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Studies on Development of Ready-to-Serve (RTS) Beverage From Guava (*Psidium gujava* L.), Aonla (*Emblica officinalis* Gaertn.), Ginger (*Zingiber officinale* Roscoe) and Fennel Seed (*Foeniculum vulgare* Mill)

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ABSTRACT

The Gauva(***Psidium guajava* L.**), Aonla(***Emblica officinalis* Gaertn.**), Ginger (***Zingiber officinale* Roscoe**) and Fennel seeds (***Foeniculum vulgare* Mill**) have nutritional, medicinal, and therapeutic values. The present research was conducted at the Post Graduate Laboratory of the Department of Post Harvest Management, College of Horticulture and Forestry, Acharya Narendra Deva University of Agriculture & Technology, Kumarganj, Ayodhya (U.P.) during the year 2023–2024. In the present studies, guava juice, aonla juice, ginger juice and fennel seed water extract were blended in different ratios viz., 86:5:5:4 (T1), 72:10:10:8 (T2), 58:15:15:12 (T3), 44:20:20:16 (T4), 30:25:25:20 (T5) for the preparation of RTS. Ten

percent of blend comprising 86 percent guava juice, 5 percent aonla juice,5 percent ginger and 4 percent fennel seeds was found best on 9- point Hedonic Scale for the preparation of results RTS with 13 percent TSS, 0.3 percent acidity and 70 ppm So_2 than other blend combinations. Ascorbic acid (vitamin C), non-reducing sugars, and organoleptic quality declined with storage period whereas TSS, acidity, reducing sugars, total sugars, and browning increased with storage period. The RTS retained its organoleptic qualities upto 3 months, In results acceptable quality of the showed that guava, aonla, ginger and fennel seed can be used to make palatable RTS that can be stored 3 months with acceptable score.

INTRODUCTION

Fruit beverages encompass a variety of products including natural and sweetened juices, squash, syrups, cordials, nectars, ready-to-serve (RTS) drinks, fruit juice concentrates, and citrus juice barley water (Sudheer and Indira, 2007). These beverages are crafted from fruit pulp or juice (ranging from 1.5% to 70%) mixed with water, along with sweeteners, flavorings, colorings, and preservatives.

Guava (*Psidium guajava* L.) is widely cultivated in India, particularly in states like Uttar Pradesh, Bihar, and Madhya Pradesh. Known for its high vitamin C content (150–250 mg/100g), it also provides vitamins A and B, along with essential minerals. Due to its perishable nature, developing cost-effective processing methods is vital to manage surplus production, stabilize prices, and extend product availability through value-added forms like beverages, jelly, and cheese.

Aonla (*Emblica officinalis* Gaertn.), a deciduous tree of the Euphorbiaceae family, is primarily cultivated in subtropical, arid, and semi-arid regions and known for its resilience and high vitamin C content. Aonla possesses significant medicinal value, widely used in Ayurvedic formulations like Triphala and Chyawanprash. Developing blended RTS (ready-to-serve) beverage incorporating Aonla with fruits like kinnow, lime, pineapple, and ginger offers a nutritionally enriched and economically viable product for health-conscious consumers (Choudhary & Kathuria, 2022).

Ginger (*Zingiber officinale* Roscoe), a member of the Zingiberaceae family, is a globally cultivated crop prized for its aromatic rhizomes. India, along with China, leads global production, with 2,219 thousand tonnes harvested over 193 thousand hectares in 2022 (NHB, 2022). Rich in phenolic compounds such as gingerols, zingerone, and shogaols, ginger exhibits multiple pharmacological activities including antioxidant, anti-inflammatory, and antimicrobial effects (Wang, 2020; Ma *et al.*, 2021). It is widely used in food, traditional medicine, and commercial products like ginger oil and powder.

Fennel (*Foeniculum vulgare* Mill.), a member of the Apiaceae (Umbelliferae) family is a widely cultivated aromatic and medicinal seed spice. Originating from the Mediterranean region, fennel is grown across temperate and subtropical zones. In India, major cultivation occurs in Gujarat and Rajasthan, with an annual production of around 1.25 lakh tonnes from 0.75 lakh hectares

(Anon., 2018). Valued for its digestive and therapeutic properties, fennel is also used as a culinary spice and in industrial applications (Telci *et al.*, 2009; Mehta *et al.*, 2011).

