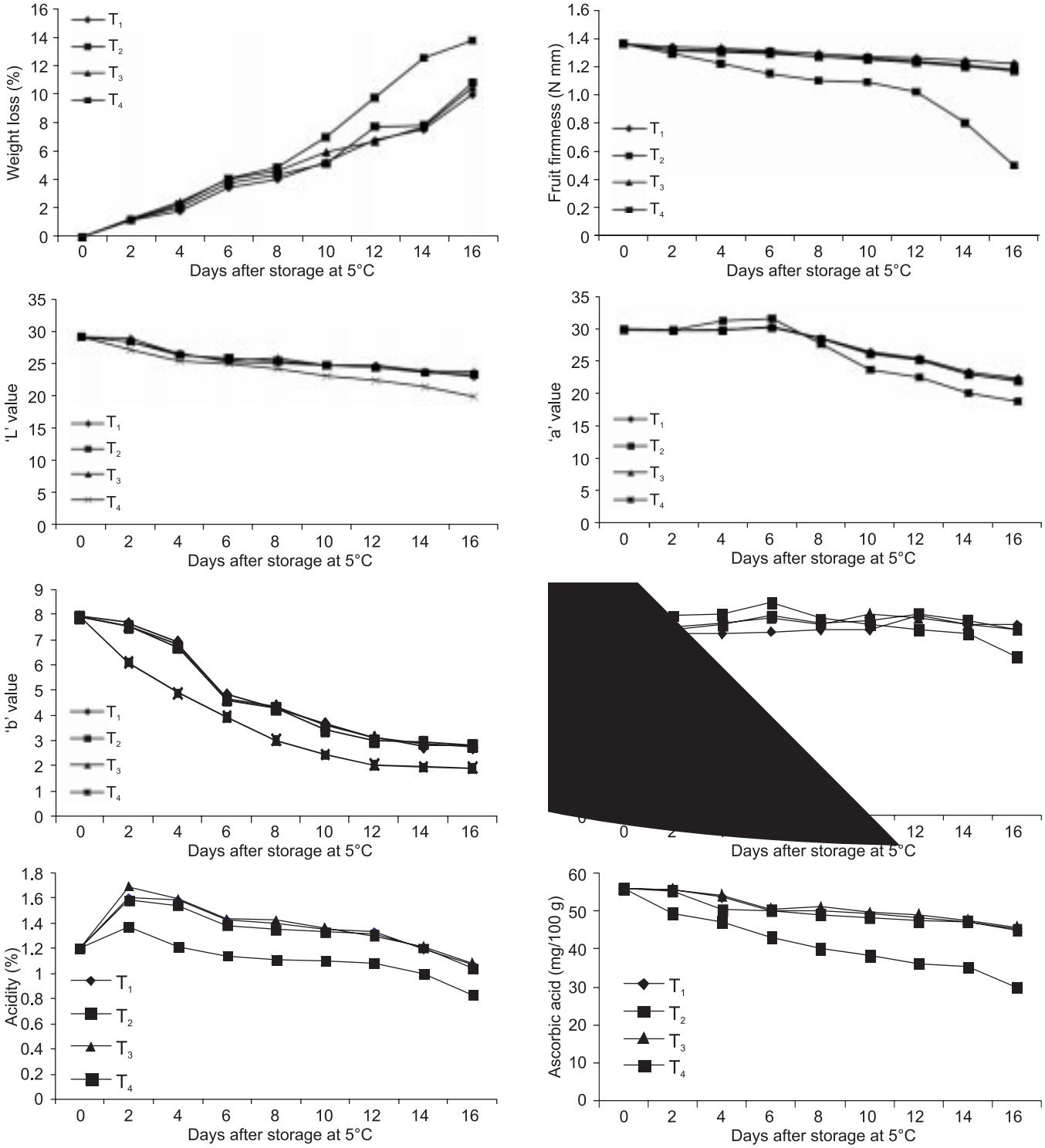

Figs 1–8 **1.** Percentage of weight loss during cold storage at 5°C of *Aloe vera* coated and control strawberry. Data are mean±S.E. **2.** Fruit firmness changes (N mm $^{-1}$) during cold at 5°C of *Aloe vera* coated and control strawberry. Data are mean±S.E. **3.** Changes in colour indicating 'L' value during cold storage at 5°C of *Aloe vera* coated and control strawberry. Data are mean±S.E. **4.** Changes in colour indicating 'a' value during cold storage at 5°C of *Aloe vera* coated and control strawberry. Data are mean±S.E. **5.** Changes in colour indicating 'b' value during cold storage at 5°C of *Aloe vera* coated and control strawberry. Data are mean±S.E. **6.** Changes in TSS of fruit changes during cold **storage** at 5°C of *Aloe vera* coated and control strawberry. Data are mean±S.E. **7.** Changes in acidity during cold storage at 5°C of *Aloe vera* coated and control strawberry. Data are mean±S.E. **8.** Changes in ascorbic acid content during cold storage at 5°C of *Aloe vera* coated and control strawberry. Data are mean±S.E.

harvest shelf life is the rate and extent or amount of loss of firmness during storage of soft fruit, such as strawberries. Fruit softening is attributed to the degradation of cell wall components, mainly pectin, due to action of specific enzymes such as polyglacturonase. The composite coatings have shown a good result with respect to the retention of fruit firmness probably because this coating slowed down metabolism and prolonged the storage life, an effect shown by El Gaouth *et al.* (1991 a) using Chitosan coatings in strawberries**.**

Effect on colour values of fruits

