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Mridula Pandey
Department of Home Science,
Food Science and Nutrition,
MMV, BHU, Varanasi,
Uttar Pradesh, India

Dr. Archana Chakravorty
Professor, Department of Food
Science and Nutrition, MMV,
BHU, Varanasi, Uttar Pradesh,
India

Adarsh Pandey
Department of Agriculture
Science and Allied Industry,
Rama University, Kanpur,
Uttar Pradesh, India

Ayushi Mishra
Department of Home Science,
Humen Development and
Family Studies, BBAU,
Lucknow, Uttar Pradesh, India

Corresponding Author:
Mridula Pandey
Department of Home Science,
Food Science and Nutrition,
MMV, BHU, Varanasi,
Uttar Pradesh, India

Preparation and sensory evaluation of pomegranate (*Punica granatum*): Kiwi (*Actinidia deliciosa*) blended jelly

Mridula Pandey, Dr. Archana Chakravorty, Adarsh Pandey, Ayushi Mishra

Abstract

The aim of study is to make preserved product using Kiwi Fruit (*Actinidia deliciosa*) and Pomegranate. Kiwi fruit is highly nutritious fruit and it was decided to preserve for human consumption throughout the year. Kiwifruit is an excellent source of vitamin C as well as a very good source of dietary fiber. It is also a good source of the mineral potassium. This study is focused on preservation of kiwi fruit blended with pomegranate as a jelly using different formulations. Using the kiwi fruit, jelly is prepared for the production of a preserved product. Pomegranate is incorporated in the preparation of kiwi jelly to set the product easily. Hence, the kiwi, pomegranate jelly is developed and the quality parameters have been assessed. Sensory evaluation is determined according to the standard methods. Regarding the texture profile, the following parameters were evaluated: hardness, cohesiveness, chewing, gummy and adhesiveness. The storage stability was good in jelly with respect to flavor and consistency. Hence, the prepared jelly was safe and fit for consumption. The development of kiwi jelly with pomegranate is an excellent alternative for the use of the raw material, since it is a product with high nutritional value, stability during storage and potential for consumer acceptance.

Keywords: *Actinidia deliciosa*, new products, texture

Introduction

Food preservation has an important role in the conservation and better utilization of fruits and vegetables in order to avoid the glut and utilize the surplus during the off-season. The most common cultivar group of kiwifruit is oval, about the size of a large hen's egg [5-8 centimetres (2.0-3.1 in) in length and 4.5-5.5 centimetres (1.8-2.2 in) in diameter]. It has a fibrous, dull greenish-brown skin and bright green or golden flesh with rows of tiny, black, edible seeds. Kiwifruits are mostly eaten as fresh, although some kiwifruits are also processed into juices, fortified drinks, purees, candies, frozen, dehydrated and lyophilized products, kiwifruit leathers, distilled spirits kiwifruit preserved in syrup. Kiwifruit could be a unique fruit of high nutritional value with various flavours, vitamins, minerals, antioxidants, phytochemicals and fibre content. Thanks to characteristics, kiwifruit provides specific health benefits and has great potential industrial, exploitation. Figoli, *et al.*, 2010^[10]. Pomegranate juice also increases the body's resistance against infections, acts as cooling beverage and tones up the function of kidney, liver and heart. The pomegranates have recently been found to boost activity of an enzyme which protects the cardiovascular risks. Pomegranate and Kiwi is usually processed into products like preserves, refreshing beverages, powder, leather, squash, nectars, toffee, jam, syrup, Jelly. For all preparations, juice is the prerequisite therefore is required to be stored to supply throughout the year. Fruits juices, when used as raw material for industries, are exposed to various treatments like adjustment of pH, heating and cooling processes. These fruit crops have their own history of consumption, local people are aware their nutritional and medicinal properties.

Materials and Methods

The present investigation entitled, "Studies on Preparation & Sensory evaluation of pomegranate (*Punica granatum*): Kiwi (*Actina*) blended jelly." was conducted at the Home (Faridabad) due to pandemic situation of COVID19, in post graduate of home Science Food and Nutrition MMV BHU Varanasi Uttar Pradesh.