2. Materials and Methods

2.1 Raw Materials

Guava (var. L49) and Aonla (var. NA-7) was obtained from the Horticultural Main Experiment Station, Department of Fruit Science, Acharya Narendra Deva University of Agriculture and Technology, Narendra Nagar, Kumarganj, India. Ginger (local variety) were purchased from the local market in Kumarganj, while fennel seed (var. AF2) was procured from the National Research Centre on Seed Spices, Rajasthan, India and used for preparation of ready to serve beverage.

2.2 Extraction of guava juice, aonla juice, ginger juice and fennel seed water extract

The methods applied to extract the guava juice, aonla juice, ginger juice and fennel seed water extract are shown in Fig. 1, Fig. 2, Fig. 3 and Fig. 4, respectively.

2.3 Standardization of Blends for Ready-to-Serve Beverage (RTS)

The different combinations (Treatments) of guava juice, Aonla juice, ginger juice and fennel seeds were used to prepare and organoleptic evaluation to get best one combinations for the development of palatable and quality RTS.

T_1 10% B.C. No.1 containing 86% guava pulp + 5% aonla juice + 5% ginger juice + 4% fennel seed extract + 13% Sugar+ 0.3% acidity+ 70ppm SO_2

$T_2$10% B.C. No.2 containing 72% guava pulp + 10% aonla juice + 10% ginger juice + 8% fennel seed extract + 13% Sugar+ 0.3% acidity+ 70ppm SO_2

T_3 10% B.C. No.3 containing 58% guava pulp + 15% aonla juice + 15% ginger juice + 12% fennel seed extract + 13% Sugar+ 0.3% acidity+ 70ppm SO_2

T_4 10% B.C. No.4 containing 44% guava pulp + 20% aonla juice + 20% ginger juice + 16% fennel seed extract + 13% Sugar+ 0.3% acidity+ 70ppm SO_2

T_5 10% B.C. No.5 containing 30% guava pulp + 25% aonla juice + 25% ginger juice + 20% fennel seed extract + 13% Sugar+ 0.3% acidity+ 70ppm SO_2

Preparation of RTS: RTS consisting 10% blend, 13% TSS, 0.3% acidity and 70 ppm So_2 were prepared for each blend combination of guava juice, Aonla juice, ginger juice and fennel seed. These RTS were organoleptically evaluated on 9- point Hedonic scale to find out the best combination of blend (Table-2). The technique used for RTS making is shown in Fig. 5.

2.4 Storage Studies

The prepared RTS filled into 200 ml glass bottles leaving a 2 cm headspace, sealed with crown corks, pasteurised, and stored at room temperature for storage studies. Monthly observations were recorded to monitor changes in total soluble solids (TSS), acidity, vitamin C, reducing and non-reducing sugars, total sugars, browning, and organoleptic properties at monthly interval. The TSS was determined with hand refractometer and reading was corrected at 20˚C (Ranganna, 2010). Acidity was determined by titrating a known volume of the aliquate of sample with N/10 sodium hydroxide solution, using two to three drops of phenolphthalein as an indicator, and the results were expressed as a percentage of anhydrous citric acid. To determine the vitamin C content, the sample was prepared in 3% metaphosphoric acid solution and titrated with 2,6-dichlorophenol indophenol dye until a faint pink endpoint was observed (Ranganna, 2010). The analysis of reducing, non-reducing, and total sugars was carried out using Fehling's Solutions A and B, with methyl blue as the indicator. For the estimation of non-enzymatic browning, 10ml sample was mixed with 30 ml 60% ethanol, filtered through Whatman No. 1 filter paper and absorbance was recorded at 440 nm using a UV-Vis Double Beam spectrophotometer (IgeneLabserve model), with 60% aqueous alcohol used as the blank. Non-enzymatic browning was quantified by the increase in optical density (Ranganna, 2010). To evaluate the organoleptic qualities of the RTS beverage a panel of nine semi-trained judges assessed the RTS using the Hedonic Rating Scale (Amerine *et al.*, 1965).

2.5 Statistical Analysis

The study was conducted using a completely randomized design (CRD) with three replications, and data were recorded at monthly intervals. The collected data were statistically analyzed using OPSTAT software, following the procedures described by Prof. O.P. Sheoran (2010).

