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Utilization of Prickly Pear for Preparation of Fruit Dessert

Sitar Joshi, Anurag Singh, Sanjana B. Laobangdisa, Shubhda Kulkarni 10.18805/ajdfr.DR-1476

ABSTRACT

Prickly pear, an underutilized fruit in India is known for its functional benefits such as it boosts immunity, builds strong bones and teeth, maintains digestive health, enhances heart health, anti-carcinogenic effects, antioxidant potential, weight loss effects and suppresses inflammation. Gelatine based dessert was prepared using cactus pear juice and was compared with pectin based jellies prepared from the same juice. The loss in quality parameters was found lesser in gelatine based dessert than that in pectin jelly. Ascorbic acid analysis showed that the gelatine based dessert had more amount of ascorbic acid content as compared to pectin based jelly. The sensory evaluation was carried out to compare the consumer acceptance of gelatine based dessert and was observed that gelatine based dessert was sensorially superior than the pectin based jelly.

Key words: Ascorbic acid, Functional, Nutritional, Prickly pear, Sensory.

INTRODUCTION

Although India is one of the world's largest fruit producers, many fruits in India are unknown and underutilized. Prickly pear fruit is one of these underutilized fruit. Most commonly, it is known as *Nagphani or Dandathohar* in India (Kaur *et al*., 2012). They are very well suited to the arid and semiarid environments because of therir water efficient nature particularly during prolonged dry spells or failure of the monsoon (Roghelia and Panchal, 2016; Benattia, 2017). The wide distribution of prickly cactus pear (*Opuntiaficus-indica*) can be seen in Mexico, much of Latin America, South Africa and the Mediterranean area (Reale *et al*, 2016). The fruits of domesticated *Opuntia* cultivars are being sold as a dessert fruit in markets of USA, Chile, Mexico, Brazil, North Africa, Spain, Italy and Greece (Singh, 2003). Its fruit shape is that of a pear, have spines and hence because of fruit it is named as *Prickly Pear*. This shrub has no leaves. Its branches are flat and are called joints and pads. The leaves having sharp edge, are tiny and thick. Mainly they have purple or red appearance. When the shoot is young these tiny leaves are observed and generally shed off soon after they are seen. Another term is *Areoles* that are dots spread over fruits and pads from which there is growth of bristles. Generally, the budding pads or roots develop from these Areoles. The appearance is mainly yellow and large of the flower, red of the fruit skin (Trivedi and Raval, 2017). Cactus pear fruit is a fleshy berry, varying in shape, size and colour and has a consistent number of hard seeds (Piga, 2004). Prickly pear botanically classified under Kingdom: Plantae, Division: Magnoliophyta, Class: Magnoliopsida, Order: Caryophyllales and Family: Cactaceae (Raj *et al*. 2015; Paiva *et al*. 2016).

Prickly pear cactus has been used for healing purposes and as food for centuries. Loaded with protein and vitamins, has been used to treat diabetes, stomach problems, constipation and cold symptoms. Folk remedies abound, such as the one that involves heating the pads and placing them on a cold sufferer's chest to relieve congestion. It has shown analgesic and anti-inflammatory activity (Loro *et al*., 1999), antidiabetic activity (Ibanez-Camacho and Román-Ramos, 1979; Trejo-González *et al*., 1996), antioxidant potential (Kuti 2004; Ndhlala *et al*., 2007), antitumor and antiproliferative effects (Zou *et al*., 2005; Liang *et al*., 2008), improvement in digestive health, improvement in heart health (Fernandez *et al*.,1994; Wolfram *et al*.,2002) and immune system boosting effects (Schepetkin *et al*., 2008).

