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Studies on coatings and packaging on shelf life and quality of custard apple cv. Balanagar

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Abstract
Present study entitled, "Studies on coatings and packaging on shelf life and quality of custard apple cv. Balanagar" was conducted during the year 2022 by using different treatments combination of coatings and packaging which was replicated thrice in factorial randomized block design. Fresh and fully matured uniform sized custard apple fruits harvested at physiological stage of maturity were coated with different edible coating like bee wax (6%), sago concentration (5%, 10%), arrow root powder (5%, 10%), *Aloe vera* gel (50%, 75%), without coating (Control). Above treated fruits were packed in 50 µ low density polyethylene bags with 1% and 1.5% perforation along with control making the 24 treatment combinations. The results indicated that, significant impact of treatment combination of coating and packaging material on all parameters. The treatment combination of coating of bee wax (6%) and packed in 50 µ low density polyethylene bags with 1% perforation had shown significantly superior result than other treatments. In treatment combination of coating of bee wax (6%) and packed in 50 µ LDPE bags with 1% perforation it was observed that in physical parameters *viz*; maximum fruit weight (138.00 at 2nd day, 137.04 at 4th day, 134.28 at 6th day and 130.99 g at 8th day), peel weight (68.19 g, 67.47 g, 66.32 g and 64.39 g), pulp weight (60.05 g, 59.46 g, 58.31 g and 56.38 g) and fruit firmness (8.05, 7.00 and 6.18 kg/cm^2), also in physico-chemical parameters *viz*; TSS (24.00, 25.33, 27.00 and 29.00 ^{o}Brix), total sugar (24.12, 26.00, 28.90 and 26.50%), reducing sugar (22.83, 23.93, 25.27, 21.56%), non-reducing sugar (3.04, 4.15, 6.20 and 9.50%) 2th, 4th, 6th and 8th day of storage moisture (77.47, 76.99 and 76.60%) at 4th, 6th and 8th day of storage.

Keywords: Custard apple, coatings, packaging, LDPE

Introduction
The custard apple well known as sugar-apple or sharifa is the fruit of *Annona squamosa* L. belonging to family Annonaceae. It is a semi deciduous, exotic subtropical fruit, consumed in many countries throughout the world. Custard apple, introduced in India from tropical South America, and is widely distributed throughout the tropical and subtropical regions.

The fruits of Custard apple are very delicate and highly perishable. Being climacteric in nature, the biochemical changes in the fruit after harvest occur at a faster rate. The mature fruits after harvest ripen quickly and become excessively soft within 2 to 3 days at ambient condition and become unfit for consumption. The increase in shelf life of custard apple fruit would, therefore, be an advantage to the growers. Fruit coatings are one such alternative as they not only improve external appearance, but also modify the internal atmosphere of fruits (Saftner, 1999) [19]. It is a comparatively newer technique of post-harvest treatment for fruits and vegetables to increase shelf-life which has virtually replaced old commercial methods of post-harvest treatments due to its obvious advantage. Use of coatings has gained importance in reducing the moisture loss and maintaining firmness (Farooqhi *et al*., 1988; Patel *et al*., 2011) [4, 17]. Coatings make good oxygen and lipid barriers at low to intermediate RH, because the polymers can effectively make hydrogen bonds.

Materials and Methods
The present investigation "Studies on coatings and packaging on shelf life and quality of custard apple cv. Balanagar" was be employed from October, 2022 using different types of coatings and packaging material carried out during the October-November, 2022 in the laboratory of Department of Horticulture, College of Agriculture, Dhule.

Experimental Material

Harvesting of custard apple fruits

Fresh and fully matured uniform sized custard apple fruits cv. Balanagar were harvested and washed thoroughly in running tap water to remove the adherent dirt material

Treatment with bee wax

For applying bee wax, fruits were dipped in aqueous solutions of bee wax 6% for 5 minutes and dried for 30 minutes at room temperature.

Treatment with sago emulsion

5% and 10% sago emulsion was prepared by dissolving 50 g and 100 g sago emulsion soaked overnight and each dissolving in 1000 ml of hot water. For applying sago emulsion, fruits were dipped in solutions of sago emulsion (5% and 10%) for 5 minutes and dried for 30 minutes at room temperature.

Treatment with arrow root powder

5% and 10% solution of arrow root powder was prepared by dissolving 50 g and 100 g in 1000 ml of water. Fruits were dipped in this solution for 5 minutes and dried for 30 minutes at room temperature.

Treatment with *aloe vera* gel

50% and 75% solution of *aloe vera* gel was prepared by dissolving 500g and 750 in 1000 ml of water. For applying *aloe vera* gel, fruits were dipped in aqueous solutions of aloe vera gel (50% and 75%) for 5 minutes and dried for 30 minutes at room temperature.

Packaging

After coating fruits were packed in 50 µ low density polyethylene bags with 1% and 1.5% perforation as well as without packaging.

Experimental details

The experiment was laid out in Factorial Randomized Block Design (FRBD) consisting of 24 treatments combinations comprising of coatings and packaging and were replicated thrice. Fifteen fruit were used as sample size for each treatment.

Results and discussion

Physical Parameters

Fruit weight (g)

Perusal of data presented in the Table 1, initial day of storage was determined to be non-significant for the interaction effect of coating and packaging materials on fruit weight of custard apples. Significant marked reduction in fruit weight across all treatment combinations at 2, 4, 6, and 8th days of storage. In C_1P_1 combination where fruits treated with 6% wax coating and packed in 50 µ LDPE bags with 1% perforation, the minimal fruit weight drop was recorded as 138.00, 137.04, 134.28 and 130.99 g on the 2, 4, 6 and 8th days of storage, respectively. In C_8P_3 combination without any coating and without packaging, maximum fruit weight reduction was measured as 131.43, 127.10, 121.31 and 111.71 g on the 2, 4, 6 and the 8th day, respectively. Lowest fruit weight percentage was recorded by treatment C_1P_1 (94.10%) compared to C_8P_3 (82.01%), which showed a greater reduction at 8th day of storage. These results in custard apple are in agreement with Patel *et al.* (2011) [17] and Masalkar and Garande (2005) [13]. Similar outcomes were also observed in result reported by Gholani and Bisen (2012) [1], Sahu (2003) [21] and Mahalle (2019) [14] in custard apple.

Peel weight (g)

Data depicted in Table 2 showed that, coating and packaging materials had no significant impact on the peel weight of custard apples during initial days of storage. However, the treatments had a significant impact on peel weight during day 2, day 4, day 6 and day 8th of storage. In all treatment combinations, a considerable reduction in peel weight was observed over the storage period. On days 2, 4, 6, and 8th of storage, maximum peel weights of 68.19, 67.47, 66.32, 64.39 g, respectively, were noted in C_1P_1 *i.e.* fruit treated with 6% wax coating and packaged in 50 µ LDPE bags with 1% perforation. In treatmentC_8P_3 (without coating and without packaging), the minimum peel weight was reported as 62.67, 62.41, 58.60, 54.72 g on the day 2, 4, 6 and 8th respectively. The results of experiment are in agreement with Mahalle (2019) [14], Dadzie and Orchard (1997) [3] in the study of custard apple.

Pulp weight (g)

From the data presented in the Table 3, it is observed that pulp weight of custard apple fruits were found to be significantly reduced during storage in all treatment combinations with exception of initial days of storage and eighth day of storage. Where the interaction effects of coating and packaging materials on pulp weight was found to be significant on 2, 4 and 6th days respectively. In treatment combination C_1P_1 (Fruit treated with 6% wax coating and packaged in 50 µ LDPE bags with 1% perforation) the maximum pulp weight was observed as 60.05, 59.46, 58.31 g on the 2, 4 and 6 days of storage, respectively. In C_8P_3 (without coating and no packaging) least amount of pulp weight was observed 56.70, 54.33, 51.30 g on the 2, 4,6 days respectively. Minimum pulp weight reduction in the form of percentage, C_1P_1 treatment combination was93.19% as compared C_8P_3 treatment combination there was 77.59% retention on 8th day of storage. These finding are in close conformity with Mahalle (2019) [14] in custard apple.

Fruit firmness (kg/cm^2)

Perusal of data presented in the Table 4, initial day and second day of storage fruit firmness had non-significant effect. However, on 4, 6, 8th day it had significant differences. Fruit treated with 6% wax coating and packed in 50 µ LDPE bags with 1% perforation (C_1P_1) had a minimal loss in fruit firmness of 8.05, 7.00 and 6.18 kg/cm^{2}on 4, 6 and 8thdays of storage respectively. On the fourth day, C_1P_1 (Beeswax 6% + 50 µ LDPE with 1% perforation) and C_1P_2 (Bees wax 6% + 50 µ LDPE with 1.5% perforation) were both at par.$C_1P_1$was superior than the other treatments on the sixth day. On 8th day of treatment combination C_1P_1 found to be superior as compared to rest of the treatments. The highest firmness reduction was 3.48, 2.24, 1.80 kg/cm ^{2} on 4, 6 day and 8th day for C_8P_3 *i.e.* without wax coating and without packaging, respectively. Less percentage of fruit firmness was

reduced (59.00%) in the C_1P_1 treatment combination and more (17.47%) in the C_8P_3 treatment combination up to 8th day. Similar result regarding fruits firmness by with Mahalle (2019) [14] and Venkatram and Bhagwan (2013) [24] in custard apple. Similar results regarding packaging were reported by Gill *et al*. (2015) [5] in mango and Jitareerat *et al*. (2016) [10] in mangosteen fruit.