The mature fruits of pomegranate CV Bhagwa and Kiwi were procured from local market of

Varanasi. After washing, Fruits were used for the preparation of jelly. Sugar and chemical like citric acid, sodium benzoate were available in the laboratory of food science BHU Varanasi. Completely Randomized Design (CRD) was applied for analysis of experimental data and sensory evaluation of guava products. DMRT (Duncan’s Multiple Range Test) was also applied to assess sensory attributes. Kiwi and pomegranate jelly samples were judged by ten panelists. The juice was extracted at three different stages. Jelly was prepared by using different sample. The sensory attributes and shelf life of the jelly were studied.

Table 1: Experimental Details

Year of experiment	:	2019-20
Design	:	F CRD
Number of treatments	:	6×5= 30
Number of replications	:	3

Table 2: Treatment Details

Treatments	:	Proportion of Kiwi Juice and pomegranate Juice
T ₁	:	100:0
T ₂	:	80:20
T ₃	:	60:40
T ₄	:	40:60
T ₅	:	20:80
T ₆	:	0:100

Table 3: Sub Treatment

Sub Treatment	:	Storage period (days)
S1	:	0
S2	:	15
S3	:	30
S4	:	45
S5	:	60

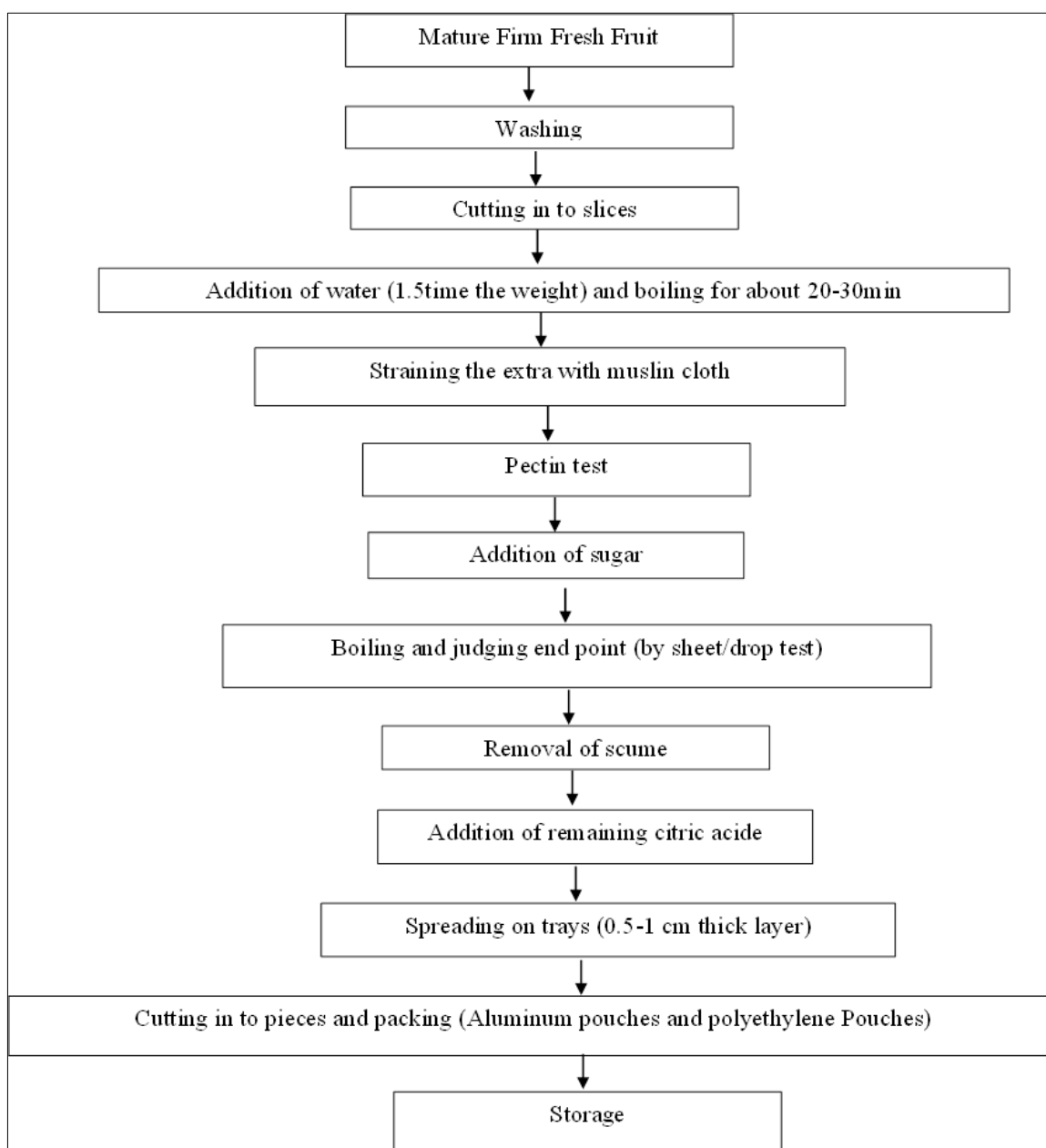


Fig 1: Preparation of Jelly

Methods

Preparation of Jelly

The product was prepared as per the steps below...

Extraction of Juice

Fresh ripe Kiwi fruits was peeled and cut into small pieces with a stainless-steel knife. Pomegranate fruits were peeled and the arils were separated manually. Then, the juice was extracted by squeezing the Kiwi pulp in double fold muslin cloth.

Straining of juice

The juice of both pomegranate and Kiwi was strained by passing it through four-fold muslin cloth. Clear Kiwi juice was obtained by heating the juice for few minutes and straining the juice through muslin cloth to remove all colloidal partials and scum.

Addition of water

The water was added in both juices in 1:1 proportion.

Blending of juices

Juices of Pomegranate and Kiwi were blended in different proportion as per the treatments.

Addition of sugar

About 750 g of blended juice of pomegranate and kiwi was used in each replication for the preparation of jelly. The sugar was added in 1:1 proportion in the juice.

