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Original Research Article

Sensory Evaluation of Gulkand during Storage at Ambient Conditions

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A B S T R A C T

An experiment was carried out in the Pt. K. L. Shukla Collage of Horticulture and Research Station Rajnandgaon (C.G) during October, 2019 to March, 2020 "Sensory evaluation of gulkand during storage at ambient conditions". The experiment was laid out in completely randomized design with twelve treatment combinations of gulkand which was replicated three times. The effect of ingredient combination on sensory evaluation of gulkand at the time of storage was evaluated. The gulkand treatment combination T_4- rose petal + sugar (1:1.25w/w) was found best over the rest treatments with respect to Sensory qualities that showed declining trend with the advancement of storage days i.e. colour (8.56), texture (9.38) and overall acceptability (8.26) which was found best in treatment combination T_4-rose petal + sugar (1:1.25w/w) whereas highest flavor was found in T_2 (8.78)- rose petal + sugar (1:0.75 w/w) and taste (8.93) was found in T_3 -rose petal + sugar (1:1 w/w).

Keywords

Gulkand, Sensory quality, Treatment

Introduction

Rose being highly perishable horticulture farm produce, the common farmers as well as entrepreneurs find hindrance for proper marketing following standard post harvest management therefore, value addition is one of the most crucial areas for the efficient consumption of the produce beside with lessening the post harvest loss. Gulkand is a sweet preserve made by mixing together a blend of rose petals and sugar in equal ratio. It is one of the most delicious ayurvedic preparations which have been used from ancient times for good strength. Gulkand is mainly prepared from sp. like *R. chinensis, R. gallica, R. pomifera, R. centifolia* and *R. bourbiana.* Among the diverse varieties, *damask rose* (*Rosa damascena* Mill.) is the main rose species utilized to make rose oil, rose water, gulkand, concrete and absolute which are valuable and important raw materials for the perfume and cosmetic industry.

Consumption of gulkand provides a list of the profits on an ordinary basis according to The National Institute of Ayurvedic Medicine. It also finds its use in cooling tonic, laxative to resist fatigue, lethargy, hyperacidity, fluid

retention and heat related conditions. It also finds its application for boosting memory and used as blood purifier (Ayushveda). Flowers of 'rose edouard' from which the sepals have been removed are mostly used. In Maharashtra, Rajasthan, Madhya Pradesh, Karnataka and Andhra Pradesh. Gulkand is greatly in demand. UP is one of the best in 'gulkand' production in the country, with Kannauj being a major hub (Ayci *et al.*, 2005).

Materials and Methods

This research was performed in processing laboratory at Department of floriculture, Pt. K. L. Shukla College of Horticulture and Research Station Rajnandgaon.

The experiment was laid out in completely randomized design with twelve treatment combinations of gulkand was replicated three times. Fresh rose petals, sugar, honey, and jaggery were the raw material used for performing the experiment. Rose flowers were collected from local flower market of Rajnandgaon. Ingredients like sugar, honey, and jaggery were collected from the general grocery shop. They were then labelled and stored under ambient condition for 0, 20, 40 and 60 days observations. The sensory parameters viz; colour, texture, taste, flavour and overall acceptability based on 9 point hedonic scale (Amerine *et al.*, 1965). The data were analysed by using

Organoleptic Rating of gulkand during storage

Organoleptic test was performed to evaluate gulkand by group of five judges by Hedonic Rating Test (Amerine *et al.*, 1965). The colour, flavor, texture, taste and overall acceptability of gulkand was examined. The score was articulated on 0-9 scale and were averaged

Results and Discussion

Colour

Data presented in Table 1 to Table 2 indicates that colour assessment of gulkand declined with the progression of storage period.

Maximum colour assessment (8.56) was observed in treatment T_4-rose petals + sugar (1:1.25 w/w), next was T_3- rose petals + sugar (1:1 w/w), and lowest (3.89) was recorded in T_9 -rose petals +honey (1:0.5 w/w), at 60 days of storage duration. Similar findings were also reported by Chanbisana and Banik (2007).

Flavour

An examination of data represented in Table 2 indicates that flavor value of gulkand declined with the progression of storage period. The data showed that flavor of gulkand was significantly affected by variety of treatments. Though highest flavor (8.78) was observed from treatment T_2-rose petals + sugar (1:0.75 w/w) next was T_4-rose petals + sugar (1:1.25 w/w) while lowest (4.22) was recorded in T_9- rose petals + honey (1:1 w/w) at 60 days of storage duration. These results were similar to the study by Patel *et al.*, (2015)

Taste

An examination of data showed in Table 3 that taste value of gulkand declined significantly with the progression of storage period. The maximum taste value (8.93) was recorded from treatment T_3-rose petal + sugar (1:1 w/w) next was T_4-rose petal + sugar (1:1.25 w/w) and lowest (3.24) was recorded in T_{10} - rose petal + jaggery (1:0.75 w/w) at 60 days of storage duration. Similar findings are also obtained by Youssef and Mousa (2012).

