The Pharma Innovation Journal 2022; SP-11(8): 893-896

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2022; SP-11(8): 893-896

www.thepharmajournal.com
Received: 22-05-2022
Accepted: 25-06-2022

Preetesh Kumar Pandey
Department of Vegetable Science, Collage of Agriculture, IGKV, Raipur, Chhattisgarh, India

Jitendra Trivedi
Department of Vegetable Science, Collage of Agriculture, IGKV, Raipur, Chhattisgarh, India

Annu Verma
Department of Vegetable Science, Collage of Agriculture, IGKV, Raipur, Chhattisgarh, India

Praveen Gupta
Department of Vegetable Science, Collage of Agriculture, IGKV, Raipur, Chhattisgarh, India

Corresponding Author
Preetesh Kumar Pandey
Department of Vegetable Science, Collage of Agriculture, IGKV, Raipur, Chhattisgarh, India

Standardization and sensory evaluation of RTS developed from blends of bottle gourd, *Aloe vera* and ginger juice

Preetesh Kumar Pandey, Jitendra Trivedi, Annu Verma and Praveen Gupta

Abstract
The experiment entitled "Standardization and sensory evaluation of RTS developed from blends of bottle gourd, *Aloe vera* and ginger juice" was conducted at the laboratory of Vegetable Science Department, College of Agriculture, Indira Gandhi Krishi Vishwavidyalaya, Raipur (C.G.) during the year 2020-2021 and 2021-2022. After experiment it was concluded that T1 (80 ml bottle gourd + 20 ml *Aloe vera* + 900 ml water) and T2 (60 ml bottle gourd + 40 ml *Aloe vera* + 900 ml water) found to be the best treatment among all as it obtained the highest organoleptic score and was liked very much and found to be the most acceptable combination for blending.

Keywords: RTS, blends of bottle gourd, *Aloe vera*, ginger juice

Introduction
Bottle gourd (*Lagenaria siceraria*), a vigorous annual vine with large leaves belongs to Cucurbitaceae family and known as Calabash, Doodhi, Lauki and White flowered gourd. Bottle gourd fruit is a good source of vitamin B complex and choline along with fair quantum of vitamin C (Singh and Singh, 2005) [8]. Bottle gourd is well known for their immunomodulatory, hepatoprotective, antioxidant, anti-stress, adaptogenic, analgesic, anti-inflammatory, cardio protective, cardio tonic, antihyperlipidemic, diuretic, aphrodisiac, alternative purgative, antidote to certain poisons and cooling properties (Ahmad *et al*., 2011; Deshpande *et al*., 2008; Mohale *et al*., 2008) [1, 2, 5].
Aloe vera (*Aloe barbadensis* Miller) belongs to Lileacea family traditional being utilized as contemporary folk remedy (Volger and Ernest, 1999) [10]. It can be utilized as a valuable ingredient for food application due to its biological activities and functional properties (Kojo and Qian, 2010) [4]. *Aloe vera* gel has a bitter taste which can be unpleasant in raw state and its palatability could be enhanced with addition of some other fruit juices. *Aloe vera* comes under food related products (Dubick and Michael, 1983) [3] and is being used as an ingredient for functional foods, mainly in the development of health drinks and beverages (Singh *et al*., 2009) [9].
Ginger scientifically known as *Zingiber officinale* belongs to the family Zingiberaceae. Ginger is extensively used in ayurvedic medicines since long back, ginger has been used to cure dyspepsia, gastritis, blood circulation disturbance and inflammatory diseases. It displays potential antipyretic, antiallergenic, analgesic, antitussive and chemo-preventive activities (Sabulal *et al*., 2007) [7].
The shelf life of fruits and vegetables is very limited because of their perishable nature. In India over and above 20-25 percent of fruits and vegetables are spoiled before utilization. Blending of juice is a way of utilization of vegetables, fruits, and spices. This may be attributed to change in dietary habits, taste preferences, and the way of life of present-day consumers. In bottle gourds, the enzymes responsible for browning are peroxidase (POD) and polyphenol oxidase (PPO) and hence the juice in its pure form is brown in colour, off-flavour and has unpleasant taste. POD, if inactivated during processing, all other enzyme systems are usually inactivated. Therefore, to improve the taste, aroma, palatability, storability and nutritive value of bottle gourd juice, it was thought to be convenient to blend it with highly nutritive juices namely *Aloe vera*, aonla and lemon with spice extracts like ginger.