Boiling

After addition of sugar the mixture was boiled as rapidly as possible to avoid destruction of pectin as well as to maintain colour and flavour of the jelly. The secum was removed with the help of spoon as when it appeared.

Addition of pectin

Out of the total required sugar, the 1/10th part of sugar was mixed with 0.5% pectin powder so as to dissolve the pectin easily in juice. After reaching 600 B TSS it was sprinkled on the pectin extract with continuous stringing to avoid loss of jelly forming strength of pectin.

Addition of citric acid

Upon reaching 65 °B TSS, the citric acid was added @0.5% in order to prevent sucrose crystallization in the finished product and to establish the optimum gel formation. Citric acid was added at the end of cooking for proper sugar inversion.

Filling, packing and processing of jelly

When the TSS of jelly reached to 68 °B, the blended jelly was filled hot in the presterilized, wide mouthed glass bottle and capped air tight. Packaged jelly was the processed in boiling water for a period of ten minutes. After processing, the

blended jelly was stored at ambient condition for further investigation

Preparation of kiwi pomegranate jelly various ingredients for the preparation of guava jelly were weighed according to the specifications. Sugar and pectin were mixed thoroughly, and then added the extracted juice to mixed sugar and pectin. The mixture was cooked till it boiled or gave the sheeting test (TSS 65%) and then citric acid was added. The finished product was poured into clear dry sterilized glass jars. The paraffin in the upper portion of cooked jelly was poured. Then the products cooled and sealed the jars tight. The final products stored in a cool dry place.

Extraction of juice Fresh and fully mature kiwi and guava were weighed and washed thoroughly in water. Soft and over ripe fruits were rejected as far as possible, because they were unfit for preparation of good jelly (quality product). The washed fruits were cut into four quarters with a stainless-steel knife. The juice was separated by the filtering through a coarse cloth.