Physico-chemical parameters

Total Soluble Solids (^{0}Brix)

From Table 5, data pertaining to TSS reflected that, total soluble solids of custard apples gradually increased as a result of the interaction between the coating and packaging materials. It was observed that, total soluble solids of custard apples on initial day, 2, 4, 6, 8th day showed significant differences. Treatment C_1P_1 (fruit treated with 6% wax coating and packed in 50 µ LDPE bags with 1% perforation) having 24.00, 25.33, 27.00 and 29.00 ^{0}Brix, had highest TSS, while in treatment combination C_8P_3 without treated fruit with coated and without packaging as 21.18, 22.33, 24.00 and 26.80 ^{0}Brix on 2, 4, 6 and 8 days of storage respectively had lowest TSS. In terms of storage study of custard apple fruits, present findings are similar with those of Ingawale *et al.*, (2005) [8], Kad (2014) [11], Mahalle (2019) [14], Bisen *et al.*, (2021) [2] and Jholgiker and Reddy (2007) [9]. Similar results observed by Meena *et al.*, (2009) [15] in ber.

Total sugar (%):

The database determining changes in total sugars is given in Table 6. The significant impact of coating and packaging material observed on the total sugar content in custard apple fruits. On initial day and second day total sugar was found to be non-significant but after that 4, 6, 8th day showed significant result during storage. Fruit treated with 6% wax coating and packed in 50 µ LDPE bags with 1% perforation (C_1P_1) had maximum total sugar values of 26.00, 28.90 and 26.50%. The effectiveness on 4th day was revealed in treatments C_1P_1, C_1P_2, C_1P_3, C_2P_1, C_2P_2, C_3P_1, C_3P_2, C_3P_3 and C_4P_1 are at par to each other and comparable to those of the other treatment combination. On day 6th and on day 8th, C_1P_1, C_1P_2 and C_3P_1were at par with one another. In C_8P_3 treatment combination fruits without a coating and without packaged, the minimum total sugar was observed as 23.50, 24.52 and 21.02% on 4, 6 and 8th days, respectively. In terms of storage study of custard apple fruits, present findings are similar with those of Sahu (2016) [20], Gohlani and Bisen (2012) [6], Mahalle (2019) [14], Bisen (2021) [2] *et al*., Patil *et al*. (2015) [18] and kad (2014) [11].

Reducing sugar (%)

Changing reducing sugar in custard apple showed in Table 7. Custard apple fruits lowering down sugar content gradually increased during the course of all storage periods up to six days before gradually declining for the remaining eight storage days. Maximum reducing sugar was observed in C_1P_1 that was treated with 6% wax coating and packed in 50 µ LDPE hags with 1% perforation as 22.83, 23.93, 25.27, 21.56% on the 2, 4, 6 and 8th days of storage. The lowest reducing sugar in C_8P_3 which were fruits treated without coating and without packaging was recorded as 21.24, 22.19, 22.66 and 18.00% on the 2, 4, 6, and 8th day, respectively. These experimental findings are agreement with Patel *et al.* (2011) [17], Singh and Sharma **(**2007) [23], Mahalle (2019) [14], Gohlani and Bisen (2012) [6] and Vyas *et al*. (2015) [25] in custard apple. Similar results were observed by Hynniewta *et al.* (2017) [7] in mango.

Non reducing Sugar (%)

The data clearly showed that, in Table 8. as storage time increased from two to eight days, non reducing sugar in custard apple fruits gradually increasing trend under all treatments. The maximum non reducing sugar was found in C_1P_1(6% bees wax coating and packed in 50 µ LDPE bags with 1% perforation) as 3.04, 4.15, 6.20 and 9.50%on the 2, 4, 6 and 8th day of storage, respectively. On 2, 4 6 and 8th and eight days, respectively, the minimum reducing sugar was observed C_8P_3 (without coating and without packaging) treatment combination 2.22, 2.50, 3.56 and 6.18%. Results of experiment are conformity with, Gohlani and Bisen (2012) [6], Mahalle (2019) [14] and Vyas *et al*. (2015) [25] obtained results of a similar nature increment of non- reducing sugar custard apple storage study.

Moistrure

Perusal of data presented in the Table 9., The fruit treated with was 6% wax coating and packed in 50 µ LDPE with 1% perforation (C_1P_1) recorded 77.47%, 76.99% and 76.60% reduction of moisture on the 4th, 6th and 8th day of storage, respectively. On 4th, 6th and 8th days, respectively, the maximum reduction moisture was measured in (C_8P_3) without coating and without packaging as 74.80%, 74.39%, 73.68%.Similar results were reported by Kad (2014) [11] who noted a decrease in moisture percentage in fruits of custard apples. Similar finding was revealed by Sahu (2016) [20] in custard apple and Salvador *et al*., (2003) [22], Kamthe, (2001) [12] and Mahalle (2019) [14] in related apple which supports to these findings in custard apple.

Table 1: Effect of coating and packaging material on fruit weight (g) of custard apple along with their interaction during storage

Treatments	Day 0			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	139.20 (100)	138.54 (100)	138.10 (100)	138.61
C_2	135.88 (100)	138.70 (100)	136.55 (100)	137.04
C_3	138.85 (100)	139.10 (100)	138.50 (100)	138.87
C_4	135.80 (100)	136.17 (100)	135.70 (100)	135.56
C_5	138.50 (100)	138.00 (100)	136.90 (100)	137.80
C_6	136.80 (100)	138.00 (100)	135.50 (100)	136.77
C_7	135.00 (100)	136.10 (100)	135.85 (100)	135.62
C_8	136.00 (100)	135.55 (100)	136.20 (100)	135.92
Mean	136.90	137.51	136.66	
	Coating(C)	Packaging(P)		(CxP)
SE(m)±	0.996	0.61		1.726
CD at 5%	NS	NS		NS
Treatments	**Day 2**			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	138.00 (99.13)	137.54 (99.05)	136.75 (99.02)	137.43
C_2	137.03 (99)	136.30 (98.26)	134.59 (98.56)	135.97
C_3	137.58 (98.97)	136.93 (98.43)	136.23 (98.36)	136.92
C_4	134.33 (98.91)	133.78 (98.24)	133.07 (98.06)	133.73
C_5	135.30 (97.68)	135.20 (98.24)	133.40 (98.06)	134.63
C_6	133.70 (97.68)	133.40 (97.97)	132.73 (97.44)	133.28
C_7	134.17 (97.73)	133.33 (97.96)	133.23 (98.07)	133.64
C_8	132.90 (97.72)	131.60 (97.08)	131.43 (96.49)	131.98
Mean	135.38	134.19	133.93	
	Coating(C)	Packaging(P)		(CxP)
SE(m)±	0.24	0.15		0.41
CD at 5%	0.67	0.41		1.17
Treatments	**Day 4**			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	137.04 (98.44)	135.38 (97.71)	134.31 (97.25)	135.88
C_2	132.92 (97.82)	132.40 (95.45)	130.33 (95.44)	131.88
C_3	135.57 (97.63)	134.37 (96.59)	132.00 (95.30)	133.98
C_4	130.00 (96.43)	130.40 (95.76)	128.18 (94.45)	129.53
C_5	132.33 (95.54)	131.83 (95.76)	131.13 (94.45)	131.77
C_6	130.67 (95.54)	130.33 (95.76)	130.00 (94.45)	130.33
C_7	132.33 (95.51)	132.00 (94.44)	131.39 (96.71)	131.91
C_8	127.40 (93.67)	127.33 (93.93)	127.10 (93.31)	127.28
Mean	132.28	131.76	130.56	
	Coating(C)	Packaging(P)	(CxP)	
SE(m)±	0.50	0.30	0.86	
CD at 5%	1.41	0.86	2.44	
Treatments	**DAY 6**			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	134.28 (96.46)	132.25 (95.45)	130.51 (94.50)	132.35
C_2	130.00 (95.67)	129.04 (93.03)	125.55 (91.94)	128.09
C_3	132.28 (95.26)	129.70 (93.24)	128.74 (92.95)	130.93
C_4	123.54 (91.64)	124.51 (91.43)	122.93 (90.58)	123.66
C_5	127.16 (91.81)	126.64 (91.43)	124.86 (90.58)	126.22
C_6	124.67 (91.81)	124.40 (91.76)	124.01 (91.20)	124.36
C_7	124.50 (91.13)	124.33 (90.14)	124.10 (91.35)	124.31
C_8	122.71 (90.22)	122.00 (90.00)	121.31 (89.06)	122.01
Mean	127.35	126.87	125.25	
	Coating (C)	Packaging(P)	(CxP)	
SE(m)±	0.39	0.24	0.68	
CD at 5%	1.12	0.69	1.94	

Treatments	Day 8			
	Packaging			
Coating	P_1	P_2	P_3	Mean
C_1	130.99 (94.10)	128.07 (92.44)	125.04 (90.54)	128.03
C_2	122.00 (89.78)	123.17 (88.80)	118.41 (86.71)	121.20
C_3	128.23 (92.25)	127.13 (91.39)	122.29 (88.29)	125.88
C_4	117.20 (86.94)	118.14 (86.75)	116.18 (85.61)	117.17
C_5	121.60 (87.79)	121.02 (86.75)	118.14 (85.61)	120.26
C_6	117.03 (87.79)	116.70 (87.69)	115.65 (86.29)	116.46
C_7	117.63 (85.54)	116.87 (85.56)	116.32 (85.62)	116.94
C_8	114.36 (84.08)	112.59 (83.06)	111.71 (82.01)	112.89
Mean	121.13	120.46	117.97	
	Coating(C)	Packaging(P)	(CxP)	
SE(m)±	0.22	0.13	0.37	
CD at 5%	0.61	0.38	1.06	