Today's consumer demands for more natural ingredients and health promoting foods that can work as nutraceuticals. The multiple functional properties of prickly pear fit well in this trend (Piga, 2004). Cactus pear pulp is considered as a major source of nutraceuticals and functional components. It is a good natural source of healthy components such as betalains, phenolic compounds, pectin (source of dietary fiber), vitamin C, calcium and magnesium. Hence one can say that cactus pears are increasingly gaining impetus both for health professionals and consumers (Moßhammer *et al*, 2006; El-Samahy *et al*, 2007). The fairly high sugar content and low acidity make prickly pear fruit very sweet and delicious and also put to different traditional and industrial uses (Saenz, 2000). The pulp of prickly pear fruit could be processed into many different value added products *viz*., juices, dehydrated sheets, marmalades, jellies, jams, natural sweeteners, beverages, wines and other alcoholic drinks, candies, canned and frozen fruit, etc.

Food Science and Technology Department, National Institute of Food Technology Entrepreneurship and Management, Sonipat-131 028, Haryana, India.

Corresponding Author: Anurag Singh, Food Science and Technology Department, National Institute of Food Technology Entrepreneurship and Management, Sonipat-131 028, Haryana, India. Email: anurag.niftem@gmail.com

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(Gurrieri *et al*., 2000; Sàenz, 2000; Sepúlveda *et al*., 2000; Sàenz and Sepúlveda, 2001).

According to Food Safety and Standards Authority of India, Fruit-based desserts, fruit-flavoured water-based desserts includes the ready-to-eat products and mixes. It also includes fruit-flavoured gelatine, rote gruze, frutgrod, fruit compote, nata de coco and mitsumame (gelatine-like dessert of agar jelly, fruit pieces and syrup). When the pectin based jels are prepared, the use of intensive heat causes the loss of various quality parameters particularly the loss of heat sensitive vitamins (e.g. vitamin C).

To utilize the health beneficial effects of prickly pear, in this study the gelatine based dessert was developed using Prickly pear fruit juice and was compared with the pectin based jelly prepared in terms of sensory qualities and retention of ascorbic acid as well as other quality parameters.

MATERIALS AND METHODS

Prickly Pear fruit

The prickly pear fruit is not cultivated commercially but generally found to be grown on the boundary of agricultural farms as well as in any barren and uncultivable land. Hence the prickly pear fruits (variety *Opuntia elatior* Mill) were collected from agricultural farms from Gujrat region.

Other raw materials

Other raw materials *viz*. animal origin packaged food grade Gelatine of Butterfly Brand, food grade citric acid of butterfly brand, granulated white sugar were procured from the nearby grocery shop. Pectin was taken from Food Science and Tech. Lab of NIFTEM.

Juice extraction from prickly pear fruit

Juice extraction from prickly pear fruits was done as per the method given by Ravindrakumar, (2016). The fully ripe fresh, bright red and purple colour fruits, without any visual defects, were selected for the experimental work. Thorns of the fruits were burnt and swept on the rough surface without any damage to fruit. Dethorned fruits were then cleaned by rinsing in the cool tap water. The cleaned prickly pear fruits were manually cut longitudinally into two halves to facilitate removal of seed and pulping. The longitudinally cut pulp was then scooped out with a spoon. The scooped pulp consisting of both, pulp and seeds was put into a mixture grinder at low speed for 10 - 15 seconds just to facilitate the separation of seed from pulp without any breakage of seeds. The whole mixture was sieved through a sieve size of 8 mesh for the separation of seeds from the pulp. The pure pulp was centrifuged at 3600 rpm for 10 min by using centrifuge (Refrigerated Centrifuge MP800, Electrocraft (India) Pvt. Ltd., Mumbai, India). It was then filtered through 2 folds muslin cloth. The collected extract was considered as clear juice and it was taken further for study.

Physico-chemical analysis of prickly pear juice

The juice obtained after centrifugation of pulp was analyzed for various physico-chemical properties as follows:

Juice Yield

The juice yield with respect to the pulp used for centrifugation was calculated using the following formula:

$$\text{Juice yield, \%} = \frac{\text{Weight of clear juice}}{\text{Weight of pulp taken}} \times 100$$

Total Soluble Solid (TSS)

The total soluble solids (TSS) content of prickly pear pulp was measured using hand refractometer (Erma 0 - 32%, Tokyo, Japan) as done by Singh *et al*., 2014.