Table 4: Required ingredients for preparation

Ingredients	Amounts
Kiwi juice	250 g
Pomegranate juice	250 g
Sugar	750 g
Pectin	10 g
Citric acid	7 g

Storage studies of kiwi and pomegranate jelly the prepared jellies were stored at room temperature (29-33 °C) and R. H. 80-85%. The bottles were opened at every 15 days interval up to 2 months to determine its Texture, colour, flavour and consistency.

Sensory evaluation the consumer acceptability of developed kiwi products was evaluated by a taste testing panel. The Panelists were untrained and selected from the home & neighbour. The panelists (10) were asked to assign appropriate score to each product tested on a 1-to-9-point hedonic scale for characteristic colour, flavour, texture and overall acceptability of five samples of jelly. The scale is arranged such that; 9=Like extremely, 8=Like very much, 7=Like moderately, 6=Like lightly, 5=Neither like nor dislike, 4 = Dislike slightly, 3= Dislike moderately, 2 = Dislike very much, and 1 = Dislike extremely.

Results and Discussion

Sensory evaluation of kiwi and Pomegranate blended jelly to evaluate the sensory attributes such as colour, flavour, texture and overall acceptability of different samples of prepared jelly were served to the panelists who were asked to evaluate them on a 1-9-point hedonic scale and the mean scores obtained by various samples for different sensory attributes are presented in table 5.

Table 5: Mean scores obtained by various attributes of jelly Colour Flavour Texture Overall acceptability

Sample	Colour	Texture/ appearance	flavour	Consistency	Overall acceptability
T1	7.65	7.33	7.33	6.70	7.78
T2	6.97	7.61	7.66	6.1	8.60
T3	7.42	8.44	8.44	7.56	8.65
T4	7.28	8.24	8.25	6.62	8.11
T5	7.64	7.69	7.70	6.02	7.89
T6	7.53	7.57	7.52	6.68	7.66

T = Treatment

The average sensory attributes scores of prepared guava jellies were statistically analyzed for variance among the jellies prepared by different sample. Table shows that colour of jelly prepared from T1 is the best than other samples. T2 got lowest score (6.97) and T1 the Highest score (7.65). In case of flavour jelly prepared from T3 is the best than other samples. T3 got highest score (7.56) and T2 the lowest score (6.1). In case of texture jelly prepared from T3 is the best than other samples. T3 got highest score (8.44) and T1 the lowest score (7.33). In terms of overall acceptability there was highly significant difference among the prepared jelly. Table shows that jelly prepared from T3 is the best than other samples. T3 got highest score (8.65) and T6 the lowest score (7.66). Storage studies of jelly during storage the changes in, colour, flavour and texture of jellies were observed at 15 days intervals up to 30 days and 45 days intervals up to 60 days at room temperature. Into glass bottles changes of the jellies have been shown in Table:

Table 6: Storage stability of Jelly from 15-30 days

Storage period	samples	colour	Flavour	Appearance
15-30	T ₁	Light Red	Pleasant	Dark
	T ₂	Light Red	Pleasant	Dark
Acceptable	T ₃	Light Red	Pleasant	Transparent
	T ₄	Light Red	Pleasant	Transparent
	T ₅	Light Red	Pleasant	Dark
	T ₆	Light Red	Pleasant	Dark

Table 7: Storage stability of Jelly from 30-45 days

Storage period	Samples	Color	Flavour	Appearances
	T ₁	Light Red	Pleasant	Clear
	T ₂	Light Red	Pleasant	Clear
30-45	T ₃	Light Red	Pleasant	Clear
	T ₄	Light Red	Pleasant	Clear
Acceptable	T ₅	Light Red	Pleasant	Clear
	T ₆	Light Red	Pleasant	Clear

Table 8: Storage stability of Jelly from 45-60 days

Storage period	Samples	Color	Flavour	Appearance
	T ₁	Red	Pleasant	Transparent
	T ₂	Red	Pleasant	Transparent
45-60	T ₃	Red	Pleasant	Transparent
	T ₄	Dark red	Unpleasant	Dark
Acceptable	T ₅	Dark red	Unpleasant	Dark
	T ₆	Dark red	Unpleasant	Dark

Conclusion

An experiment was conducted under the title, "Studies on preparation of pomegranate (*Punica granatum* L.): Kiwi (*Actinidia Deliciosa*) blended jelly" at faizabad during the year 2020-2021.