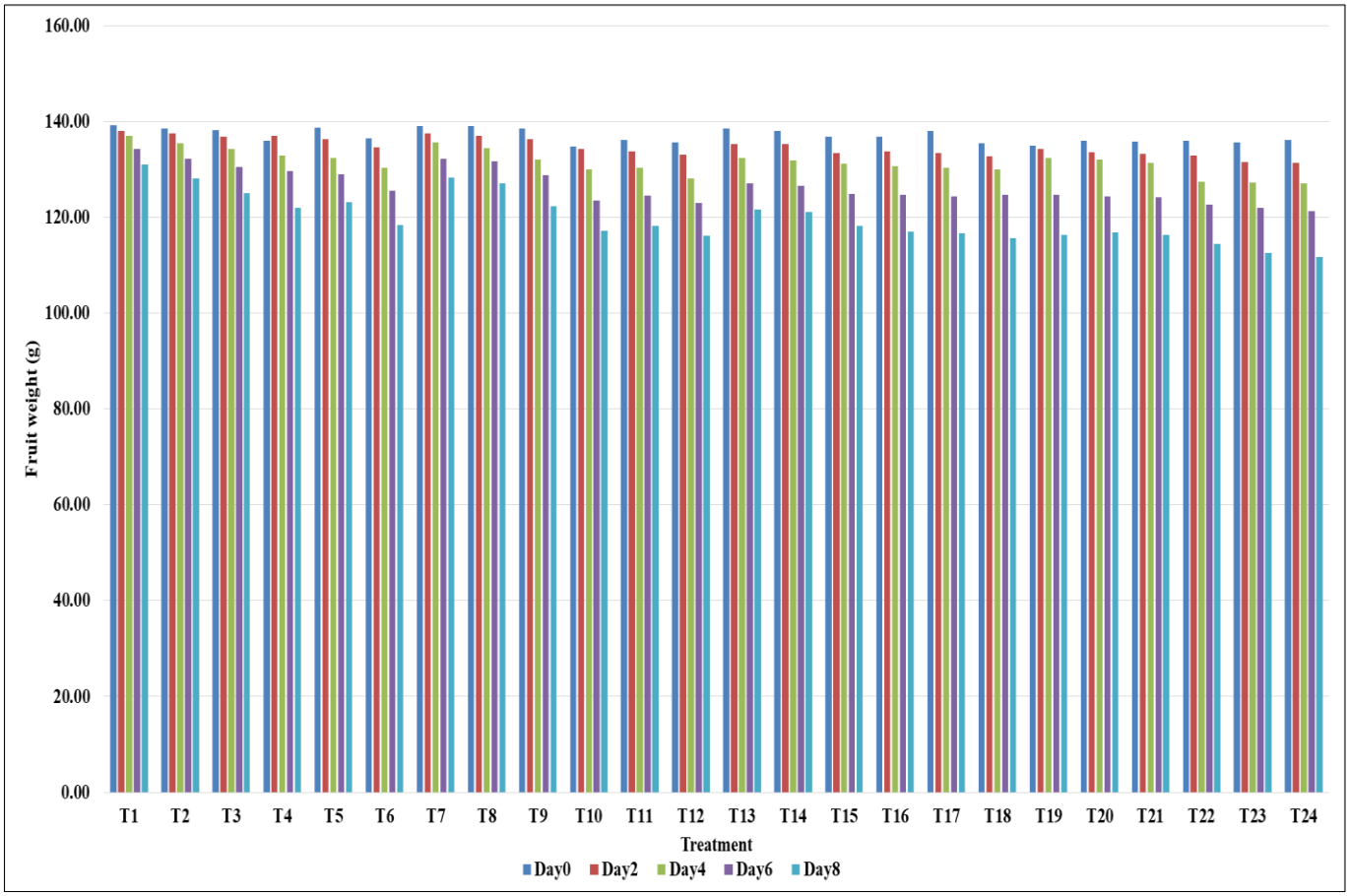

Fig 1: Effect of coating and packaging on fruit weight of custard apple along with their interaction during storage

Table 2: Effect of coating and packaging material on peel weight (g) of custard apple along with their interaction during storage

Treatments	Day 0			
	Packaging			
Coating	P_1	P_2	P_3	Mean
C_1	68.92 (100)	68.24 (100)	68.71 (100)	69.00
C_2	66.75 (100)	68.29 (100)	67.11 (100)	67.38
C_3	68.90 (100)	68.35 (100)	68.15 (100)	68.81
C_4	66.43 (100)	67.04 (100)	66.80 (100)	66.76
C_5	67.63 (100)	67.78 (100)	66.75 (100)	67.39
C_6	67.35 (100)	67.75 (100)	67.65 (100)	67.58
C_7	66.75 (100)	67.05 (100)	66.88 (100)	66.81
C_8	66.75 (100)	66.72 (100)	67.04 (100)	66.84
Mean	67.40	67.77	67.32	
	Coating(C)	Packaging(P)	(CxP)	
SE(m)±	0.582	0.356	1.007	
CD at 5%	NS	NS	NS	

Treatments	Day 2			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	68.19	67.71	66.39	67.43
C_2	66.70	66.38	65.83	66.30
C_3	67.90	67.29	66.00	67.40
C_4	64.99	64.23	65.00	64.74
C_5	66.57	66.40	65.77	66.24
C_6	65.73	65.13	65.27	65.38
C_7	65.94	65.84	64.80	65.53
C_8	63.83	64.33	62.67	63.61
Mean	66.36	65.93	65.36	
	Coating(C)	Packaging(P)		(CxP)
SE(m)±	0.31	0.19		0.53
CD at 5%	0.88	0.54		1.52

Treatments	Day 6			
	Packaging			
Coating	P_1	P_2	P_3	Mean
C_1	66.32	65.27	64.04	65.21
C_2	62.47	63.38	61.11	62.32
C_3	65.80	64.21	62.96	64.66
C_4	60.81	61.16	60.37	60.78
C_5	62.54	61.97	60.89	61.80
C_6	61.10	60.96	59.96	60.67
C_7	60.89	60.33	60.30	60.51
C_8	59.77	58.65	58.60	59.01
Mean	62.46	62.11	61.02	
	Coating(C)	Packaging(P)		(CxP)
SE(m)±	0.436	0.267		0.656
CD at 5%	1.208	0.601		1.803

Treatments	Day 4			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	67.47	66.79	65.99	66.75
C_2	65.58	64.54	63.71	64.64
C_3	67.00	66.79	65.12	66.30
C_4	63.53	62.90	62.88	63.10
C_5	64.78	64.22	63.30	64.10
C_6	63.71	63.50	62.78	63.33
C_7	63.56	63.04	62.70	63.10
C_8	62.70	62.39	62.41	62.50
Mean	64.66	64.41	63.61	
	Coating(C)	Packaging(P)		(CxP)
SE(m)±	0.037	0.022		0.064
CD at 5%	0.111	0.066		0.192

Treatments	DAY 8			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	64.39 (93.42)	62.98 (92.29)	61.47 (89.46)	62.94
C_2	60.53 (90.68)	60.50 (88.59)	58.07 (86.52)	59.70
C_3	63.13 (91.70)	62.48 (91.41)	60.30 (88.48)	61.97
C_4	57.81 (87.02)	58.11 (86.67)	57.23 (85.67)	57.72
C_5	59.80 (88.42)	59.51 (86.67)	57.81 (85.67)	59.04
C_6	57.70 (88.42)	57.20 (87.79)	56.48 (86.60)	57.13
C_7	57.17 (85.67)	57.08 (84.42)	56.89 (85.06)	57.05
C_8	55.68 (83.41)	55.18 (82.70)	54.72 (81.62)	55.19
Mean	59.52	59.13	57.87	
	Coating(C)	Packaging(P)		(CxP)
SE(m)±	0.563	0.345		0.975
CD at 5%	1.689	1.035		NS

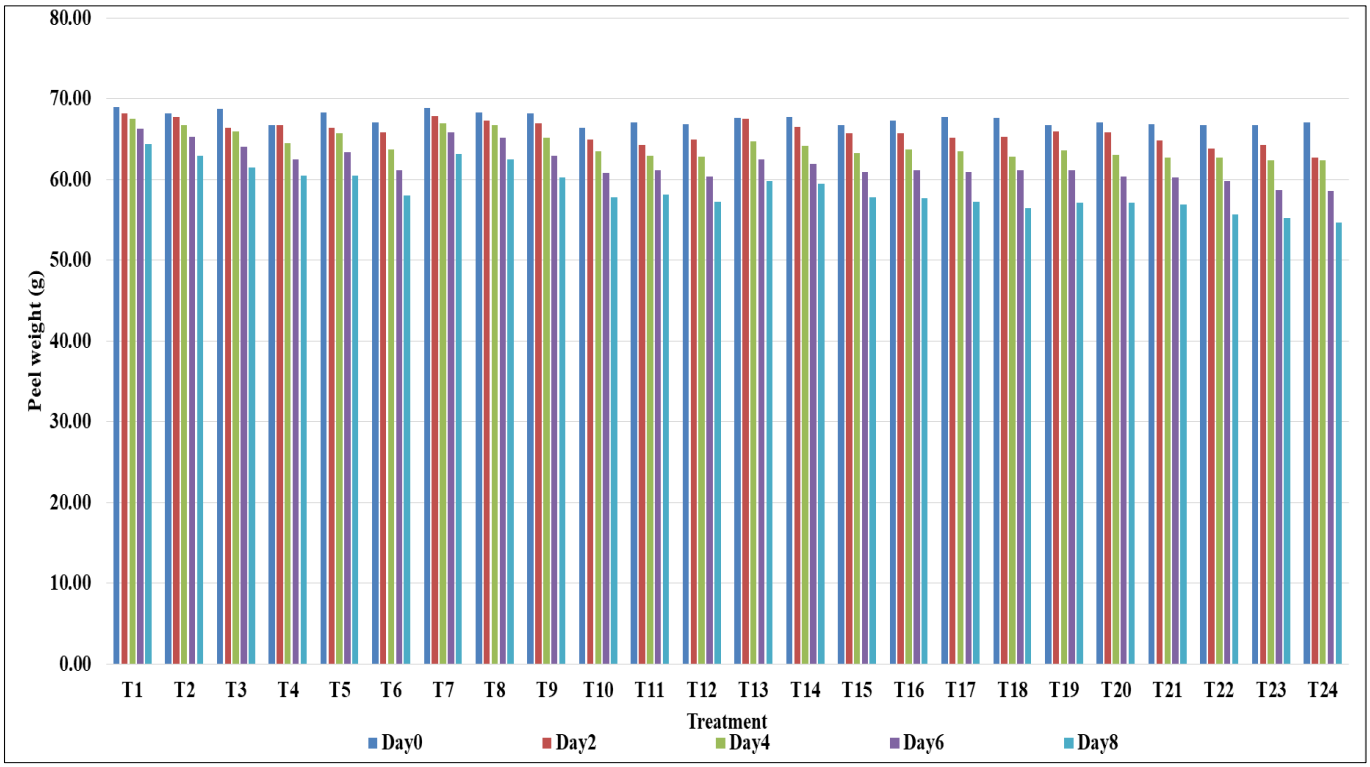

Fig 2: Effect of coating and packaging material on peel weight of custard apple along with their interaction during storage