3. RESULTS AND DISCUSSION

3.1 Chemical Attributes of Guava Pulp, Aonla Juice, Ginger juice and Fennel seed extract

The data related to the chemical characteristics of Guava Pulp, Aonla Juice, Ginger juice and Fennel seed extract are presented in Table 1. The Total Soluble Solids (TSS) content was found to be 11.84% in guava pulp, 9.25% in aonla juice, 2.17% in ginger juice and 8.86% in fennel seed extract, respectively. The acidity of guava pulp, aonla juice, ginger juice and fennel seed extract were recorded 0.60 percent ,1.54 percent, 0.28 percent and 0.79 percent, respectively. The vitamin C content of guava pulp, aonla juice, ginger juice and fennel seed extract were recorded 191.80 percent ,535.21 percent, 2.39 percent and 2.78 percent, respectively. The reducing sugars, non-reducing sugars and total sugars content in guava pulp were recorded

3.51 percent ,1.93 percent and 5.44 percent, respectively. Similarly finding were reported by Thakre *et al.*, (2023) found that guava pulp contains 0.25 to 0.89% acidity, 3.6 to 3.94 pH, and

41.32 to 57.00 mg/100g ascorbic acid, Wazed *et al.*, (2021) observed that guava juice contains 12% TSS, 28.87 mg/100g ascorbic acid, 0.51% acidity, Kumar *et al.*, (2020) also found that guava pulp cv. Lucknow-49 contains 12.80% TSS, 0.44% acidity, 220.00mg/100g ascorbic acid, 6.47% reducing sugars, 3.08% non-reducing sugar and 9.55% total sugars, Byanna*et al.*, Sasikumar (2013) reported that Indian gooseberry or aonla (*Emblica officinalis)* juice contains high amount of vitamin C (478.56 mg/100 ml) and Harendra and Deen (2022) revealed that ginger juice contains 2.20% TSS, 0.26% acidity, 1.90 mg/100g vitamin-C, 0.63% reducing sugars, 1.12% non-reducing sugar and 1.75% total sugars, Shukla *et al.*, (2018) considered that fresh ginger juice contains 2.4% TSS, 0.6% acidity and 2 mg/100g vitamin-C.

3.2 Standardization of the Blends

s3.2.1Organoleptic quality of RTS prepared from different blends guava pulp, aonla juice, ginger juice and fennel seed extract

The data recorded on organoleptic quality of RTS prepared from various combinations of guava pulp, aonla juice, ginger juice and fennel seed extract blends are presented in Table 2. Results reveals that the treatment no. 1 comprising86% guava pulp,5% Aonla juice, 5% ginger juice and 4% fennel seed extract was found to be superior over rest treatments and also differed significantly with other treatments. Thus 10% blend comprising 86% guava pulp, 5% Aonla juice, 5% ginger juice and 4% fennel seed extract can be used to prepare quality palatable RTS containing 13% TSS, 0.3% acidity and 70 ppm So_2 can be used to obtain quality palatable RTS beverages.

3.2.2 Biochemical changes during storage of prepared products

"Data pertaining to biochemical changes during storage of RTS presented in Table 3. which indicates that total soluble solids increased gradually after one month of storage from 13.00 ºbrix to 13.42 ºbrix. This change might be due to the conversion of polysaccharides into simple sugars". Similar increasing trend in TSS during storage was reported trend in TSS during storage was reported Bharati *et al.* (2023) on sweet orange, guava and ginger based blended RTS, Nadella *et al.* (2022) on guava and pineapple blended RTS, Hegde *et al.* (2018) on kokum, aonla and ginger based RTS, The total acidity of RTS increased gradually during storage. Total acidity was increased from 0.30 per cent at initial day to 0.70 per cent at final days". Degradation of pectic substances and formation of organic acid. Similar results that an increase in acidity content during storage of products were reported by Pali *et al.* (2023) in carrot, orange and ginger RTS blends beverage, Nadella *et al.* (2022) in guava and pineapple