Ascorbic acid content

The ascorbic acid content of the pulp was determined by standard method given by Ranganna (2003). The principle of this method is the reduction of 2, 6-dichlorophenol indophenol by ascorbic acid. The dye is blue in alkaline solution and red in acid solution but when reduced by ascorbic acid turns to colorless form.

The standardization of dye was done against standard ascorbic acid solution for determination of dye factor. Then the sample extract was titrated against the dye. The ascorbic acid content was calculated as follows:

$$\text{Ascorbic Acid (mg)/100 g} = \frac{A*B*V}{D*W} \times 100$$

Where, A is the volume in ml of standard dye used for titration, B is the weight in mg of ascorbic acid equivalent to 1ml of indophenol solution i.e. dye factor, V is the volume made up, D is the aliquot taken for estimation and W is the weight of the sample.

pH

pH is the measurement of H^+ ion activity; it measures active acidity. pH of samples were determined by digital pH meter (MK VI, Systronics, Ahmedabad). The pH meter was standardized using standard pH buffers.

Titratable acidity

The titratable acidity of all the samples was determined by the standard titration method given by Ranganna (2003). The pulp samples were titrated against 0.1 N NaOH using phenolphthalein as indicator. The acidity was calculated by the following formula:

$$\%\ \text{Total Acid} = \frac{(\text{Titre} \times \text{Normality of Alkali} \times \text{Volume made up} \times \text{equ.wt of acid} * 100)}{(\text{Vol.of sample taken for estimation} \times \text{wt or vol.of sample taken} * 1000)}$$

Viscosity

The viscosity of the juice was measured using clean and dried Ostwald capillary viscometer as per the method used by Singh *et al*., 2012. Double distilled water was used as a reference. Time required to flow through the capillary section of the Oswald viscometer was noted using a stopwatch for the reference and the sample at 20 $\pm$ 2°C.

$$\text{Apparent viscosity, } \frac{\eta}{\eta_W} = \frac{Ds * ts}{Dw * tw}$$

Where,

D = density
t = time of flow
s = sample
w = water.

Optimization of ingredients for dessert preparation
Optimization of Intensity of the fruit flavour

Prickly pear juice was mixed with water in different proportions to optimize the intensity of the fruit flavour. In each sample the dilution was done to make up the volume 100 ml (Table 1). The samples were analyzed by trained panellists to optimize the fruit flavour. "Just about Right" scale were used (Too intense, slightly too intense, Just about Right, slightly mild, too mild) for sensory analysis.

Optimization of sourness

After optimizing the amount of water to be added with juice (i.e. 80 ml water+20 ml juice), amount of citric acid to be added was optimized using 0.5%, 1% and 2 % Citric acid solutions. Acid solutions and water was added in 1:1 ratio to maintain final volume 100 ml (Table 2). The samples were analyzed by trained panellists to optimize the sourness of the dessert. "Just about Right" (Too sour, slightly too sour, Just about Right, slightly sour, too slightly sour) scale was used for sensory analysis.

Table 1: Various combinations tried to optimize juice water ratio.

Sample	Amount	
	Prickly Pear Juice	Water
S-1	20 ml	80 ml
S-2	30 ml	70 ml
S-3	40 ml	60ml

Table 2: Amount of citric acid solution varied to select the best fit of sourness.

Sample	Amount		
	Prickly Pear Juice	Citric Acid	Water
S-4	20 ml	2% 40 ml	40 ml
S-5	20 ml	1% 40 ml	40 ml
S-6	20 ml	0.5% 40 ml	40 ml

Table 3: Amount of sugar varied to select the best fit of sweetness.