Table 3: Effect of coating and packaging material on pulp weight (g) of custard apple along with their interaction during storage

Treatments	DAY 0			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	60.50 (100)	60.11 (100)	59.70 (100)	60.10
C_2	58.83 (100)	60.09 (100)	59.04 (100)	59.32
C_3	59.72 (100)	56.35 (100)	60.15 (100)	58.74
C_4	58.43 (100)	59.03 (100)	58.85 (100)	58.77
C_5	59.62 (100)	59.77 (100)	58.75 (100)	59.38
C_6	56.35 (100)	59.55 (100)	58.75 (100)	59.22
C_7	58.50 (100)	59.05 (100)	58.87 (100)	58.81
C_8	58.75 (100)	58.71 (100)	59.04 (100)	58.83
Mean	59.21	59.08	59.14	
	Coating(C)		Packaging(P)	(CxP)
SE(m)±	0.553		0.339	0.958
CD at 5%	1.986		0.985	NS
Treatments	**DAY 2**			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	60.05	59.67	59.27	59.66
C_2	59.00	58.01	57.78	58.26
C_3	59.10	58.53	57.88	58.50
C_4	57.04	57.64	57.09	57.26
C_5	58.50	58.20	57.50	58.13
C_6	57.45	57.25	56.85	57.18
C_7	57.55	57.30	56.95	57.27
C_8	57.10	57.01	56.70	56.93
Mean	58.22	57.95	57.14	
	Coating(C)	Packaging(P)	(CxP)	
SE(m)±	0.497	0.205	0.662	
CD at 5%	1.221	0.615	1.886	

Treatments	Day 4			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	59.46	58.79	57	58.41
C_2	57.68	56.40	55.70	56.59
C_3	58.79	57.06	56.30	57.38
C_4	54.90	55.42	54.88	55.07

C_5	56.76	56.11	55.32	56.06
C_6	55.53	55.30	54.77	55.20
C_7	55.74	55.56	55.03	55.16
C_8	54.70	54.59	54.33	54.44
Mean	56.45	56.03	55.67	

	Coating(C)	Packaging(P)	(CxP)
SE(m)±	0.49	0.30	0.849
CD at 5%	1.201	0.849	2.380

Treatments	**Day 6**			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	58.31	57.27	56.03	57.20
C_2	54.46	55.36	53.12	54.31
C_3	57.24	53.10	55.94	55.43
C_4	52.80	53.16	52.36	52.77
C_5	54.60	53.96	52.88	53.81
C_6	52.96	53.09	51.95	52.67
C_7	52.39	52.99	52.35	52.58
C_8	51.81	51.33	51.30	51.48
Mean	54.32	53.78	53.24	

	Coating(C)	Packaging(P)	(CxP)
SE(m)±	0.422	0.258	0.731
CD at 5%	1.206	0.738	2.001

Treatments	**DAY 8**			
	Packaging			
Coating	P_1	P_2	P_3	Mean
C_1	56.38 (93.19)	55.17 (91.78)	53.46 (89.54)	55.00
C_2	51.80 (88.05)	52.56 (87.46)	50.02 (84.72)	51.46
C_3	54.45 (91.17)	54.49 (96.69)	52.28 (86.91)	53.74
C_4	49.80 (85.23)	50.11 (84.88)	49.24 (83.67)	49.72
C_5	51.77 (86.83)	51.03 (85.37)	49.81 (84.78)	50.87
C_6	49.69 (88.18)	49.24 (82.68)	48.47 (82.50)	49.13
C_7	49.16 (84.03)	49.00 (82.98)	48.88 (83.03)	49.01
C_8	47.79 (81.34)	47.33 (80.61)	45.81 (77.59)	46.98
Mean	51.36	51.12	49.75	

	Coating(C)	Packaging(P)	(CxP)
SE(m)±	0.495	0.26	0.736
CD at 5%	1.213	0.743	NS

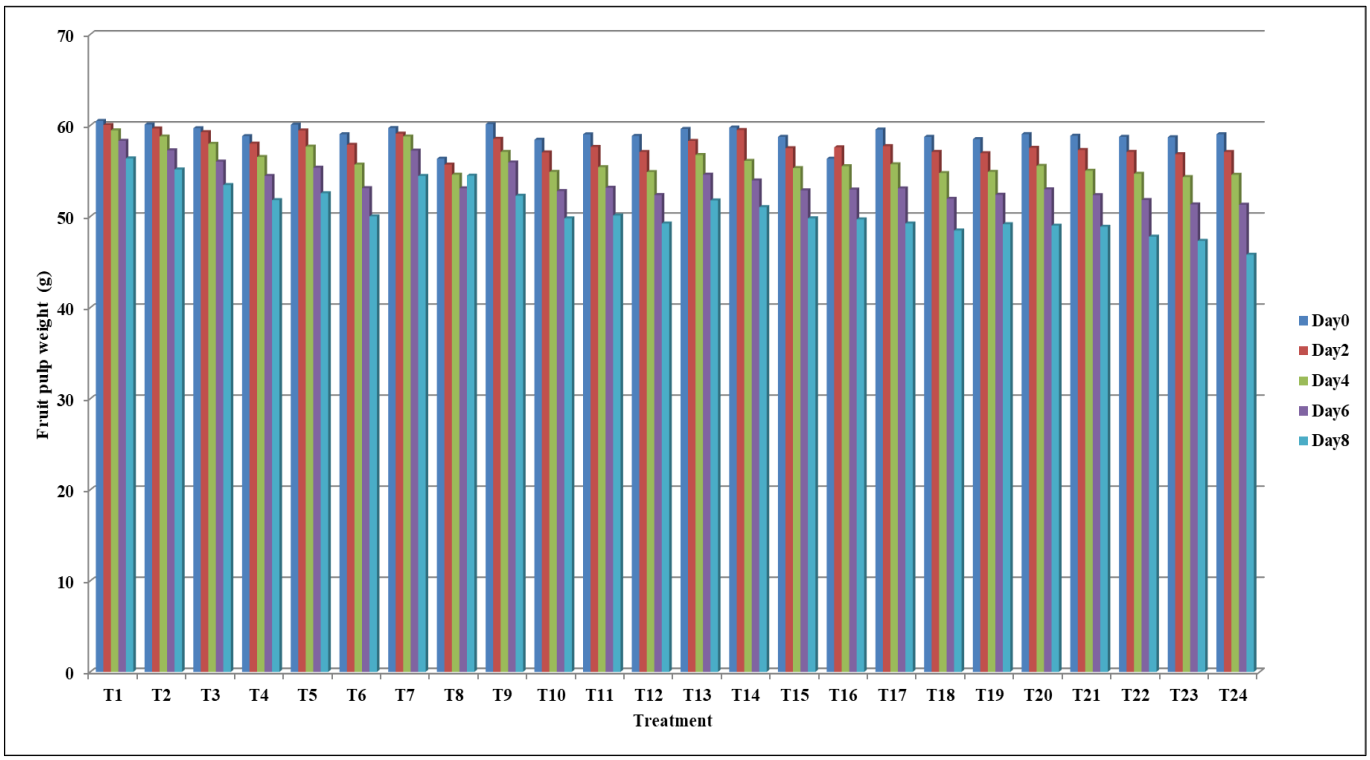

Fig 3: Effect of coating and packaging on pulp weight of custard apple along with their interaction during storage

Table 4: Effect of coating and packaging material on fruit firmness (kg/cm ^{2}) of custard apple along with their interaction during storage

Treatment	Day 2			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	9.50	9.33	8.78	9.20
C_2	8.66	8.50	8.41	8.52
C_3	9.18	8.90	8.48	8.85
C_4	7.56	7.45	6.66	7.22
C_5	8.32	8.07	7.48	7.96
C_6	6.30	6.12	5.81	6.08
C_7	7.30	7.03	6.24	6.86
C_8	5.74	5.60	5.33	5.56
Mean	7.82	7.63	7.15	
	Coating(C)	Packaging(P)	(CxP)	
SE(m)±	0.075	0.046	0.129	
CD at 5%	NS	NS	NS	

Treatment	DAY 0			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	10.30 (100)	10.30 (100)	10.30 (100)	10.30
C_2	10.30 (100)	10.30 (100)	10.30 (100)	10.30
C_3	10.30 (100)	10.30 (100)	10.30 (100)	10.30
C_4	10.30 (100)	10.30 (100)	10.30 (100)	10.30
C_5	10.30 (100)	10.30 (100)	10.30 (100)	10.30
C_6	10.30 (100)	10.30 (100)	10.30 (100)	10.30
C_7	10.30 (100)	10.30 (100)	10.30 (100)	10.30
C_8	10.30 (100)	10.30 (100)	10.30 (100)	10.30
Mean	10.30	10.30	10.30	
	Coating(C)	Packaging(P)	(CxP)	
SE(m)±	0.00	0.00	0.00	
CD at 5%	NS	NS	NS	