blended RTS, Shukla *et al.* (2018) in Aloe vera, aonla and ginger blended RTS. Similarly, Gautam (2015) noticed that "acidity content increased in RTS, squash and syrup prepared from guava and aloe vera gel during storage period under ambient condition. Vitamin C content was continuously decreased from the first day (18.63 mg/100) to the end of storage (16.38 mg/100g) throughout the storage period. This decrease in vitamin C content might be due to the oxidation of ascorbic acid into dehydro-ascorbic acid". The loss of vitamin-C in RTS of different fruits based beverages during storage at ambient temperature was also reported by Pali *et al.* (2023) on carrot, orange and ginger RTS blends beverages, Bharati *et al.* (2023) on sweet orange, guava and ginger based blended RTS, Nadella *et al.* (2022) on guava and pineapple blended RTS, Selvi *et al.* (2018) on guava, lime and ginger blended RTS Beverages. The reducing sugars and total sugars of blended RTS, increased continuously during entire period of storage and it was increased from 3.47 per cent to 4.98 per cent and 11.75 per cent to 12.67 per cent respectively. The increase in reducing sugars of products might be due to conversion of non-reducing sugar into reducing sugars. This finding was supported by Tiwari and Deen noticed that total sugars and reducing sugars increased, during storage period in blended beverages prepared from bael and aloe vera. Similar considerations were also reported by the earlier workers like Pali *et al.* (2023) in carrot, orange and ginger RTS blended beverage, Bharati *et al.* (2023) in sweet orange, guava and ginger based blended RTS, Shagiwal and Deen (2022) in strawberry, Aloe vera and ginger based RTS beverage, Kausar *et al.* observed that "reducing sugars increased from 3.75 to 4.32% while non reducing sugar decreased from 9.53 to 8.91% in RTS prepared from aloe vera and lemon juice during storage of 90 days". The increase in total and reducing sugars. This increment in sugars also may be due to hydrolysis of some carbohydrates into sugars. Further similar trend in changes of sugars content with the advancement of storage period was observed. Mishra and Sangma (2017) found "an increasing trend in reducing sugars and decreasing trend in total sugars during 60 days of storage period in all aloe vera, ginger, sweet lime and aonla RTS drinks at ambient temperature when filled into PET bottles".

The non-reducing sugar content of RTS showed gradual decreasing from 8.28% to 7.69% Antithesis to reducing and total sugars, reduction in non-reducing sugar might be due to conversion of reducing sugar. The results are similar with Harendra and Deen notice that reducing sugars and total sugars increased whereas, non-reducing sugars decreased continuously up to the end of the storage period under ambient temperature (20.1-29.4 C) in syrup prepared from blend of mango, citrus, aloe vera and ginger in case of both glass and polypet bottles. Singh *et al.* (2018) noticed that "reducing sugars, total sugars increased whereas, non-reducing sugar decreased in blend RTS prepared from mango and aloe vera during two months storage at 25 ˚C. The changes in browning could be mainly because of Maillard reaction between organic acids with sugars and amino acids which lead to the formation of brown pigment. The browning was also found to be increased in lime-aonla spiced RTS beverages during storage. The results are similar with Anand mentioned that browning increased in aonla and aloe vera blended RTS and squash during storage under ambient temperature, Neelam *et al.* (2024) reported that browning increased in blended RTS, prepared from pomegranate, aonla and aloe vera during storage under ambient condition, Pali *et al.* (2023) on RTS developed from blend of carrot, orange and ginger, Shagiwal and Deen (2022) on RTS prepared from blend of strawberry, Aloe vera gel and ginger, Gautam (2015) on blended beverages prepared from guava and Aloe vera. Organoleptic score decreased gradually with increase in storage period at temperature and acceptability of blended RTS under studies was maintained up to three months. The score was significantly decreased from 8.15 at first day to 7.13 at final day of storage. Similar findings were reported by Neelam *et al.* (2024) reported that "the organoleptic score decreased continuously with storage period. The RTS prepared from blend of pomegranate, aonla and aloe vera gel could be stored up to three months under ambient conditions with acceptable quality, Sangma *et al.*(2017) showed that the physico-chemical and the sensory quality of the RTS blends (Aloe vera + sweetlime + amla + ginger) were acceptable up to 60 days of storage.

CONCLUSION

It may be concluded from above findings that 10 percent of the blend containing 86% guava pulp, 5% aonla juice, 5% ginger juice and 4% fennel seed extract was found best on Hedonic Scale by the panel of semi trained judges for the preparation of palatable quality of RTS adjusted to 13 % TSS, 0.3% percent acidity and 70 ppm So2.The TSS, acidity, reducing sugars, total sugars and browning was increased, whereas vitamin-C, non-reducing sugar, and organoleptic quality was decreased during storage under ambient temperatures. The RTS can be stored with acceptable quality up to 4 months under ambient temperatures.