The main colour changes were observed for L, a and b colour which reduced during storage period; however significant differences were found between control and *Aloe vera* treated fruits ($P>0.05$). Both control and *Aloe vera* treated (coated) strawberries initially showed a decrease in L value. Upon subsequent storage *Aloe vera* treated fruits had high L value compared to control. However among different *Aloe vera* treatments T1 (1: 3 ratio) ratio was found effective to maintain the L value significantly (Fig 3). However after the first day of storage control samples developed more 'a' value, ie redness compared to treated fruits. During prolonged storage decrease in redness was rapid in fruits stored without any pretreatment. Among the *Aloe gel* treatments T1 (1: 3 ratio) was found more effective to maintain the colour of the fruits. 'b' value indicating the vivid colour was noted by significant lower value in control samples as compared with treated fruits of strawberry fruits. Differences in external colour between coated and uncoated samples during the storage period at 25°C were more acute than those reported by Garcia *et al.* (1998a) and Zang and Quantick (1998). Edible coatings reduce the respiration rate of fruits. The highest storage temperature used in this study increased respiration and gave rise to more significant differences between coated and uncoated samples.

Effect on total soluble solids (TSS) of fruits

Total soluble solids significantly ($P>0.05$) increased with storage time in all treatments (Fig 6). However in control increase was rapid from day 2 itself and reached the maximum 9.4 Brix at 6th day of storage thereafter there was decrease in TSS i.e., 7.0° Brix at 16th day of cold storage. In case of treated strawberries TSS was found 8.4 Brix in T1 (*Aloe gel* 1: 3), 8.2 in T2 (*Aloe gel* 1: 2) and T3 (*Aloe gel* 1: 2), respectively at the end of storage study.

Table 1 Mean of the attributes in the sensory evaluation for the shelf-life of *Aloe vera* gel coated strawberry stored at 5°C during 16 days