This research was aimed to standardize proportion of pomegranate CV bhagwa and Kiwi juices in the blended jelly and to study the storage behaviour of pomegranate: Kiwi blended jelly. Six treatments comprising different proportions were selected for standardization with three replications. Pomegranate and Kiwi blended jelly were analysed for sensory quality parameters at 0,15,30,45,60 days of storage.

The research data was subjected to the statistical analysis with Factorial Completely Randomized Design (FCRD).

The sensory quality parameters of the pomegranate: Kiwi blended jelly viz. Colour, Flavour and Texture, were

evaluated by nine points hedonic rating test method. The sensory score for consistency of the jelly was highest (7.56) in the treatment T3 (60:40) and lowest (5.68) in treatment T6. In the treatment T4 (40:60). A decrease was observed in sensory score for texture of the blended jelly from 7.52 to 5.62 during 60 days of storage period at ambient conditions. The mean score for flavour of the jelly was highest for the Treatment T3, (8.44), T4 (8.25) and the mean flavour decreased from T1 & T6 respectively, (7.33) & (7.52) during 60 days storage. The mean score for color and appearance of the blended jelly obtain by the treatment T3 (60:40) was highest Lowest T6 (0:100) sensory score was observed in the treatment T1 (100:0). An increase was noticed from (7.29) and decreased (5.63) during the 60 days of storage.

References

- Athanasia MG, Konstantinos GA. Rheological models of kiwifruit juice for processing applications. *J Food process. Technol.* 2011;2(1):100-106.
- Benlloch-Tinoco M, Varela P, Salvador A, Martínez-Navarrete N. Effects of microwave heating on sensory characteristics of kiwifruit puree. *Food bioprocess technol.* 2011;5(8):3021-3031.
- Cassano A, Donato L, Drioli E. Ultrafiltration of kiwifruit juice: operating Parameters, juice quality and membrane fouling. *J Food Eng.* 2007;79(2):613-621.
- Barrachina, AA, Hernández F. Influence of deficit irrigation and crop load on the yield and fruit quality in wonderful and Mollar de Elche pomegranates. *J Sci. Food agric.* 2018;98:3098-3108.
- Kodandaram Reddy D, Priyanka Samala, Jyoti Kiran Singh. Formulation and evaluation of preserved products using an under-exploited fruit [kiwi fruit (*Actinidia Deliciosa*)]. *International journal of basic and applied biology.* 2015;2(4):205-209.
- Garcia CV, Quek SY, Stevenson RJ, Winz RA. Kiwifruit flavour: A review. *Trends Food Sci. Technol.* 2012;24(2):82-91.
- Morán FE, Marco EN, Escrich A, Barbé S, López MM. Biodiversity and biogeography of three pseudomonas syringae pathovars which affect kiwi fruit cultivation. *Journal online biodiversity.* 2018;1(1):1-3.
- Ventura J, Alarcón-Aguilar F, Roman-Ramos R, Campos-Sepulveda E. *et al.* quality and antioxidant properties of a reduced-sugar pomegranate juice jelly with an aqueous extract of pomegranate peels. *Food chem.* 2013;136:109-115.
- Hani NM, Romli Hartel Elbe, Hofberger R. Influences of red pitaya fruit puree and gelling agents on the physico-mechanical properties and quality changes of gummy confections. *Int. J Food sci. Technol.* 2018;50(2):331-339.
- Figoli A, Cassano A, Criscuoli A, Mozumder MS, Uddin MT, Islam MA, *et al.* Influence of operating parameters on the arsenic removal by nanofiltration. *Water research.* 2010 Jan 1;44(1):97-104.