REFERENCES

- Neelam. and Deen, B. (2024). Studies on blend beverage form pomegranate (*Punica Granatum* L.), aonla (*Emblica Officinalis* Gaertn.) and aloe vera (*Aloe Barbadensis* Miller). *Journal of advances in biology & biotechnology*, 27, 980- 990.https://journaljabb.com/
- Harendra. and Deen, B. (2022). Studies on syrup preparation from mango (*Mangifera indica*L.), citrus (*Citrus aurantifolia* Swingle.), aloe vera (*Aloe barbadensis* Miller.) and ginger (*Zingiber officinale* Rosc.) blends. *International journal of plant and soil science*,34(6):70-82.https://doi.org/10.33545/26646781.2022.v4.i2a.74
- Anand, P.K. (2012). Studies on development of blended beverages of aonla (*Emblica officinalis* Gaertn.) and aloevera (*Aloe barbedensis* Millar.) M.Sc. Thesis, N. D. Universityof Agriculture& Technology, Faizabad, (U. P.).
- Kausar, H.,Parveen, S.,Saeed, S.,Ishfaq, B. and Ali, M.A.(2016). Development and standardization of ready to serve aloe vera-lemon functional drink. *Journal of Environmental Science, Toxicology and Food Technology*,10(4):47 52.https://www.semanticscholar.org/
- Sangma,C.M.D.andMishra,L.K. (2017).Quality attributes, phytochemical profile and storage stability studies of functional ready to serve (RTS) drink made from blend of *aloe vera*, sweet lime, amla and ginger. *Journal of food science and technology*,54, 761–769.https://link.springer.com/
- Tiwari, D.K. and Deen, B. (2014). Studies on development of squash from bael (*Aegle marmelos* Correa.) pulp and aloe vera (*Aloe Barbadensis* Miller.) gel blend. *Annals of Agri Bio Research*,19(3):483-487.https://www.researchgate.net/
- Chaudhary, M., Deen, B., Gautam, D.K. and Mishra, K.K. (2017). Studies on development of squash from mango (*Mangifera indica* L.) pulp and aloe vera (*Aloe barbadensis* Miller.) gel blend. *International Journal of Current Microbiology and Applied Sciences*,6(7):1962-1969.https://ijcmas.com/
- Shagiwal, M. and Deen, B. (2022). Studies on development of ready-to-serve beverage from strawberry (*Fragaria ananassa* Duch), ginger (*Zingiber officinale* Rosc) and aloe vera (*Aloe barbadensis* Miller) blend. *The Journal of Pharmaceutical Innovation*,11(7):2308-17.https://www.thepharmajournal.com/
- Gill, H.S., Kaushal, N., Kaur, M., Jyoti, S. and Singh, G. (2020).Standardizationof recipe for ready to serve ofkagzi limefruit blendedwith aloeveragel and rose juice. *Journal of Pharmacognosy and Phytochemistry*,9(3): 1739-1742.https://www.phytojournal.com/
- Balaji Vikram and Purnima Singh Sikarwar. (2018).Development and evaluation of physico-chemical properties of kinnow - aonla - aloe vera blended squash.

International Journal of Current Microbiology and Applied Sciences,7(4): 113-122https://www.researchgate.net/
- Bharati, S., Prasad, V.M., Bahadur, V. and Prajapati, P. (2023). Standardization of blended ready to serve beverages from sweet orange (*Citrus sinensis*), guava (*Psidium guajava*) and ginger (*Zingiber officinale)*. *The Journal of Pharmaceutical Innovation*,12(6):492-495. https://www.thepharmajournal.com/
- Nadella KV, Singh D, Bahadur V., Yadav A., Nath S. and Srivastava KS. (2022).Physico-chemical characteristics of blended beverages prepared from guava and pineapple. *The Asian Journal Of Microbiology, Biotechnology And Environmental Sciences*,24(4):817-822. https://www.researchgate.net/
- Pali O., Verma A. and Gunjeshree G. (2023). Quality assessment of ready-to-serve beverage from blends of carrot, orange and ginger juices. *The Journal of Pharmaceutical Innovation*,12(6):4657-4663. https://www.thepharmajournal.com/
- Gautam, A. (2015). Studies on blending of guava (*Psidium guajava* L.) and *aloe vera* (*Aloe barbadensis* Miller.) pulp for beverage development [MSc Thesis]. Faizabad (U.P.): N. D. University of Agriculture and Technology Kumarganj.
- Shukla, P. and Hussain S. (2018). Development and storage studies of therapeutic made ready to serve from blend of *aloe vera* with ginger, sweet lime juice and aonlajuice.*International Journal of Applied Science and Engineering*,4(2):20-31. https://ijseas.com/
- Wazed, A.M., Gupta, D.M., Dey, S., Majumder, K.R., Amina, A. and Shakib, R.S. (2021). Preparation and quality evaluation of carbonated guava fruit drinks produced from BARI Payera-4. *Malaysian Journal of Halal Research Journal*,ISSN: 2616-1923. https://www.researchgate.net/
- Thakre, S.V., Kad, P.V., Yenge, B.G. and Kamble, J.K. (2023). Some physico-chemical properties of mix juice of guava, aonla and ginger.*Journal of Agriculture Research and Technology*,48(2):297-301. https://www.jart.co.in/
- Kumar, A., Pathak, S., Yadav, A., Kumar, V.A., Yadav, K.A. and Singh, D. (2020). Studies on qualitative traits and effect of annatto colour on beverages of guava pulp cv. Lucknow-49. *International Journal of Current Microbiology and Applied Sciences*,9(12):3303-3307. https://www.researchgate.net/
- Byanna, C.N. and Gowda, I.N. (2012). Standardization of sweet orange and pomegranate blended RTS beverage preparation and its storage.*Crop Research.*,44:109-115.https://www.indianjournals.com/
- Selvi, J., Banumathi, P., Kanchana, S. and Kamaraj, P. (2018). Studies on preparation of guava-lime-ginger ready to serve (RTS) beverage. *International journal of chemical studies*,6(5):336-340.https://www.chemijournal.com