Treatment	Day 4			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	8.05	7.89	7.26	7.73
C_2	7.24	7.13	6.98	7.12
C_3	7.57	7.32	7.20	7.36
C_4	6.13	6.02	5.28	5.81
C_5	6.80	6.61	6.10	6.50
C_6	4.71	4.01	3.82	4.18
C_7	5.85	5.50	4.20	5.18
C_8	3.71	3.50	3.48	3.56
Mean	6.26	6.00	5.54	
	Coating(C)	Packaging(P)	(CxP)	
SE(m)±	0.049	0.03	0.084	
CD at 5%	0.139	0.085	0.241	

Treatment	Day 6			
	Packaging			
Coating	P_1	P_2	P_3	Mean
C_1	7.00	6.38	5.96	6.45
C_2	5.89	5.64	5.34	5.62
C_3	6.26	6.00	5.70	5.99
C_4	4.50	4.30	4.03	4.28
C_5	5.16	5.00	4.46	4.87
C_6	3.83	3.10	3.01	3.31
C_7	4.25	3.82	3.26	3.78
C_8	2.99	2.86	2.24	2.70
Mean	4.99	4.64	4.25	
	Coating(C)	Packaging(P)	(CxP)	
SE(m)±	0.038	0.023	0.066	
CD at 5%	0.108	0.066	0.187	

Treatment	DAY 8			
	Packaging			
Coating	P_1	P_2	P_3	Mean
C_1	6.18 (59.00)	5.30 (51.45)	5.00 (48.54)	5.49
C_2	4.94 (47.96)	4.83 (46.89)	4.54 (44.07)	4.77
C_3	5.18 (50.29)	5.04 (48.93)	4.88 (47.37)	5.03
C_4	3.95 (38.34)	3.70 (35.92)	3.21 (31.16)	3.62
C_5	4.15 (40.29)	4.04 (39.22)	3.98 (38.64)	4.06
C_6	2.90 (28.15)	2.24 (21.74)	2.15 (20.87)	2.43
C_7	3.50 (33.98)	3.21 (31.16)	2.60 (25.42)	3.10
C_8	2.88 (27.96)	2.45 (23.78)	1.80 (17.47)	2.38
Mean	4.21	3.85	3.52	
	Coating(C)	Packaging(P)	(CxP)	
SE(m)±	0.037	0.022	0.064	
CD at 5%	0.105	0.064	0.181	

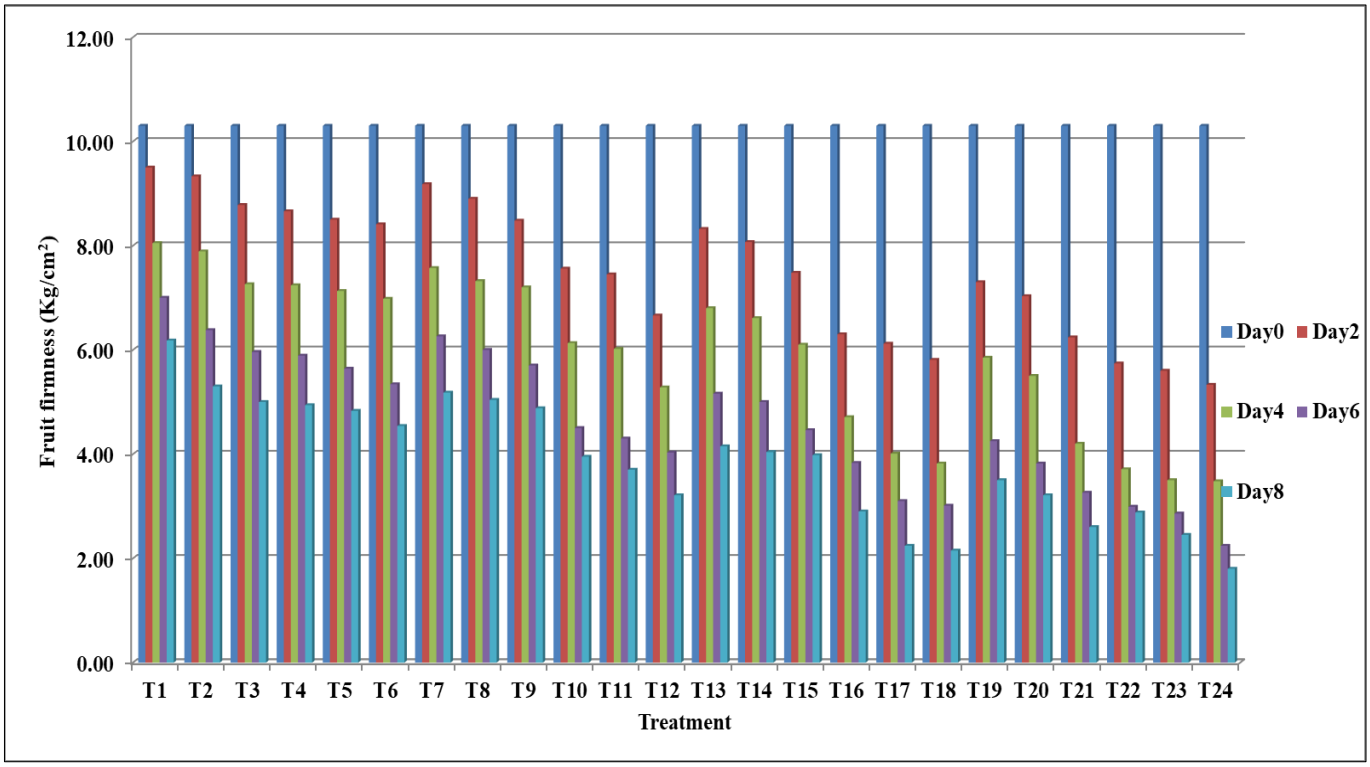

Fig 4: Effect of coating and packaging on fruit firmness of custard apple along with their interaction during storage

Table 5: Effect of coating and packaging material on total soluble solids (^{0}Brix) of custard apple along with their interaction during storage

Treatments	Day 0			
	Packaging			
Coating	P_1	P_2	P_3	Mean
C_1	21.25	21.25	21.25	21.25
C_2	21.25	21.25	21.25	21.25
C_3	21.25	21.25	21.25	21.25
C_4	21.25	21.25	21.25	21.25
C_5	21.25	21.25	21.25	21.25
C_6	21.25	21.25	21.25	21.25
C_7	21.25	21.25	21.25	21.25
C_8	21.25	21.25	21.25	21.25
Mean	21.25	21.25	21.25	21.25
	Coating(C)	Packaging(P)	(CxP)	
SE(m)±	0.00	0.00	0.00	
CD at 5%	NS	NS	NS	
Treatments	**Day 2**			
	Packaging			
Coating	P_1	P_2	P_3	Mean
C_1	24.00	23.40	22.68	23.36
C_2	22.08	22.54	22.10	22.24

C_3	23.74	22.73	22.40	22.95
C_4	22.54	22.37	22.40	22.44
C_5	23.33	22.76	22.16	22.75
C_6	22.70	22.60	22.23	22.51
C_7	22.74	22.08	22.29	22.37
C_8	22.30	22.41	21.18	21.97
Mean	22.93	22.61	22.18	
	Coating(C)	Packaging(P)		(CxP)
SE(m)±	0.22	0.14		0.38
CD at 5%	0.63	0.39		1.10

Treatments	**Day 4**			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	25.33	24.50	23.87	24.57
C_2	24.40	24.19	23.87	24.16
C_3	25.13	24.22	23.81	24.39
C_4	23.90	24.03	23.50	23.81
C_5	24.33	23.50	23.37	23.73
C_6	23.57	23.33	23.16	23.35
C_7	23.61	23.27	23.17	23.35
C_8	22.67	22.83	22.33	22.61
Mean	25.33	24.50	23.87	
	Coating(C)	Packaging(P)		(CxP)
SE(m)±	0.24	0.15		0.41
CD at 5%	0.68	0.41		1.13

Treatments	**DAY 6**			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	27.00	25.97	25.33	26.10
C_2	25.86	25.79	25.14	25.59
C_3	26.53	25.81	25.17	25.84
C_4	25.51	25.47	25.10	25.36
C_5	25.67	25.36	25.13	25.39
C_6	25.33	25.25	25.00	25.19
C_7	25.59	25.17	25.07	25.27
C_8	24.70	24.81	24.00	24.50
Mean	25.77	25.45	24.99	
	Coating(C)	Packaging(P)		(CxP)
SE(m)±	0.20	0.12		0.34
CD at 5%	0.56	0.34		0.97

Treatments	**Day 8**			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	29.00	28.50	27.90	28.30
C_2	27.95	27.80	27.30	27.95
C_3	28.72	28.10	27.85	28.10
C_4	27.68	27.54	27.21	27.48
C_5	27.65	27.53	27.48	27.55
C_6	27.45	27.30	27.15	27.30
C_7	27.65	27.46	27.30	27.47
C_8	27.08	27.05	26.80	26.98
Mean	27.90	27.66	27.44	
	Coating(C)	Packaging(P)		(CxP)
SE(m)±	0.206	0.126		0.356
CD at 5%	0.618	0.378		1.068

