

FORMAT OF EXTENDED SUMMARY

NASRAFUH-18

The extended summary should be prepared in MS-Word not exceeding 800 words (within 2 pages).

1. Title of extended summary (standard format) – Botanical Names must be in italics
2. Title should be followed by author's names, details and affiliation.
3. Abstract should be written in short.
4. Keywords are not required.
5. Introduction should be according to the content theme.
6. Methods should be written in short but covering all the details.
7. Results and discussions should be written properly.
8. Recommendation is needed to be highlighted.
9. One-two tables can also be added for highlighting the research findings.
10. Maximum of 2-3 references is permitted.
11. Figures can also be added given that the page limit is not exceeding.
12. Extended summary after proper checking shall have to be sent to mail id: Nasrafuh@gmail.com

Effects of aloe vera edible coating on quality and postharvest physiology of ber (*Zizyphus mauritiana* Lamk.) under ambient storage conditions

Author's name

Author's affiliation (institute name & details)

Corresponding author's mail id

Abstract: The study was conducted to check efficacy of aloe vera gel as edible coating so as to enhance shelf life of ber. The treatment combinations were T₁ (control), T₂ (corn starch @1%) and T₃ (Aloe vera gel @2%). The physio-chemical properties, hardness and decay percentage of fruits were observed till 15th day of storage. The study revealed that the coating of aloe vera gel was effective in retaining quality of Ber fruit over a storage period of at least 15 days. Aloe vera gel coated fruits showed minimum physiological loss in weight, minimum shrinkage percentage, maximum colour retention, lesser loss in acid content as compared to uncoated ones.

Introduction: Ber (*Zizyphus mauritiana* Lamk.) is one of the important minor fruit crop which is eaten fresh or processed. Ber fruit is highly perishable and has poor shelf life at ambient condition. During its peak season, due to the surplus of fruits in local market, a substantial quantity goes to waste, resulting in heavy postharvest losses. Edible coatings is cheap alternative that provides a barrier against external elements and therefore increase shelf life by reducing gas exchange, loss of water, flavors and aroma and solute migration through cuticle. *Aloe vera* gel is a medicinal plant which can be used as an edible coating material for fruits for its antifungal and antibacterial properties. Hence, studies were carried out to evaluate the efficiency of *Aloe vera* as an edible coating to extent the shelf life of ber.

Materials and Methods: Matured ber c.v. Umran were collected and were subjected to edible coating of following treatments: T₁ = control, T₂= corn starch (1%) and T₃= Aloe vera gel (2%). The number of replications was 3. The fruits were physio-chemical parameters, visual parameters and hardness at storage. Physiological loss in weight (PLW) was calculated based on initial weight and weight at subsequent intervals AOAC (1994). Length and breadth (mm) were measured as an index for shrinkage by digital vernier calipers. Fruit colour was recorded with the help of Royal Horticulture Society colour chart. Chemical analysis like TSS was determined by hand refractometer. Total and reducing sugar were estimated by the method described by Mazumdar and Majumder, (2003). The acidity and ascorbic acid were estimated by the method described by Rangana, (1977). The pH of the Ber fruit was determined as per the method of AOAC (1994). Degree and rate of fruit spoilage were visually observed. Instrumental texture or hardness determination was done by texture analyzer using 2mm probe. The study consists of a Randomized Block Design, with 3 replicates. The data presented in this paper was analyzed by SPSS 17.