Sample	Amount			
	Prickly Pear Juice	Citric Acid	Water	Sugar
S-7	20 ml	1% 40 ml	40 ml	30 g
S-8	20 ml	1% 40 ml	40 ml	20g
S-9	20 ml	1% 40 ml	40 ml	10 g

Optimization of Sweetness

After optimizing the citric acid concentration to be added for desired sourness (i.e. 1% Citric acid 40 ml), the sweetness of the dessert was optimized by adding 10, 20 and 30 g sugar in three samples, respectively (Table 3). Using "Just about Right" scale (Too sweet, slightly too sweet, Just about Right, slightly sweet, too slightly sweet), sensory analysis was done by the trained panellists.

Optimization of Gel strength/Texture

After optimizing all other ingredients, the amount of gelatine to be added for making a good set dessert was optimized. Gelatine was added in varying quantity (2, 4, 6 and 8 g) in samples with the optimized ingredients (Table 4). The samples were analyzed by panellist using "Just about Right" scale (Too hard, slightly too Hard, Just about Right, Slightly Soft, Too soft and fluidy) to optimize the texture of the dessert prepared.

Preparation of optimized Sample of gelatine based dessert

After optimizing all the ingredients to be added in the dessert, the final dessert sample was made. Juice was taken in a beaker and was diluted with water and 1% citric acid solution in a ratio 1:2:2. The mixture was then heated at about 40-50°C for 5 min so that it becomes lukewarm. Sugar was added at this stage and its complete dissolution was ensured. Water was taken in a large surface dish. Gelatine was sprinkled over the surface of water and was allowed to bloom for 10 minutes. Powder like gelatine granules were swollen upon absorption of water. The swollen granules were collected. The swollen gelatine granules were added to lukewarm mixture prepared above with constant stirring. The entire mixture was then poured in moulds and refrigerated at 4°C for 24 hours. After 24 hours of refrigeration, the dessert was ready.

Preparation of Pectin based Prickly Pear Jelly

The prickly pear jelly was prepared as per the method given by De Wit *et al*. (2014). 250 ml of juice was added with 200 g of sugar and 6 g dried apple pectin. The mixture was cooked till the end point of jelly reached. For a good set of jelly, the pH must vary between 2.8 and 3.4 hence a pH of 3 was maintained using 1% citric acid solution. When the end point reached, the cooked mass was transferred in moulds and allowed to cool.

Table 4: Amount of Gelatine varied to select the best fit of gel strength.

Sample	Amount				
	Prickly Pear Juice	Citric Acid	Sugar	Water	Gelatine
S-10	20 ml	1% 40 ml	10g	40 ml	2g
S-11	20 ml	1% 40 ml	10g	40 ml	4g
S-12	20 ml	1% 40 ml	10g	40 ml	6g
S-13	20 ml	1% 40 ml	10g	40 ml	8g

Sensory evaluation

Initial sensory evaluations were carried out to select the best composition of ingredients to prepare the fruit based dessert. "Just about right" scales, as mentioned earlier, were used for this purpose. The finally prepared samples of gelatine based dessert and pectin based jelly, both were analyzed on 1-9 hedonic scale (9-extremely desirable, 8-very desirable, 7-moderately desirable, 6-slightly desirable, 5-neither desirable nor undesirable, 4-slightly undesirable, 3-moderately undesirable, 2-very undesirable, 1-extremely undesirable) for different sensory parameters like taste, aroma, appearance, mouthfeel, texture and overall acceptability.

Statistical analysis

For the statistical analysis of the sensory evaluation, non-parametric test for two independent samples was carried out. Mann-Whitney U test using 0.05 level of significance was employed for comparing each of the parameters (*viz*. Taste, Aroma, Appearance, Mouthfeel/Texture and Overall Acceptability) for both the products. The analysis was done using Origin Pro 9 (Academic). Null hypothesis was assumed as: Pectin based product is sensorially equally superior or superior to the Gelatine based product w.r.t taste/ aroma/ appearance/ texture/ overall acceptability. Similarly, alternative hypothesis was assumed as: Gelatine based product is sensorially superior to the Pectin based product w.r.t taste/ aroma/ appearance/ texture/ overall acceptability.