Materials and Methods

This experiment was conducted at the laboratory of Vegetable Science Department, College of Agriculture, Indira Gandhi Krishi Vishwavidyalaya, Raipur (C.G.) during the year 2020-2021 and 2021-2022. Bottle gourd and ginger was purchased from nearby market while *Aloe vera* was gathered from IGKV farm of the university. Other crude materials utilized was sugar, citric acid, sodium benzoate, raspberry red food colour, juice bottles acquired from nearby market.

Extraction of bottle gourd Juice

Fresh and tender bottle gourd fruits were selected for the experiment. The bottle gourd fruits were washed under running tap water to remove surface adhering extraneous material contaminations and other microbial load. The fruits were then peeled, top 20 mm and bottom 15 mm of bottle gourd was cut and removed. The fruits were sliced (around 5mm thickness) using a stainless steel knife and were immediately blanched at 80 °C for 3-4 min. in order to deactivate enzymes and avoid browning. After blanching fruit pieces were used to extract juice by using a mechanical juice extractor. The extracted juice was filtered through two layers of muslin cloth and used for further processing.

Extraction of *Aloe vera* juice

The *Aloe vera* pulp was taken out by the traditional hand filleting method to avoid the contamination of internal fillet with the yellows sap. The fresh, succulent, undamaged, mature (3-4 years), rot free leaves were taken for preparing the juice. The lower 1 inch of the leaf base (the white part attached to the large rosset stem of the plant), the tapering point of 2-4 inches of leaf top and the short, sharp spines along the leaf margins were removed by using a sharp knife. Then the upper peel of the leaf was removed by introducing knife in the mucilage layer below green rind. Similarly the bottom peel was removed. The highest concentration of potentially beneficial aloe constituents are found in mucilage. The filleting is done within 36 hours of harvesting the leaves. The then pulp was heated at 60-65 °C for 10 minutes. Then the heated pulp is grinded in mixer-grinder. The mashed pulp was then strained using clean muslin cloth to get pure *Aloe vera* juice.

Extraction of ginger juice

A fresh, clean, large and solid rhizome of ginger was chosen. The rhizomes were first washed in clean water to eliminate the mud followed in rhizome. The rhizomes were then stripped and cut into pieces. These pieces were then agitated utilizing processor to make mash. The mash was then stressed with muslin fabric to get unadulterated ginger juice.

Preparation of RTS

After obtaining pure bottle gourd, *Aloe vera* and ginger juice the RTS was prepared by blending all three juices in different concentrations as per the treatments and homogenization was done for all the treatment RTS. Sugar was added according to TSS (10%). Then citric acid @ 3.5 g/1.5 lt of RTS and sodium benzoate @ 1.5 g/1.5 lt of RTS was added as a preservative. The bottling was done in 250 ml bottle each and crown corked. All the prepared treatments were then stored in the laboratory at room temperature.

Sensory analysis

This is a test which measures the consumer's acceptability for the product. In this method, a semi-trained panel consisting of several judges, belonging to different age groups and having different eating habits was constituted to evaluate the sensory qualities of the product. The sensory qualities were evaluated using 9 point hedonic rating test method as suggested by Ranganna (2001) [6].

Results

Standardization of RTS

The preliminary trials were conducted to assess the optimum level of ingredients for the blended RTS beverage. The optimum levels of all the ingredients *viz*., juice, sugar, citric acid, sodium benzoate, food colour and water were selected. The better combination levels of juice 60 and 80 ml, sugar according to 10 per cent TSS, citric acid 3.5 g and water 900 ml for 1000 ml RTS beverage were standardized.

Organoleptic Evaluation of Blended RTS at the Time of Preparation

During 1st season of experiment, In case of colour and appearance the maximum score of 8.8 was recorded by T2 followed by T0 and T1 i.e. 8.3. The minimum score of 5.7 was recorded by T4. In case of flavour, the maximum score of 8.4 was recorded by T2 followed by T0 and T1 i.e. 8.3 and 8.0 respectively. The minimum score of 5.8 was recorded by T4. The maximum score of 8.3 for taste was obtained by T0 followed by T2 and T1 which recorded 7.5 and 7.1 respectively. The minimum score was obtained 5.9 by T3.