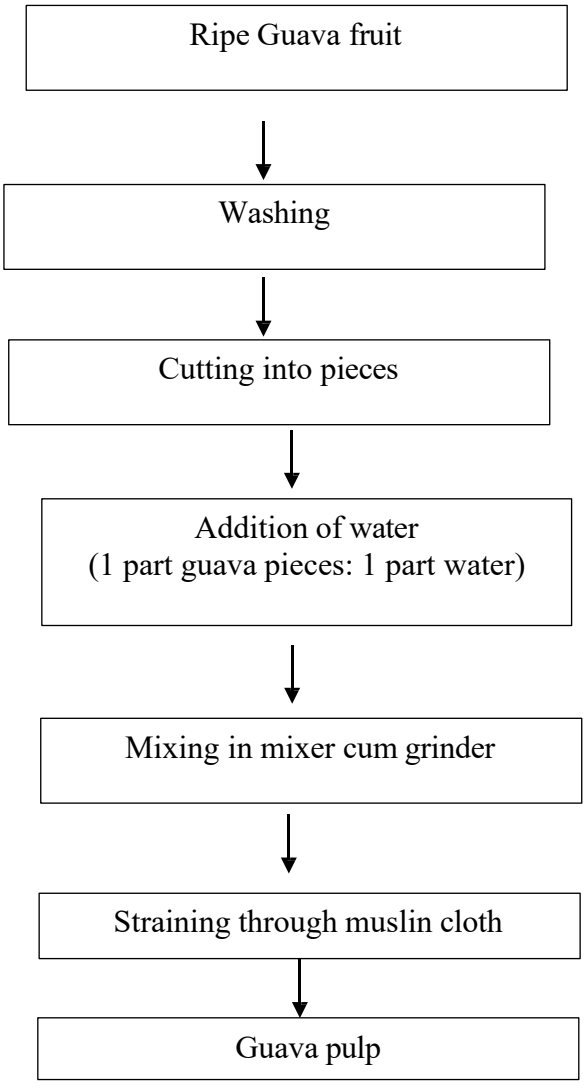

Fig :1 Flow chart of pulp extraction from guava fruits

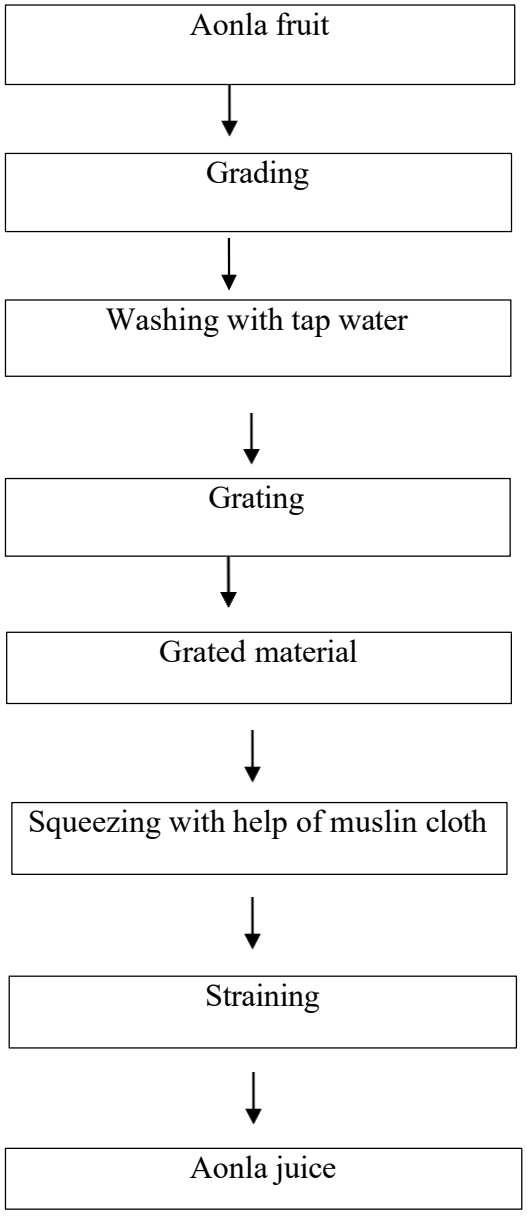

Fig 2. Flow sheet for extraction of aonla juice

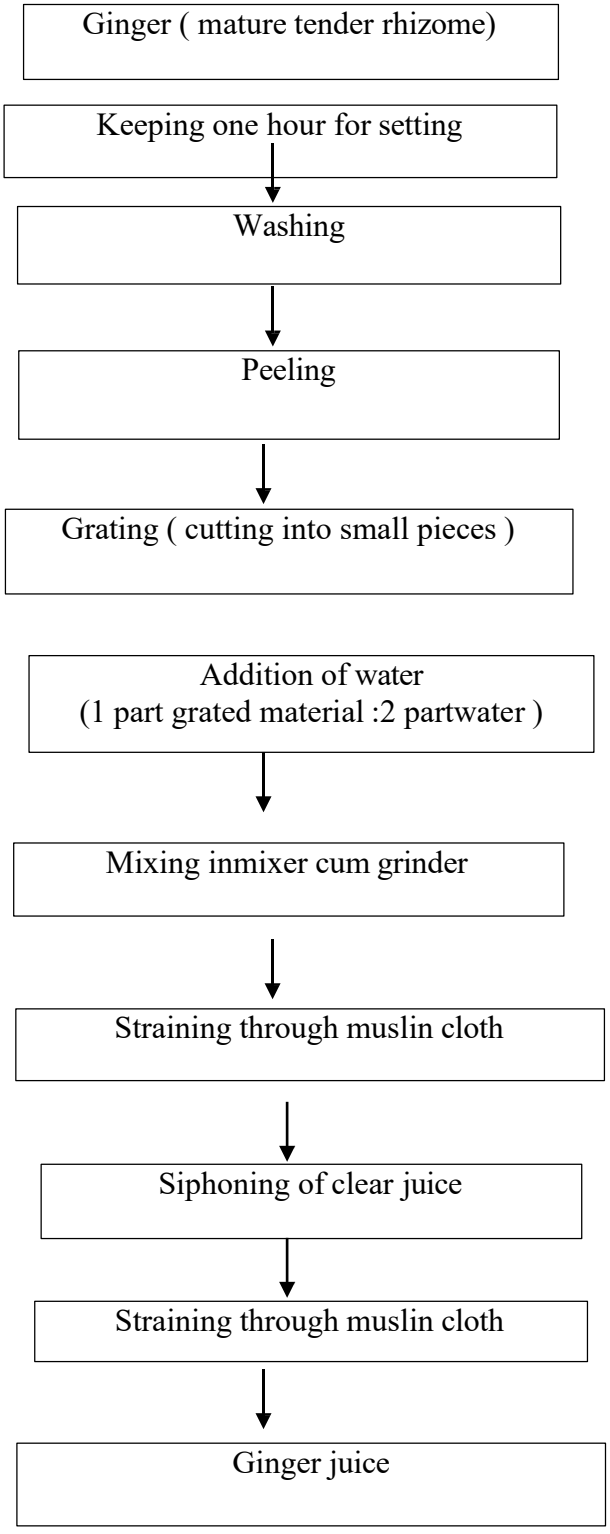