Physico-chemical analysis of optimized dessert and jelly samples

The prepared samples of gelatine based dessert and pectin based jelly were analyzed for various physico-chemical characteristics as follows:

Water Activity

Digital benchtop water activity meter (chilled mirror dew-point) was used to measure the water activity. The sample was placed in a small sample cup in the temperature controlled chamber. Instrument was switched on and was allowed to run, till the dew point was reached. Readings were observed from the digital display.

TSS

Digital hand held refractometer was used to analyze TSS as discussed above.

Titratable acidity

The titratable acidity was determined by titration method as discussed above.

Colour

Colour content of cactus pear fruits dessert and pectin jelly as per *'L', 'a', 'b'* colour scale was done by Hunter Lab Colorimeter. Small amount of the sample was taken and wrapped in a transparent cellophane film. The calibrated colorimeter was used to measure colour values.

Ascorbic acid content

The ascorbic acid content of the samples was determined by standard method given by Ranganna (2003) as discussed earlier.

Moisture content

Moisture content was analyzed by the hot air oven method given by Ranganna (2003). The calculation was done using the following formula:

$$\text{Moisture content (\%)} = \frac{(\text{Weight of dish with the sample after drying - Wt.of empty dish})}{\text{Original weight of the sample}} \times 100$$

Ash content

Ash content was analyzed using the muffle furnace method given by Ranganna (2003). The calculation was done using the following formula:

$$\text{Ash content (\%)} = \frac{(\text{Wt.of crucible with sample after ashing - Wt.of empty crucible})}{\text{Original weight of the sample}} \times 100$$

RESULTS AND DISCUSSIONS

Physico-chemical parameters of prickly pear juice obtained

The juice obtained from prickly pear fruit after pulping and centrifugation was analysed for various physico-chemical parameters. The results are shown in the Table 5

Optimization of ingredients

The result of preliminary sensory analysis carried out to determine the best fit of various ingredients using JAR scale is given in Table 6. Total 15 trained panellists were used for the sensory analysis. Here the numbers below in the table denotes the number of individual who found that particular sample appropriate as per the scale. The composition of the optimized gelatine based dessert found is shown in Table 7.

Sensory evaluation of optimized gelatin based dessert and pectin based jelly

To compare the quality of gelatine based prickly pear dessert and pectin based prickly pear jelly, the sensory evaluation was done on 09 point hedonic scale w.r.t. four parameters *viz*. aroma, appearance, texture and overall acceptability. Total respondents were 30 in numbers. The result of this analysis is given in Table 8 and 9. The figures mentioned in the table is the number of respondents.

Table 5: Physico-chemical parameters of prickly pear juice obtained.

Parameter	Value*
Juice yield (%)	82.47
TSS (Brix)	11.3
Ascorbic Acid (mg/100 gm)	9.52
pH	5.1
Titratable Acidity (%)	0.34
Viscosity (cP)	1.8

* the result mentioned is the average of three replications.

According to the mean scores of the responses, it was observed that the scores for "aroma", "aappearance", "mouthfeel/texture" and "overall acceptability" were higher for gelatine based prickly pear fruit dessert but the score for "taste" was higher for the pectin based prickly pear jelly. Mean scores out of 10 for both the products and for each of the sensory parameters *viz*. taste, aroma, appearance, texture and overall acceptability were- (gelatine based dessert: 7.00, 7.30, 7.83, 7.53, 7.83 respectively; Pectin based jelly: 7.47, 6.33, 6.67, 6.30, 6.90 respectively).