During 2nd season of experiment, In case of colour and appearance the maximum score of 8.7 was recorded by T2 followed by T3 and T2 i.e. 7.9 and 7.5 respectively. The minimum score of 5.7 was recorded by T4. In case of flavour, the maximum score of 8.6 was recorded by T2 followed by T0 and T3 i.e. 8.4 and 8.1 respectively. The minimum score of 4.7 was recorded by T4. The maximum score of 8.8 for taste was obtained by T2 followed by T1 and T3 which recorded 8.6 and 8.4 respectively. The minimum score was obtained 6.3 by T0.

In case of overall acceptability, the maximum score of 8.2 was obtained by T1 and T2 both treatments followed by T0 which recorded 7.8 and the minimum score of 5.8 was obtained by T4.

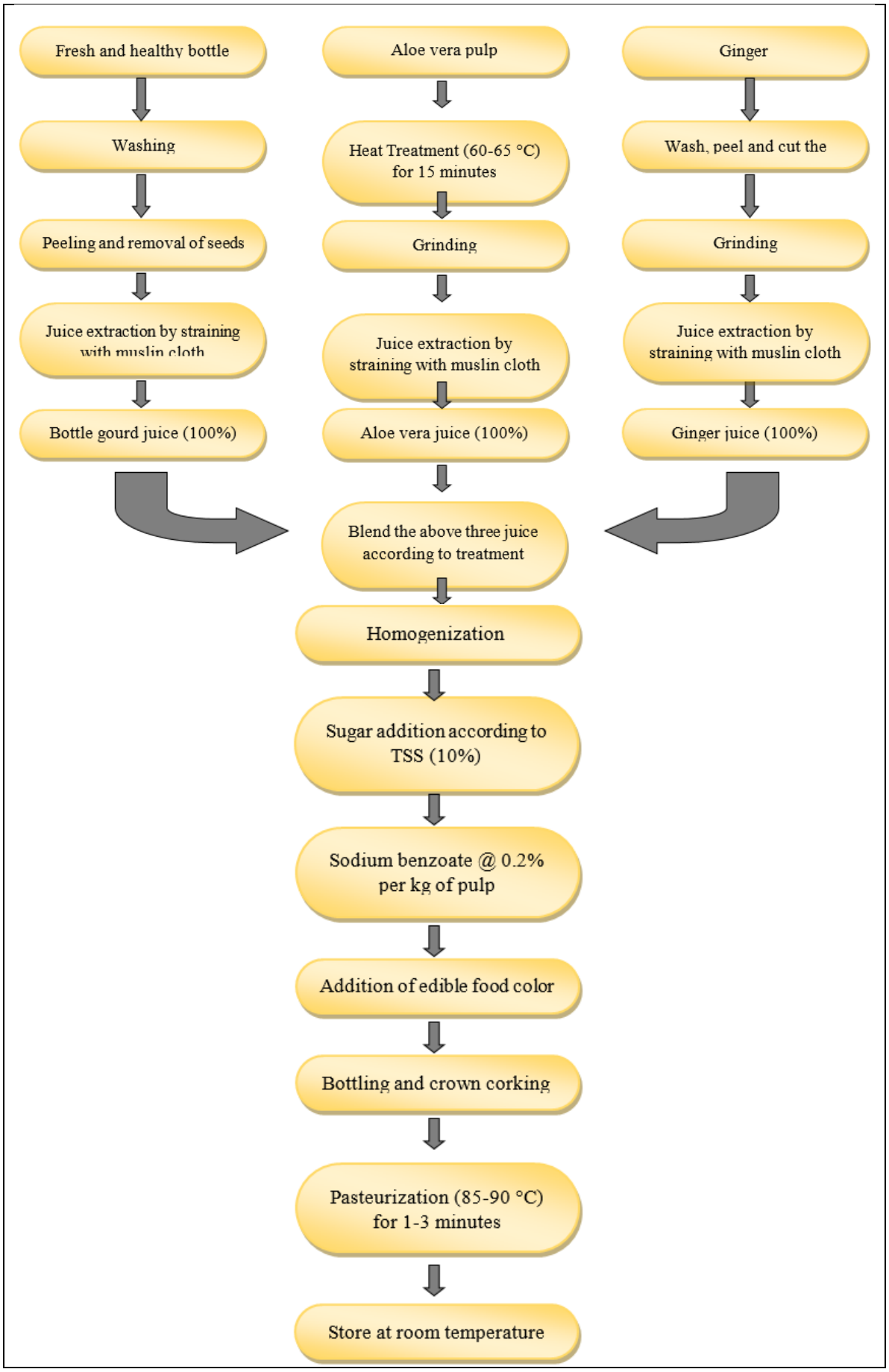

Fig 1: Flowchart for preparing RTS from bottle gourd blend with *Aloe vera* and ginger.