Fig 3. Flow sheet for extraction of ginger juice

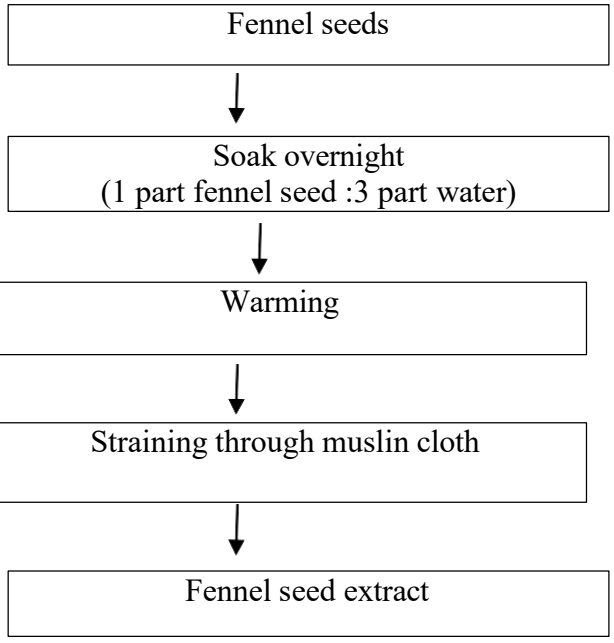

Fig 4. Flow sheet for extraction of fennel seed extract

Blending of guava juice, aonla juice, ginger juice and fennel seed extract as per combinations