Texture

It is clear from the data shown in Table 4 that texture score of gulkand was highly influenced by different treatments combination.

The highest texture value (9.38) was recorded from treatment T_4-rose petals + sugar (1:1.25 w/w) next was T_3-rose petals + sugar (1:1 w/w) and lowest (4.98) was in T_9 - rose petals + jaggery (1:0.75 w/w) at 60 days of storage duration. These results were similar to the study by Patel *et al.*, (2015).

Overall acceptability

Data regarding the effect of various ingredient combination and storage duration on overall acceptability of gulkand are presented in Table 5. It shows that overall acceptability of gulkand decreased with the progression of storage duration. Overall acceptability was significantly affected by different treatments up to 60 days of storage duration.

However the highest overall acceptability score (8.77) was recorded in treatment T_4-rose petals + sugar (1:1.25w/w), followed by T_3-rose petals + sugar (1:1w/w),while minimum (3.79) was in T_{10}-rose petals + jaggery (1:0.75w/w), at 60 days of storage duration. Similar findings were also obtained by Youssef and Mousa (2012).

It can be concluded that Sensory qualities showed declining trend with the advancement of storage days i.e. colour (8.56), texture (9.38) and overall acceptability (8.26) was found best in treatment combination T_4-rose petal + sugar (1:1.25w/w) whereas highest flavor was found in T_2 (8.78)- rose petal + sugar (1:0.75 w/w) and taste (8.93) was found in T_3 -rose petal + sugar (1:1 w/w).

Table.1 Effect of ingredient combination on color of gulkand during ambient storage.

Treatment	0 days	20 days	40 days	60 days	Mean
Rose petals + Sugar (1:0.5w/w)	8.00	7.02	6.89	6.32	7.06
Rose petals+ Sugar (1:.75w/w)	8.02	7.23	7.01	6.89	7.29
Rose petals + Sugar (1:1.w/w)	8.35	7.43	7.16	7.12	7.52
Rose petals + Sugar (1:1.25w/w)	8.56	7.52	7.23	7.15	7.62
Rose petals + Honey (1:0.5w/w)	5.02	5.00	4.89	4.62	4.88
Rose petals + Honey (1:0.75w/w)	5.39	5.16	5.12	4.92	5.15
Rose petals + Honey (1:1w/w)	5.65	5.18	5.15	5.04	5.26
Rose petals + Honey (1:1.25w/w)	5.70	5.22	5.22	5.09	5.31
Rose petals+ Jaggery (1:0.5w/w)	4.34	4.06	4.15	3.89	4.11
Rose petals+ Jaggery (1:0.75w/w)	4.76	4.67	4.03	4.01	4.37
Rose petals+ Jaggery (1: 1w/w)	4.85	4.72	4.34	4.11	4.51
Rose petals + Jaggery(1:1.25)	4.84	4.79	4.66	4.37	4.67
C.D.	0.44	0.65	0.52	0.38	
SE(m)	0.15	0.22	0.18	0.13	
C.V.	4.25	4.78	3.56	4.21	

Table.2 Effect of ingredient combination on flavour of gulkand during ambient storage.

Treatment	0 days	20 days	40 days	60 days	Mean
Rose petals + Sugar (1:0.5w/w)	8.32	8.18	8.12	8.07	8.17
Rose petals+ Sugar (1:0.75w/w)	8.78	8.46	8.25	8.19	8.36
Rose petals + Sugar (1:1.w/w)	8.52	8.64	8.45	8.45	8.56
Rose petals + Sugar (1:1.25w/w)	8.68	8.65	8.48	8.45	8.59
Rose petals + Honey (1:0.5w/w)	4.42	4.38	4.36	4.32	4.37
Rose petals + Honey (1:0.75w/w)	4.56	4.42	4.40	4.39	4.44
Rose petals + Honey (1:1w/w)	4.62	4.57	4.51	4.43	4.53
Rose petals + Honey (1:1.25w/w)	4.76	4.68	4.61	4.48	4.63
Rose petals+ Jaggery (1:0.5w/w)	4.43	4.38	4.24	4.22	4.32
Rose petals+ Jaggery (1:0.75w/w)	4.50	4.45	4.34	4.34	4.41
Rose petals+ Jaggery (1: 1w/w)	4.72	4.64	4.52	4.50	4.59
Rose petals + Jaggery(1:1.25)	5.00	4.83	4.61	4.59	4.76
C.D.	0.27	0.46	0.36	0.52	
SE(m)	0.09	0.16	0.12	0.18	
C.V.	2.64	4.65	3.67	5.02	

Table.3 Effect of ingredient combination on taste of gulkand during ambient storage.

