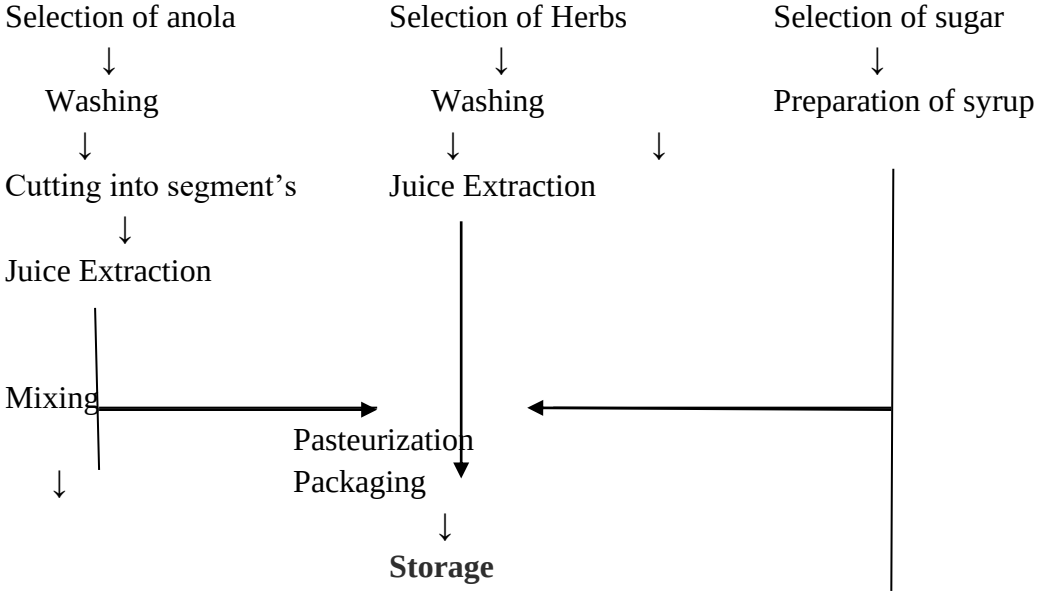
Sample 1

Sr.No	Name of Ingredients	Sample (ml)		
		A_1+G	A_2+G	A_3+G
1	Amla juice	300	400	500
2	Ginger Juice	100	100	100
3	Sugar Syrup	600	500	400

Sample 2

Sr.No	Name of Ingredients	Sample (ml)		
		A_1+M	A_2+M	A_3+M
1	Anola juice	300	400	500
2	Mint Juice	100	100	100
3	Sugar	600	500	400

Flow diagram of squash preparation:



1.Determination of Physico-Chemical properties

1.1 Total soluble solids (T.S.S)

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The amount of juice's total soluble solid (TSS) was calculated using a digital hand refractometer. In order to express the mean value as a percentage of ^{0}Bx, the reading was corrected to 20^{0}C. (AOAC, 2000).

1.2 Titratable Acidity

By titrating a 5 ml aliquot of the sample against a standard 0.1N sodium hydroxide solution and using phenolphthalein as an indicator, the titratable acidity of the sample was calculated. The percentage of citric acid present in the 100 ml liquid sample was used to express the total titratable acidity (Ranganna, 2011). Formula was used to calculate it,

$$\text{Acidity (\%)} = \frac{\text{Titre value x N of alkali x Volume made up x Equivalent weight. of acid x 100}}{\text{Aliquot x Volume of sample taken x 1000}}$$

1.3 Determination of Vitamin ‘C’

For the purpose of determining vitamin C, Hussian et al. (2006).'s methodology was applied. A 25 ml conical flask weighed 1g of each ground sample. Following the addition of 10 ml of the oxalic acid (0.05 M)-EDTA (0.02 M) solution, the mixture was left to stand for 24 hours to allow for the necessary reaction time. The samples were filtered through Whatman Filter Paper No. 1 (0.45 m) after 24 hours.In a separate 25 ml volumetric brown flask, 2.5 ml of each sample was then transferred, and 2.5 ml of the oxalic acid (0.05 M)-EDTA (0.02 M) solution was then added. Then, in each volumetric brown flask, acetic acid (0.5 ml), sulphuric acid (5% v/v) solution (1 ml), and ammonium molybdate solution (2 ml) were added in different amounts before the volume was brought to 25 ml with distilled water. A visible spectrophotometer was used to measure the absorbance at 760 nanometers.

1.4. Determination of Carbohydrate

The sample was precisely weighed (0.5 g) in a test tube, placed in an ice water bath for a short period of time, and then added with cold (72% H2SO4) while being gently stirred. To achieve a final concentration of 2 N with respect to acid, the thick paste was thinned out using distilled water. After that, it was refluxed for 3–4 hours at 98°C to finish the hydrolysis process. Using glucose as a reference, the phenol-H2SO4 technique was used to quantify the sugar content. On a spectrophotometer, the orange-yellow colour was read at 480 nm. The concentration of sugar in the hydrolysate was determined from the calibrated curve, and the percentage of total sugar in the sample was measured (Ranganna, 2001).

1.5. Determination of Protein:

By using the Micro Kjeldhal's approach, as defined in Method No. 46-10 of the (AACC, 2000). This is based on the observation that organic substances are oxidised during digestion with concentrated sulfuric acid and catalysts, and the nitrogen is transformed into ammonium sulphate. Ammonia is released after making the reaction mixture alkaline, removed by the steam distillation, collected, and titrated.