Statistical analysis of sensory evaluation data

For the statistical analysis of the sensory evaluation of finished products, non-parametric test for two independent samples was carried out. Mann-Whitney U test using 0.05 level of significance was employed for comparing each of the parameters (*viz*. Taste, Aroma, Appearance, Mouthfeel/ Texture and Overall Acceptability) for both the products. The analysis was done using Origin Pro 9 (Academic). The statistical data for different quality parameters are given in Table 10.

Table 6: Sensory evaluations to select the best blend of ingredients using "JAR" scale.

TRIAL	"JAR" Scale					Inference
1	A	B	C	D	E	
S1	*1*	*2*	*7*	*3*	*2*	Sample 1 was preferred. Out of 15 members, 7 of them found sample 1 with
S2	2	8	5	0	0	appropriate (JAR) flavour characteristics.
S3	9	6	0	0	0	
2	F	G	H	I	J	
S4	6	6	3	0	0	Sample 5 was preferred. Out of 15 members, 6 of them found sample 5 with
S5	*2*	*4*	*6*	*2*	*1*	appropriate (JAR) sourness.
S6	0	2	4	5	4	
3	K	L	M	N	O	
S7	10	2	3	0	0	Sample 9 was preferred. Out of 15 members, 7 of them found sample 9 with
S8	5	5	2	3	0	appropriate (JAR) sweetness.
S9	*0*	*3*	*7*	*2*	*3*	
4	P	Q	R	S	T	
S10	0	0	3	5	7	Sample 12 was preferred. Out of 15 members, 7 of them found sample 12
S11	0	3	5	4	3	with appropriate (JAR) textural characteristics.
S12	*3*	*5*	*7*	*0*	*0*	
S13	8	7	0	0	0	

Where the symbols denote as follows:

A	Very much too intense	For optimizing fruit strength
B	Too intense	
C	Just about Right	
D	Mild, Flavour not enough	
E	Too mild, Flavour not enough	
F	Very much too Sour	For optimizing acid concentration
G	Too sour	
H	Just about Right	
I	Mild, Slightly sour, Not enough	
J	Very mild, Too slightly sour, Not enough	
K	Very much too Sweet	For optimizing sugar concentration
L	Too sweet	
M	Just about Right	
N	Mild, Slightly sweet, Not enough	
O	Very mild, Too slightly sweet, Not enough	
P	Very much too hard	For optimizing gelatine quantity
Q	Too hard	
R	Just about Right	
S	Slightly soft	
T	Too soft and fluidy	

From the statistical analysis it was found that with respect to taste at 0.05 level of significance, the x's do NOT significantly tends to be greater than the y's and hence null hypothesis may be accepted. It means that Pectin based product is sensorially equally superior or superior to the Gelatine based product w.r.t taste. For Aroma, the x's do significantly tends to be greater than the y's at the level of 0.05 significance and hence null hypothesis may be rejected. So it can be concluded that Gelatine based product is sensorially superior to the pectin based product w.r.t aroma. Appearance of gelatine based product was found sensorially superior to the pectin based product as the x's do

Table 7: Composition of the finalised Prickly Pear Gelatine based dessert.

Amount					Yield
Prickly Pear juice	Water	Gelatine	Citric Acid Solution	Sugar	
20 ml	40 ml	6 g	1% (40 ml)	10 g	105 g

Table 8: Final sensory evaluation of the Gelatine based prickly pear fruit dessert.

	Scale								
	1	2	3	4	5	6	7	8	9
Parameter									
Taste	0	0	1	1	2	6	8	7	5
Aroma	0	0	0	0	4	6	5	7	8
Appearance	0	0	0	0	0	4	7	9	10
Mouthfeel / Texture	0	0	0	0	1	5	8	9	7
Overall acceptability	0	0	0	0	0	5	6	8	11

Table 9: Final sensory evaluation of the pectin based prickly.