Table 1: Organoleptic Evaluation of Blended RTS at the Time of Preparation

Treatments	Colour and Appearance		Flavour		Taste		Overall Acceptability	Rating
	1st Season	2nd Season	1st Season	2nd Season	1st Season	2nd Season		
T0: 100 ml bottle gourd + 0 ml *Aloe vera* + 900 ml water	8.3	7.2	8.3	8.4	8.3	6.3	7.8	Like Slightly
T1: 80 ml bottle gourd + 20 ml *Aloe vera* + 900 ml water	8.3	8.7	8.0	8.6	7.1	8.6	8.2	Like Very Much
T2: 60 ml bottle gourd + 40 ml *Aloe vera* + 900 ml water	8.8	7.5	8.4	8.0	7.5	8.8	8.2	Like Very Much
T3: 40 ml bottle gourd + 60 ml *Aloe vera* + 900ml water	8.1	7.9	6.4	8.1	5.9	8.4	7.4	Like Slightly
T4: 20 ml bottle gourd + 80 ml *Aloe vera* + 900ml water	5.7	5.7	5.8	4.7	6.2	6.4	5.8	Like Slightly
T5: 0 ml bottle gourd + 250 ml *Aloe vera* + 750ml water	6.4	6.5	6.9	6.5	6.8	6.5	6.6	Like Slightly

Conclusions

The goal of making this blended RTS beverage is to improve the nutritional value of a product that can be taken by people of all ages. Blending of juice is a way of utilization of vegetables, fruits, and spices. This may be attributed to change in dietary habits, taste preferences, and the way of life of present-day consumers. After evaluating all the sensory attributes *viz*. Colour and appearance, flavour, taste and overall acceptability, it can be concluded that T1 (80 ml bottle gourd + 20 ml *Aloe vera* + 900 ml water) and T2 (60 ml bottle gourd + 40 ml *Aloe vera* + 900 ml water) found to be the best treatment among all as it obtained the highest organoleptic score and was liked very much and found to be the most acceptable combination for blending.

References

1. Ahmad I, Irshad M, Rizvi MMA. Nutritional and medicinal potential of *Lagenaria siceraria*. International Journal of Vegetable Science. 2011;17(2):157-170.
2. Deshpande JR, Choudhri AA, Mishra MR, Meghre VS, Wadodkar SG, Dorle AK. Beneficial effects of *Lagenaria siceraria* (Mol.) standley fruit epicarp in animal models. Indian Journal of Experimental Biology. 2008;46(4):234-242.
3. Dubick, Michael A. Dietary supplements and health aids. A critical evaluation: Part 3: Natural Miscellaneous Products. J. Nutrition Education. 1983;26(6):259-265.
4. Kojo E, Qian H. *Aloe vera*: A valuable ingredient for the food, pharmaceutical and cosmetic industries-a review. Critical Review in Food Science and Nutrition. 2010;44:91-96.
5. Mohale DS, Dewani AP, Saoji AN, Khadse CD. Antihyperlipidemic activity of isolated constituents from the fruits of *Lagenaria siceraria* in albino rats. International Journal of Green Pharmacy. 2008;2(2):104-107.
6. Ranganna S. Hand Book of Analysis and Quality Control for Fruits and Vegetable Products. 7th Edition, Tata McGraw Hill Book Co., New Delhi, 2001, 594-625.
7. Sabulal B, Dan M, John JA, Kurup R, Purushothaman C, Varughese G. Phenylbutanoid-rich rhizome oil of *Zingiber neesanum* from Western Ghats, Southern India. J. Flavour Fragrance. 2007;22(6):521-524.
8. Singh DK, Singh SK. Nutritional security of horticultural crops. Elements of Horticulture. Udaipur, India: Agrotech Publishing Academy, 2005, 68-74.
9. Singh S, Kumar A, Shalini R. Studies on effect of preservation techniques and storage condition on TSS and pH of flavoured *Aloe vera* juice. Bev. and Fd World. 2009;36(12):15-19.
10. Volger BK, Ernest E. *Aloe vera*: A systematic review of its clinical effectiveness. British Journal of General Practice. 1999;49:823-828.