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1.6. Determination of Fat:

Soxhlet extraction was used to determine the crude fat as per Method No. 30-10. (AACC, 2000). Following moisture analysis, the dried sample was collected in a thimble and put in the extraction tube of the Soxhlet device. In a 500 ml bottom flask linked to a Soxhlet apparatus, about 250 ml of hexane were introduced. Hexane was applied to the sample at a rate of 3–4 drops per second for roughly 5 hours to extract the fat. After recovering the solvent, the flask was placed in a hot air oven set to 40–50°C for 10 minutes. The flask was weighed after cooling in desiccators. The formula below was used to get the fat percentage.

$$\text{Crude fat}(\%) = \frac{\text{Final weight of flask} - \text{Empty weight of flask}}{\text{Weight of sample}} \times 100$$

1.7 Determination of TPC

Using the Folin-Ciocalteu technique, the extracts' total phenolic contents (TPC) were calculated. Initially, 1 ml of the material was added to a tube with 5 ml of the Folin-Ciocalteu reagent. The mixture was then given 4 ml of 7.5% (w/v) sodium carbonate. The absorbance was measured at 765 nm against a blank after 60 min of incubation at room temperature (321 degree C). The results were represented as milligrams of gallic acid equivalent (mg GAE/g dw basis) per gramme of fresh sample. Using the formula, the total phenolic content in all samples was determined,

$$C = c\ V/m$$

where, C = total phenolic content mg GAE/g dry extract

c = concentration of gallic acid obtained from calibration curve in mg/mL V = volume of extract in ml

m = mass of extract in gram.

1.8 Determination of DPPH

The diphenylpicrylhydrazyl (DPPH) assay was used to gauge the extracts' antioxidant activity. 2 mL of extract were combined with 2 mL of a 100 M DPPH solution in pure ethanol. The samples were given 20 minutes to react with DPPH, and then the reaction's end result was determined by measuring the absorbance at 520 nm (Lab Spectronic). Distilled water served as the blank for all the samples, while ascorbic acid (1% in distilled water) served as the positive control. Antioxidant activity was measured as the percentage of the DPPH radical that was inhibited, and it was visible as a change in the colour of the DPPH reagent from a deep violet to a lighter shade or colourless solution. Antioxidants react with DPPH in the DPPH radical scavenging experiment, turning it into the yellow substance a-diphenyl-picryl hydrazine. The level of discoloration reveals the sample's capacity to scavenge free radicals.

Here is how it was calculated:

$$\text{scavenging activity}(\%) = \frac{\text{Absorbance of DPPH blank} - \text{Absorbance of sample DPPH}}{\text{Absorbance of DPPH blank}} \times 100$$

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Sensory Evaluation of Squash

Sensory Evaluation Done By :9 Point Hedonic Rating Scale

Name of Sample:

Score Card	Reaction
9	Like extremely
8	Like very much
7	Like moderately
6	Like slightly
5	Neither like nor dislike
4	Dislike slightly
3	Dislike moderately
2	Dislike very much
1	Dislike extremely

Result:

Table 1 :Determination of Ginger - Amla Squash

Sr.no	**Parameters**	**A1+G**	**A2+G**	**A3+G**
1	Fat	2.98	3.01	3.54
2	Protein	3.98	4.01	4.37
3	Carbohydrate	54.77	52.88	51.34
4	Acidity	1.58	1.68	1.98
5	Vitamin C	360.37	388.68	410.98
6	TPP	280.78	288.98	310.46
7	DPPH	88.09	89.03	90.26

Table 2: Determination of Nutritional Value of Mint-Amla Squash

Sr.no	**Parameters**	**A1+M**	**A2+M**	**A3+M**
1	Fat	3.46	3.88	4.01
2	Protein	3.76	3.98	4.10
3	Carbohydrate	54.37	52.78	51.01
4	Acidity	1.55	1.67	1.80
5	Vitamin C	410.42	460.98	515.12
6	TPP	288.64	310.12	356.74
7	DPPH	90.14	90.98	91.46

Table 3: Sensory evaluation of Amla – GingerSquash:

Sr.No	Sensory attributes	**A1+G**	**A2+G**	**A3+G**
1	Color	7.0	7.5	7.0
2	Taste	7.5	8.0	7.0

3	Flavour	6.5	7.0	7.5
4	Overall Acceptability	7.0	7.5	7.1

Table 4 : Sensory evaluation of Amla - Mint Squash:

Sr.No	Sensory attributes	**A1+M**	**A2+M**	**A3+M**
1	Color	7.00	7.5	7.5
2	Taste	6.5	7.0	7.0
3	Flavour	6.5	7.0	7.0
5	Overall Acceptability	6.66	7.1	7.1

Conclusion:

According to the research work amla herbal Squash was beneficial for the human health as well as we have seen it has proved in different research paper, due to its therapeutic values we can deals with different diseases. On the basis of above results and the sensory evaluation revealed in the present study it can be concluded that this formulation can satisfy consumer taste and preferences. Hence Ginger herb extract can be used for enrichment and fortification of phenolic compound in food products. If we are taken in daily diet then it's helpful to remove the toxic elements from the bodyUtilization of the amla with herbs in the diet or by incorporation and optimizing their use in fruit beverages, an individual will get all the benefits related to health and also reduces the risk of serious diseases like cancer.

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