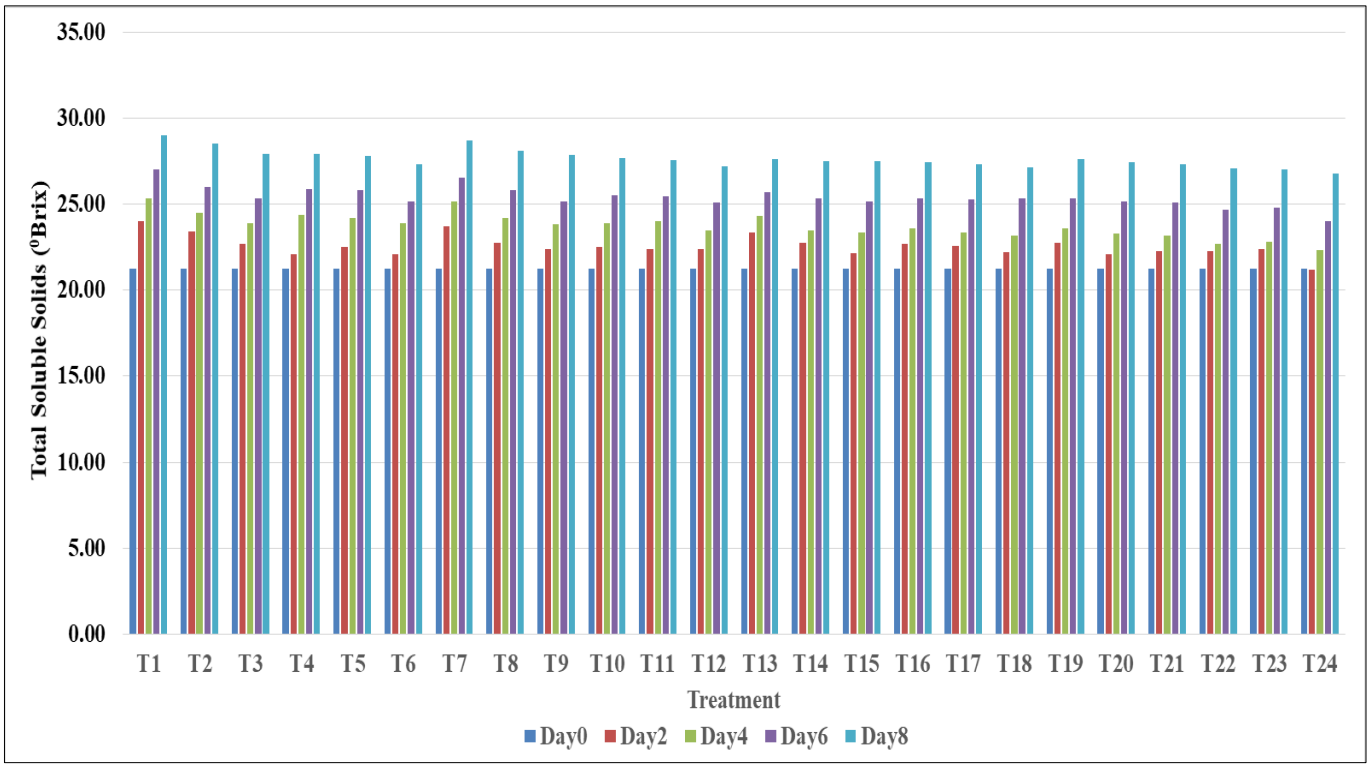

Fig 5: Effect of coating and packaging on total soluble solids of custard apple along with their interaction during storage

Table 6: Effect of coating and packaging material on total sugar (%) of custard apple along with their interaction during storage

Treatments	**Day 0**			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	21.80	21.80	21.80	21.80
C_2	21.80	21.80	21.80	21.80
C_3	21.80	21.80	21.80	21.80
C_4	21.80	21.80	21.80	21.80
C_5	21.80	21.80	21.80	21.80
C_6	21.80	21.80	21.80	21.80
C_7	21.80	21.80	21.80	21.80
C_8	21.80	21.80	21.80	21.80
Mean	21.80	21.80	21.80	
	Coating(C)	Packaging(P)	(CxP)	
SE(m)±	00	00	00	
CD at 5%	NS	NS	NS	

Treatments	**DAY 2**			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	24.12	24.04	23.72	23.96
C_2	23.91	23.73	23.35	23.66
C_3	23.95	23.90	23.54	23.79
C_4	23.38	23.28	23.07	23.24
C_5	23.57	23.54	23.20	23.43
C_6	22.78	22.70	22.50	22.66
C_7	22.99	22.90	22.50	22.79
C_8	22.60	22.54	22.40	22.51
Mean	23.41	23.32	23.03	
	Coating(C)	Packaging(P)	(CxP)	
SE(m)±	0.187	0.114	0.324	
CD at 5%	0.534	0.342	0.989	

Treatments	**DAY 6**			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	28.90	28.36	27.03	28.10
C_2	27.76	27.44	27.00	27.40
C_3	28.00	27.85	27.20	27.68
C_4	26.64	26.51	26.20	26.45

C_5	26.92	26.72	26.40	26.68
C_6	25.49	25.35	25.00	25.28
C_7	26.00	25.88	25.21	25.69
C_8	24.90	24.74	24.52	24.72
Mean	26.77	26.58	26.16	
	Coating(C)	Packaging(P)		(CxP)
SE(m)±	0.221	0.135		0.382
CD at 5%	0.630	0.386		0.970

Treatments	**DAY 4**			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	26.00	25.80	25.65	25.81
C_2	25.61	25.33	24.95	25.29
C_3	25.82	25.71	25.14	25.55
C_4	25.70	24.78	24.75	25.11
C_5	24.91	24.80	24.77	24.82
C_6	24.11	24.02	23.90	24.01
C_7	24.49	24.40	24.09	24.32
C_8	23.78	23.65	23.50	23.64
Mean	25.06	24.81	24.59	
	Coating(C)	Packaging(P)		(CxP)
SE(m)±	0.215	0.132		0.373
CD at 5%	0.615	0.564		0.965

Treatments	**DAY 8**			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	26.50	25.96	25.30	29.25
C_2	25.25	24.94	24.39	24.86
C_3	25.72	25.35	24.66	25.24
C_4	24.02	23.95	23.56	23.84
C_5	24.42	24.21	23.93	24.18
C_6	22.62	22.47	22.04	22.37
C_7	23.20	23.04	22.27	22.83
C_8	21.86	21.34	21.02	21.40
Mean	24.19	23.90	23.39	
	Coating(C)	Packaging(P)		(CxP)
SE(m)±	0.211	0.129		0.366
CD at 5%	0.603	0.369		1.044

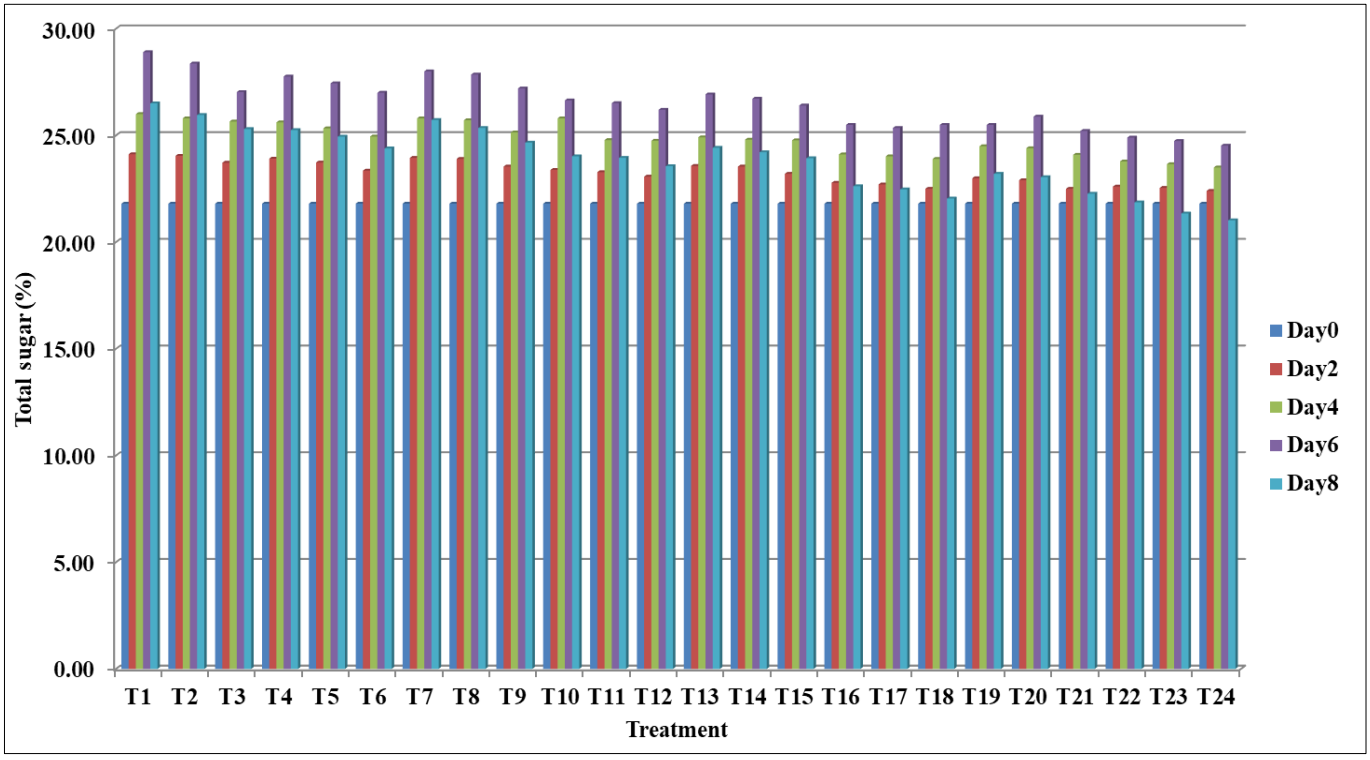

Fig 6: Effect of coating and packaging on total sugar of custard apple along with their interaction during storage

Table 7: Effect of coating and packaging material on reducing sugar (%) of custard apple along with their interaction during storage

Treatments	Day 0			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**P_1**
C_1	20.20	20.20	20.20	20.20
C_2	20.20	20.20	20.20	20.20
C_3	20.20	20.20	20.20	20.20
C_4	20.20	20.20	20.20	20.20
C_5	20.20	20.20	20.20	20.20
C_6	20.20	20.20	20.20	20.20
C_7	20.20	20.20	20.20	20.20
C_8	20.20	20.20	20.20	20.20
Mean	20.20	20.20	20.20	20.20
	Coating(C)	Packaging(P)		(CxP)
SE(m)±	00	00		00
CD at 5%	NS	NS		NS