Dissolving sugar + citric acid +water as per calculations

Measuring the amount as per calculations

Addition of preservatives

Mixing with syrup

Syrup

Straining through muslin cloth

Homogenization

Bottling

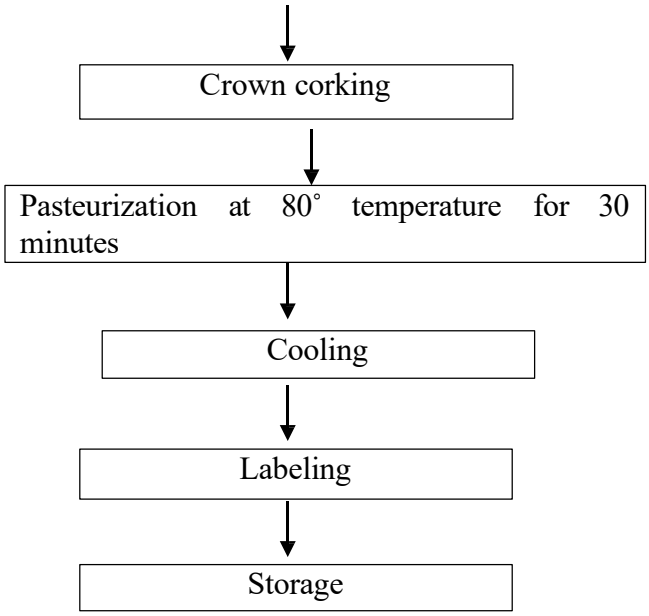

Fig.:5 Flow chart for the preparation of RTS

Table-1 Chemical attributes of guava pulp, aonla juice, ginger juice and fennel seed extract

Raw Materials	Chemical attributes					
	Mean value					
	T.S.S (%)	Acidity (%)	Vitamin- C (mg/100g)	Reducing sugars (%)	Non-reducing sugar (%)	Total sugars (%)
Guava pulp	11.84	0.60	191.80	3.51	1.93	5.44
Aonla juice	9.25	1.54	535.21	5.28	3.21	8.49
Ginger juice	2.17	0.28	2.39	0.45	1.12	1.57
Fennel seed extract	8.86	0.79	2.78	1.19	1.47	2.66

Table-2 Organoleptic quality of RTS prepared from different blend combinations of guava pulp, aonla juice, ginger juice and fennel seed extract

Blend combinations (No.)	Different combinations of blend (RTS)					Organoleptic quality	
	Guava pulp (%)	Aonla juice (%)	Ginger juice (%)	Fennel seed extract (%)	Sugar (%)	Score	Rating
1	86	5	5	4	13	8.20	LVM
2	72	10	10	8	13	7.66	LM
3	58	15	15	12	13	7.57	LM
4	44	20	20	16	13	8.13	LVM
5	30	25	24	20	13	7.83	LM
SE. m ±							0.08
CD at 5%							0.26

LVM : Like Very Much, LM : Like Moderately

Table 3. Changes during storage life of prepared RTS

Storage period (Months)	T.S.S (%)	Acidity (%)	Vitamin-C (mg/100ml)	Reducing sugars (%)	Non-reducing sugar (%)	Total sugars (%)	Browning (O.D)	Organoleptic quality

								Score	Rating
0	13.00	0.30	18.63	3.47	8.28	11.75	0.25	8.15	LVM
1	13.20	0.52	17.26	3.73	8.20	11.90	0.30	7.80	LM
2	13.37	0.62	17.80	4.09	8.00	12.09	0.33	7.47	LM
3	13.42	0.70	16.38	4.98	7.69	12.67	0.41	7.13	LM
SE.m±	0.03	0.01	0.03	0.01	0.03	0.02	0.02	0.08	
CD at 5%	0.10	0.02	0.09	0.03	0.09	0.08	0.06	0.26	

LVM : Like Very Much, LM : Like Moderately