Treatment	0 days	20 days	40 days	60 days	Mean
Rose petals + Sugar (1:0.5w/w)	8.58	8.43	8.31	8.29	8.40
Rose petals+ Sugar (1:.75w/w)	8.86	8.53	8.44	8.40	8.56
Rose petals + Sugar (1:1.w/w)	8.93	8.73	8.54	8.40	8.65
Rose petals + Sugar (1:1.25w/w)	8.92	8.88	8.55	8.43	8.70
Rose petals + Honey (1:0.5w/w)	3.89	3.72	3.35	3.24	3.55
Rose petals + Honey (1:0.75w/w)	4.21	4.19	4.16	4.15	4.18
Rose petals + Honey (1:1w/w)	4.28	4.20	4.19	4.16	4.21
Rose petals + Honey (1:1.25w/w)	4.32	4.21	4.21	4.26	4.25
Rose petals+ Jaggery (1:0.5w/w)	4.44	4.24	4.08	4.04	4.20
Rose petals+ Jaggery (1:0.75w/w)	4.57	4.37	4.15	3.94	4.26
Rose petals+ Jaggery (1: 1w/w)	4.62	4.41	4.13	4.11	4.32
Rose petals + Jaggery(1:1.25)	4.71	4.41	4.23	3.97	4.33
C.D.	0.39	0.38	0.17	0.24	
SE(m)	0.13	0.13	0.06	0.08	
C.V.	3.92	3.93	1.79	2.57	

Table.4 Effect of ingredient combination on texture of gulkand during ambient storage.

Treatment	0 days	20 days	40 days	60 days	Mean
Rose petals + Sugar (1:0.5w/w)	8.36	8.12	8.02	8.00	8.13
Rose petals+ Sugar (1:.75w/w)	8.78	8.59	8.43	8.43	8.56
Rose petals + Sugar (1:1.w/w)	9.23	9.12	9.01	8.47	8.96
Rose petals + Sugar (1:1.25w/w)	9.38	9.32	9.22	9.17	9.27
Rose petals + Honey (1:0.5w/w)	5.89	5.78	5.53	5.25	5.61
Rose petals + Honey (1:0.75w/w)	6.12	6.04	5.53	5.99	5.92
Rose petals + Honey (1:1w/w)	6.61	6.33	6.14	6.04	6.28
Rose petals + Honey (1:1.25w/w)	6.76	6.62	6.57	6.34	6.57
Rose petals+ Jaggery (1:0.5w/w)	5.12	5.08	5.00	4.98	5.05
Rose petals+ Jaggery (1:0.75w/w)	5.33	5.18	5.06	5.03	5.15
Rose petals+ Jaggery (1: 1w/w)	5.54	5.42	5.34	5.21	5.38
Rose petals + Jaggery(1:1.25)	5.61	5.56	5.48	5.22	5.47
C.D.	0.38	0.46	0.32	0.33	
SE(m)	0.13	0.16	0.11	0.11	
C.V.	3.27	4.01	2.82	2.97	

Table.5 Effect of ingredient combination on overall acceptability of gulkand during ambient storage.

Treatment	0 days	20 days	40 days	60 days	Mean
Rose petals + Sugar (1:0.5w/w)	8.34	8.18	8.13	8.09	8.18
Rose petals+ Sugar (1:.75w/w)	8.65	8.52	8.49	8.41	8.51
Rose petals + Sugar (1:1.w/w)	8.62	8.68	8.59	8.54	8.6
Rose petals + Sugar (1:1.25w/w)	8.77	8.54	8.42	8.35	8.52
Rose petals + Honey (1:0.5w/w)	4.51	4.48	4.39	4.32	4.42
Rose petals + Honey (1:0.75w/w)	4.65	4.58	4.51	4.41	4.54
Rose petals + Honey (1:1w/w)	4.74	4.61	4.49	4.40	4.56
Rose petals + Honey (1:1.25w/w)	5.14	5.06	4.47	4.45	4.78
Rose petals+ Jaggery (1:0.5w/w)	4.12	4.08	3.92	3.90	4.00
Rose petals+ Jaggery (1:0.75w/w)	4.26	4.15	4.11	3.79	4.07
Rose petals+ Jaggery (1: 1w/w)	4.43	4.31	4.27	4.23	4.31
Rose petals + Jaggery(1:1.25)	4.68	4.43	4.39	4.27	4.44
C.D.	0.48	0.36	0.2	0.23	
SE(m)	0.16	0.12	0.06	0.07	
C.V.	4.83	3.71	2.07	2.45	

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