	Scale								
	1	2	3	4	5	6	7	8	9
Parameter									
Taste	0	0	0	1	2	4	7	7	9
Aroma	0	0	0	3	7	7	6	4	3
Appearance	0	0	0	1	7	7	6	4	5
Mouthfeel/ Texture	0	0	1	5	4	7	4	5	4
Overall acceptability	0	0	0	2	6	4	6	5	7

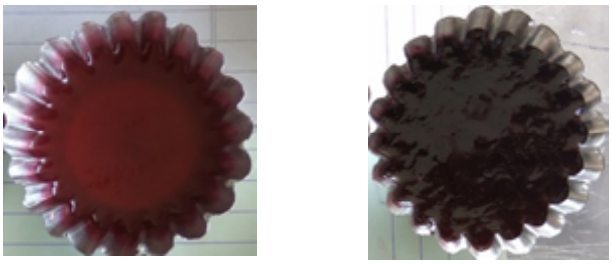
Table 10: Statistical values of Mann-Whitney U test conducted for different quality parameters of the test samples.

	U	Z	Exact Prob>U	Asymp. Prob>U	Remark at 0.05 level
Taste	368.5	-1.2259	0.89122	0.88988	X's do Not significantly tends to be greater than the Y's
Aroma	610	2.4001	0.00809	0.0082	X's do significantly tends to be greater than the Y's
Appearance	654	3.07621	8.65156E-4	0.00105	X's do significantly tends to be greater than the Y's
Mouthfeel/ texture	635	2.77785	0.00243	0.00274	X's do significantly tends to be greater than the Y's
Overall acceptability	595.5	2.19864	0.01353	0.01395	X's do significantly tends to be greater than the Y's

Table 11: Physico-chemical characteristics of the Prickly pear fruit dessert and jelly.

Parameter	Gelatine based dessert*	Pectin based Jelly*
Water Activity	0.985	0.84
TSS (°Brix)	4.3	65.2
Titratable Acidity (% citric acid)	0.227	0.63
Colour	L*= 20.43, a*= 4.5, b*=2.1	L*= 18.23, a*= 4.8, b*= 0.2
Ascorbic acid (mg/100g)	5.75	2.43
Moisture Content (%)	95.64	42.8
pH	3.8	3.1
Ash Content (%)	0.118	0.48

* *average of three replicates*



(a): Gelatine based Prickly Pear Dessert. **(b):** Pectin based Prickly Pear Jelly.

Fig 1: Optimized prickly pear dessert and pectin based jelly.

significantly tends to be greater than the y's. Similarly the Mouthfeel of gelatine based product was found sensorially superior to the pectin based product as the x's do significantly tends to be greater than the y's and the null hypothesis was rejected.

The overall acceptability of gelatine based dessert was found superior to the pectin based jelly as in this case also the x's do significantly tends to be greater than the y's at 0.05 level of significance.

Physicochemical parameters of optimized samples

Various physico-chemical parameters analyzed for optimized gelatine based prickly pear dessert and pectin based jelly are given in the Table 11. From the results it was found that the pectin based jelly was darker in colour than the gelatine based dessert. The most important parameter with respect to the nutritive value of this dessert was ascorbic acid content that was found much higher in gelatine based dessert (5.75mg/100g) than that of pectin based jelly (2.43mg/100g). It is evident that this was due to involvement of high heat for making pectin based jelly as ascorbic acid is liable to heat treatment.

CONCLUSION

The gelatine based prickly pear dessert was developed successfully with an optimized composition. The product was preferred by sensory panel and the common mass. Comparing the dessert with pectin based jelly made from the same prickly pear juice, the gelatine based dessert was found superior to pectin based jelly with respect to appearance, aroma, mouthfeel and overall acceptability. Chemical analysis of dessert confirms that the retention of ascorbic acid is more in gelatine based dessert as compared to the pectin based jelly. The prepared product can be good option for diabetic people who cannot consume large quantity of sugar. Moreover the overall nutritional retention due to minimal processing makes gelatine based product superior to the pectin based jelly.

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