Parameter	Treatment	Storage period at 5°C (Days)				
		2	4	8	12	16
Appearance	*Aloe vera* gel 1: 3	7.6	7.5	7.4	7.4	7.3
	Aloe vera gel 1: 2	7.3	7.2	7.1	7.1	7.0
	Aloe vera gel 1: 1	7.4	7.1	7.0	7.0	6.9
	Control	6.6	6.6	5.7	5.5	5.0
CD (P=0.05)		0.191	0.191	0.259	0.191	0.192
Firmness	*Aloe vera* gel 1: 3	7.4	7.2	7.3	7.1	7.1
	Aloe vera gel 1: 2	7.5	7.2	7.1	7.0	7.0
	Aloe vera gel 1: 1	7.3	7.2	7.1	7.1	7.0
	Control	7.0	6.5	6.0	5.9	5.5
CD (P=0.05)		0.235	0.156	0.199	0.175	0.191
Colour	*Aloe vera* gel 1: 3	7.6	7.5	7.4	7.3	7.2
	Aloe vera gel 1: 2	7.5	7.3	7.2	7.2	7.1
	Aloe vera gel 1: 1	7.4	7.2	7.1	7.1	7.0
	Control	7.1	6.9	6.0	5.6	5.0
CD (P=0.05)		0.302	0.191	0.191	0.191	0.191
Taste	*Aloe vera* gel 1: 3	8.0	7.6	7.5	7.3	7.2
	Aloe vera gel 1: 2	7.8	7.5	7.2	7.0	7.0
	Aloe vera gel 1: 1	7.7	7.5	7.3	7.2	7.0
	Control	7.2	6.9	6.3	5.7	5.0
CD (P=0.05)		0.191	0.221	0.175	0.191	0.191
Over all acceptability	*Aloe vera* gel 1: 3	7.6	7.4	7.2	7.1	7.1
	Aloe vera gel 1: 2	7.6	7.2	7.1	7.1	6.9
	Aloe vera gel 1: 1	7.7	7.2	7.1	7.0	7.0
	Control	7.5	6.3	5.9	5.5	5.0
CD (P=0.05)		NS	0.191	0.175	0.191	0.191

Scores for appearance, firmness, colour, taste, and overall acceptability; 1: Dislike extremely; 2, dislike very much; 3, dislike moderately; 4, dislike slightly; 5, liked/disliked; 6, liked slightly; 7, like moderately; 8, liked very much; 9: liked extremely

Effect on acidity of fruits

Titratable acidity increased significantly (P>0.05) in first two days of storage in all the treatments and untreated control strawberries, thereafter, a rapid decrease was noticed in all the treatments including control fruits. However the decrease was rapid in control. At end of storage (16 days) the titrable acidity was found to be 0.83% and 1.37, 1.26 and 1.08 in T1 (1: 3), T2 (1: 2) and T3 (1: 1) respectively (Fig 7). The decrease in acidity indicates attainment of maturity in strawberry fruits, irrespective of their pre-treatments. Similar trends showing the decrease of acidity in coated and uncoated strawberry fruits have been reported by El Gaouth *et al.* 1991a for chitosan based formulation and by Garcia *et al.* 1998a, 1998b for starch based coatings.

Effect on Ascorbic Acid (Vitamin C) contents

Ascorbic acid content of the fruits significantly (P>0.05) decreased with the storage time in all the treatments (Fig 8). Ascorbic acid decreased with storage period, however, but fruits coated with *Aloe vera* showed minimum decrease for the period of 16 days storage (45±0.4 mg/100 g in treated and 30±0.5 mg/100 g in untreated fruits. The *Aloe vera* coating has delayed ripening of strawberry during storage as indicated by retention in titratable acidity, minimal changes in TSS and ascorbic acid content.

Sensory evaluation of strawberry

The sensory evaluation of strawberry fruits showed that during initial days of storage appearance, colour and brightness of the treated as well as control (Table 1) fruits were acceptable for consumption but at the end of the study period fruits in control were rejected due to their dull colour and overripe conditions. Coatings significantly (P>0.05) improved the shelf life of strawberry by maintaining appearance, firmness, colour, taste scoring > 7.0 which indicates that the consumers would prefer *Aloe vera* coated fruits. Among the treated fruits T1 (1: 3 ratio) was the best in terms of consumer's acceptability. From the results of sensory evaluation for taste of strawberries, *Aloe vera* coatings had no negative effect (P>0.05) on flavour, taste, firmness and appearance of strawberry scoring. Results indicate that *Aloe vera* coatings can be used to coat strawberry fruits for quality maintenance and improving shelf life. Particularly, *Aloe vera* 1: 3 ratio was mostly liked by judges and consumers as well.

It can be concluded that *Aoe vera* gel applied as agri based coating in fruits is beneficial for retarding the ripening process of strawberry fruits. It acts as a barrier to moisture loss; thereby reduces the weight loss and maintains fruit firmness. *Aloe vera* delays colour change, maintains quality attributes like acidity, ascorbic acid and TSS and improves storability significantly. Results on sensory analysis confirm the beneficial effect in terms of taste, aroma and appearance. Further this treatment can be tested for other fruits to observe its effect on quality maintenance, safety and commercial application on large scale.

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