Treatments	Day 2			
	Packaging			
Coating	P_1	P_2	P_3	Mean
C_1	22.83	22.47	22.19	22.39
C_2	22.41	22.28	21.94	22.21
C_3	22.42	22.38	22.11	22.30
C_4	22.16	22.10	21.88	22.04
C_5	22.17	22.11	21.97	22.08
C_6	21.53	21.48	21.40	21.47
C_7	21.66	21.60	21.43	21.56
C_8	21.38	21.35	21.24	21.32
Mean	22.03	21.97	21.77	
	Coating(C)	Packaging(P)		(CxP)
SE(m)±	0.199	0.122		0.344
CD at 5%	0.567	0.432		0.887

Treatments	DAY 4			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	23.93	23.66	23.58	23.69
C_2	23.62	23.39	23.06	23.35
C_3	23.67	23.60	23.23	23.50
C_4	23.13	23.08	23.00	23.07
C_5	23.10	23.06	22.90	23.02
C_6	22.60	22.57	22.54	22.57
C_7	22.84	22.78	22.72	22.78
C_8	22.42	22.35	22.19	22.32
Mean	23.14	23.06	22.90	
	Coating(C)	Packaging(P)		(CxP)
SE(m)±	0.206	0.126		0.356
CD at 5%	0.587	0.367		0.850

Treatments	DAY 6			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	25.27	25.05	24.70	25.07
C_2	24.68	24.41	24.18	24.42
C_3	24.82	24.76	24.35	24.64
C_4	24.14	24.06	23.82	24.00
C_5	24.19	24.15	24.10	24.15
C_6	23.27	23.20	23.00	23.16
C_7	23.60	23.65	23.10	23.45
C_8	22.92	22.85	22.66	22.81
Mean	24.11	24.01	23.739	
	Coating(C)	Packaging(P)		(CxP)
SE(m)±	0.211	0.129		0.366
CD at 5%	0.604	0.343		0.967

Treatments	DAY 8			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	21.56	21.08	20.64	21.094
C_2	20.68	20.42	20.00	20.36
C_3	20.91	20.65	20.14	20.56
C_4	20.12	20.10	19.87	20.03
C_5	20.26	20.20	20.00	20.15
C_6	19.19	19.10	18.83	19.04
C_7	19.45	19.35	19.01	19.27
C_8	18.75	18.23	18.00	18.33
Mean	20.11	19.89	19.56	
	Coating(C)	Packaging(P)		(CxP)
SE(m)±	0.153	0.094		0.266
CD at 5%	0.438	0.268		0.658

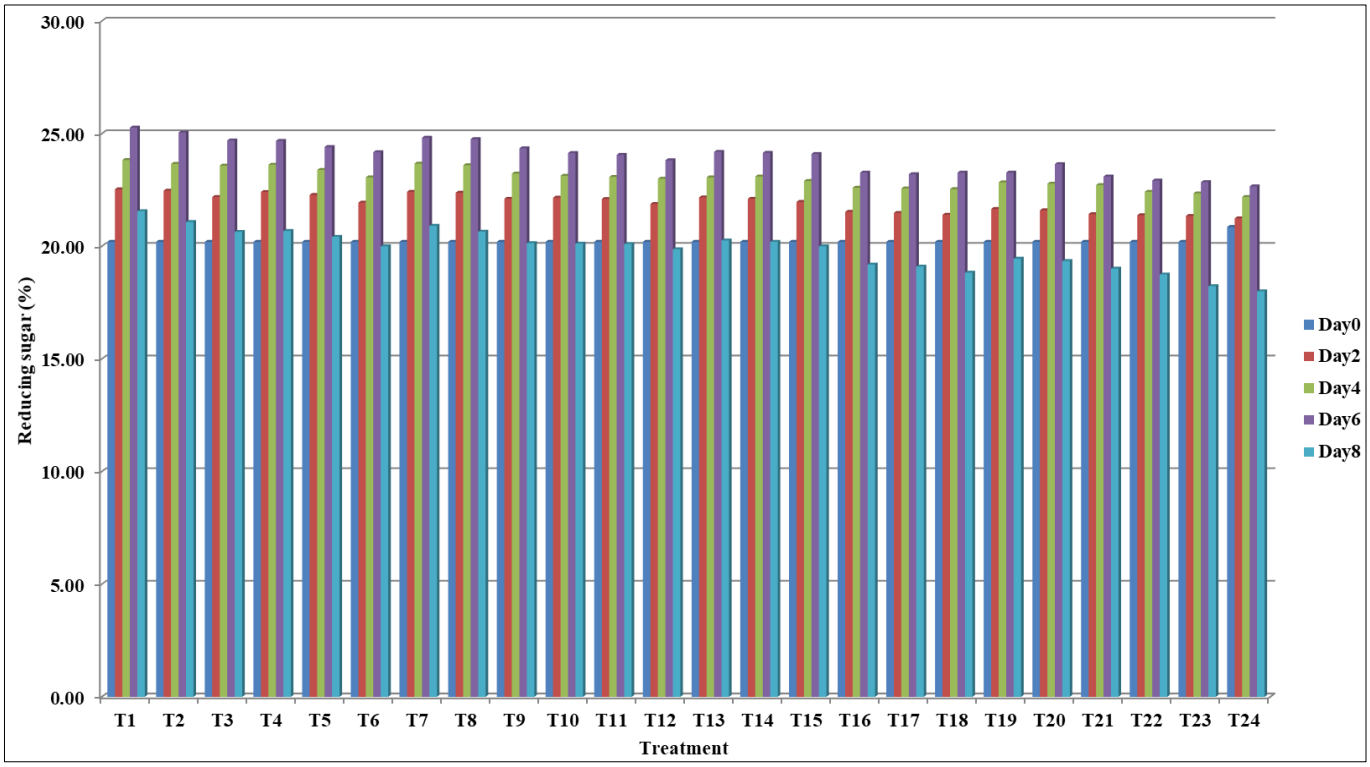

Fig 7: Effect of coating and packaging material on reducing sugar of custard apple along with their interaction during storage

Table 8: Effect of coating and packaging material on non-reducing sugar (%) of custard apple along with their interaction during Storage

Treatments	Day 2			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	3.04	3.00	2.93	2.99
C_2	2.87	2.78	2.70	2.78
C_3	2.96	2.91	2.73	2.87
C_4	2.34	2.25	2.20	2.26
C_5	2.67	2.38	2.16	2.40
C_6	2.40	2.34	2.26	2.33
C_7	2.55	2.45	2.33	2.44
C_8	2.31	2.28	2.22	2.27
Mean	2.64	2.55	2.44	
	Coating(C)	Packaging(P)		(CxP)
SE(m)±	0.022	0.013		0.038
CD at 5%	0.062	0.038		0.107

Treatments	Day 0			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	1.52	1.52	1.52	1.52
C_2	1.52	1.52	1.52	1.52
C_3	1.52	1.52	1.52	1.52
C_4	1.52	1.52	1.52	1.52
C_5	1.52	1.52	1.52	1.52
C_6	1.52	1.52	1.52	1.52
C_7	1.52	1.52	1.52	1.52
C_8	1.52	1.52	1.52	1.52
Mean	1.52	1.52	1.52	1.52
	Coating(C)	Packaging(P)		(CxP)
SE(m)±	00	00		00
CD at 5%	NS	NS		NS

Treatments	Day 4			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	4.15	4.02	3.96	4.04
C_2	3.81	3.72	3.61	3.71
C_3	4.08	3.90	3.66	3.88
C_4	3.20	3.15	3.06	3.14
C_5	3.54	3.25	3.10	3.30
C_6	2.89	2.77	2.60	2.75
C_7	3.16	2.98	2.63	2.92
C_8	2.60	2.55	2.50	2.55
Mean	3.43	3.29	3.14	
	Coating(C)	Packaging(P)		(CxP)
SE(m)±	0.026	0.016		0.045
CD at 5%	0.073	0.045		0.127

Treatments	Day 6			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	6.20	6.00	5.95	6.05
C_2	5.89	5.80	5.40	5.70
C_3	6.10	5.93	5.46	5.83
C_4	4.80	4.69	4.56	4.68
C_5	5.24	4.89	4.08	4.74
C_6	4.25	4.11	4.00	4.12
C_7	4.60	4.28	4.05	4.31
C_8	3.80	3.61	3.56	3.66
Mean	5.11	4.91	4.63	
	Coating(C)	Packaging(P)		(CxP)
SE(m)±	0.047	0.029		0.081
CD at 5%	0.134	0.082		0.233

Treatments	Day 8			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	9.50	9.39	9.12	9.38
C_2	8.98	8.79	8.38	8.80
C_3	9.17	8.83	8.44	8.81
C_4	8.40	8.37	8.25	8.57
C_5	7.50	7.40	7.25	7.38
C_6	7.10	8.00	7.75	7.61
C_7	7.36	7.29	6.60	7.08
C_8	6.40	6.24	6.18	6.27
Mean	8.05	8.04	7.94	
	Coating(C)	Packaging(P)		(CxP)
SE(m)±	0.065	0.04		0.112
CD at 5%	0.185	0.109		0.321