Results and Discussion: Physiological loss in weight was maximum in control (22.65%) samples whereas T₃ showed minimum loss (22.65%) followed by T₂ (11.49%) at 15th day. Shrinkage percentage in length is maximum in T₁ (47.23) and minimum in T₃ (35.9), while T₂ shows a average shrinkage percentage of 44.41. Shrinkage percentage in breadth showed a similar pattern, T₁ showed a maximum shrinkage percentage (39.32) followed by T₂(36.16) and T₃(29.25) respectively. At the time of harvesting, fruits were yellowish green (YGG150B) coloured, which changed to brown (BG200D) in T₁; grayish brown (GBG199C) in T₂ and yellow green (YGG145B) in T₃. The fall in titratable acidity was maximum in T₁ (3.92) at 15th day. T₃ showed minimum fall in the titratable acidity (11.48 to 7.21) followed by T₂ (11.64 to 6.37). In T₁ the TSS falls from 13.08 at 0 day to 3.8 at 15th day of storage. Similar results can also be observed in case of T₂ and T₃. The rate of fall in TSS of treated fruit is lower as compared to that of uncoated ones. Total sugar in untreated fruits shows an increase from 8.17 at 0 day to 12.93 at 15th day of storage. In T₃ there was a significant increase in total sugar at 15th day. The total sugar content was 8.65 at 0 day to 11.29 at 15th day of storage. Decline in ascorbic acid content of the fruits were more in case of T₁ as compared to T₂ and T₃. T₁ showed a decline in ascorbic acid content from 89.37 at 0 day to 75.87 at 15th day of storage. Hardness (N) was maximum in T₃ (462.74) followed by T₂(445.22) and T₁(291.60). T₂ and T₃ have a less and least decay percentage upto 15th day of storage. Only 25% fruits were found decayed in T₃ (aloe vera gel) which is a remarkable achievement.

Recommendation: Aloe vera gel is effective in retaining quality of ber fruit over a storage period of at least 15 days.

Table 1: Physical properties and spoilage percent at 15th day of storage.

| Treatment | Physiological loss in weight (g) | Shrinkage percent (%) | | Colour | Hardness (N) | Spoilage percentage (%) |
|-------------------------|----------------------------------|-----------------------|---------|--------------|--------------|-------------------------|
| | | Length | Breadth | | | |
| T1 (Control) | 22.65 | 47.23 | 39.32 | BG200D | 291.60 | 98.33 |
| T2 (corn starch) | 11.49 | 44.41 | 36.16 | GBGN199 C | 445.22 | 68.33 |
| T3 (aloe vera) | 9.75 | 35.9 | 29.25 | YGG145B | 462.74 | 25.00 |

| | | | | | | |
|------------|------|---|---|---|--------|--------|
| gel) | | | | | | |
| S.Em. (±) | 0.67 | - | - | - | 18.89 | 3.04 |
| C.D. at 5% | 2.69 | - | - | - | 76.160 | 12.268 |

Table 2: Bio-chemical properties of fruit at 15th storage day

| Treatment | pH | Titrateable acidity (%) | TSS (°B) | Total sugar (%) | Reducing sugar (%) | Ascorbic Acid (mg/100g) |
|-------------------|-------|-------------------------|----------|-----------------|--------------------|-------------------------|
| T1 (Control) | 5.83 | 3.92 | 3.80 | 12.93 | 6.30 | 75.87 |
| T2 (corn starch) | 5.5 | 6.37 | 5.34 | 11.93 | 5.83 | 78.81 |
| T3 (aloevera gel) | 5.53 | 7.21 | 6.09 | 11.29 | 5.23 | 79.96 |
| S.Em. (±) | 0.095 | 0.213 | 0.167 | 0.11 | 0.082 | 0.757 |
| C.D. at 5% | NS | 0.860 | 0.673 | 0.43 | 0.33 | 3.050 |

Reference

1. AOAC (Association of Official Analytical Chemists) (1994). Official methods of analysis, 16th edition. Virginia, USA.
2. Mazumdar B.C. and K. Majumder, 2003. Determination of chemical constituents. Methods on physio-chemical analysis of fruits. Daya Publishing House, Delhi. Pp.93-139.
3. Rangana S., 1977. Ascorbic acid. Manual analysis of fruit and vegetable products. Tata McGraw-Hill Publish. Comp.Ltd., New Delhi. pp. 94-101.