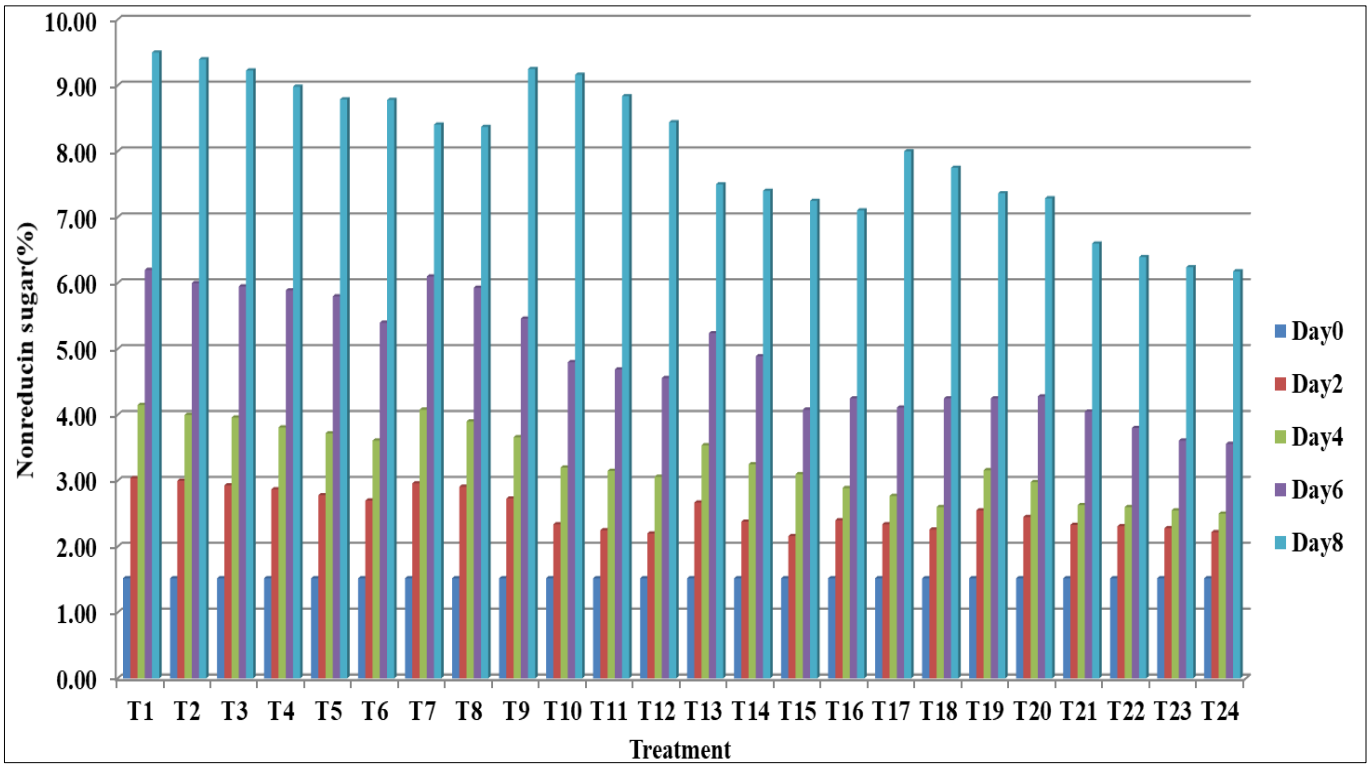

Fig 8: Effect of coating and packaging material on non-reducing sugar of custard apple along with their interaction during storage

Table 9: Effect of coating and packaging material on Moisture (%) of custard apple along with their interaction during storage

Treatments	**Day 0**			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	80.50	80.50	80.50	80.50
C_2	80.50	80.50	80.50	80.50
C_3	80.50	80.50	80.50	80.50
C_4	80.50	80.50	80.50	80.50
C_5	80.50	80.50	80.50	80.50
C_6	80.50	80.50	80.50	80.50
C_7	80.50	80.50	80.50	80.50
C_8	80.50	80.50	80.50	80.50
Mean	80.50	80.50	80.50	80.50
	Coating(C)	Packaging(P)		(CxP)
SE(m)±	00	00		00
CD at 5%	NS	NS		NS
Treatments	**DAY 2**			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	79.50	78.93	78.43	79.04
C_2	78.10	77.96	77.80	77.95
C_3	79.19	78.90	77.84	78.56
C_4	77.21	77.15	77.05	77.14
C_5	77.80	77.40	77.15	77.45
C_6	76.88	76.78	76.48	76.71
C_7	76.90	76.90	76.63	76.81
C_8	76.43	76.05	75.80	76.09
Mean	77.72	77.54	77.15	
	Coating(C)	Packaging(P)		(CxP)
SE(m)±	0.663	0.406		1.148
CD at 5%	NS	NS		NS
Treatments	**DAY 4**			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	77.47	76.83	76.73	77.01
C_2	76.87	76.40	76.35	76.54
C_3	77.34	76.80	76.59	76.91
C_4	76.20	76.13	76.01	76.11

C_5	75.95	75.97	75.77	75.89
C_6	75.79	75.68	75.48	75.65
C_7	76.10	75.71	75.46	75.76
C_8	75.09	74.89	74.80	74.93
Mean	76.35	76.05	75.90	
	Coating(C)	Packaging(P)		(CxP)
SE(m)±	0.21	0.13		0.36
CD at 5%	0.59	0.36		1.02

Treatments	**DAY 6**			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	76.99	76.52	76.43	76.65
C_2	76.07	75.82	75.80	75.90
C_3	76.82	76.39	76.27	76.49
C_4	75.91	75.74	75.57	75.74
C_5	75.73	75.69	75.46	75.63
C_6	75.48	75.38	75.25	75.37
C_7	75.81	75.45	75.11	75.46
C_8	74.79	74.56	74.39	74.58
Mean	75.95	75.69	75.53	
	Coating(C)	Packaging(P)		(CxP)
SE(m)±	0.17	0.11		0.30
CD at 5%	1.49	0.30		0.85

Treatments	**DAY 8**			
	Packaging			
Coating	**P_1**	**P_2**	**P_3**	**Mean**
C_1	76.60	75.97	75.87	76.14
C_2	75.60	75.21	75.07	75.29
C_3	76.29	75.92	75.84	76.02
C_4	75.15	74.92	74.64	74.90
C_5	75.04	74.97	74.73	74.91
C_6	74.53	74.42	74.27	74.41
C_7	74.90	74.55	74.29	74.58
C_8	73.96	73.76	73.68	73.80
Mean	59.58	59.45	58.81	
	Coating(C)	Packaging(P)		(CxP)
SE(m)±	0.20	0.12		0.34
CD at 5%	0.56	0.34		0.96

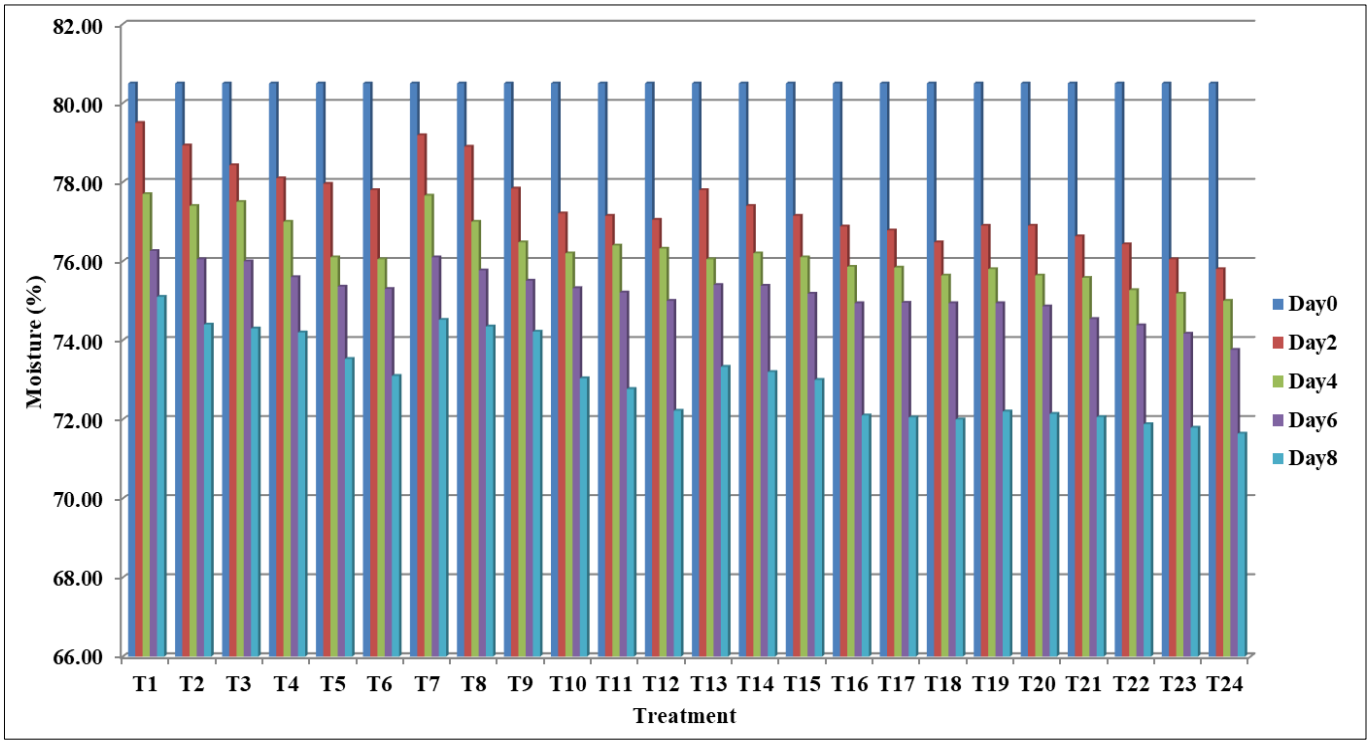

Fig 9: Effect of coating and packaging material on moisture of custard apple along with their interaction during storage

Conclusions

On the basis of findings of investigation, it can be concluded that fruits coated with 6% wax and packed in 50 µ LDPE bags with 1% perforation (C_1P_1) was found to be the most effective for extending shelf life and improving the quality of custard apple fruits in cv. Balanagar. These fruits also had the least physiological loss in fruit weight with highest fruit weight, as well as the highest peel weight, pulp weight, and total sugar, reducing sugar, and moisture per cent. Ripening of Custard apple fruits was postponed up to 8 days when treated with 6% wax coating and stored in 50 µ LDPE bags with 1% perforations, without negative impacting their physicochemical parameter values.

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