Effect of packaging film of different thicknesses on shelf life and quality of minimally processed onion

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INTRODUCTION

- Fruits and vegetables consumption plays a key role in healthy diet. A daily intake of 400g of fruits and vegetables by a normal adult.(WHO)

- In urbanized living, where time is a limiting factor, this minimally processed products is available in easy to use form with minimal waste.

- Minimally processed onion is a ready-to-use product which offers consumer a 100 percent usable product with increased shelf life and without much change in its freshness.

- Packaging film thickness plays an important role in the shelf life of minimally processed products.

- Hence, an investigation was undertaken to study the effect of packaging film thickness on the shelf life and quality of minimally processed onion.
MATERIALS AND METHODS

RAW MATERIAL

Onion Cv. Arka Sona

CUTTING

Plain sharp knife

DIP TREATMENT

Calcium lactate (2%)

PACKAGE

Polypropylene (PP) bags
Size: 250 x 125mm
Thickness: 25µm & 50µm
STORAGE CONDITION
10±1°C, 83 % Relative Humidity (RH)

OBSERVATIONS RECORDED
Shelf life
Weight loss
Firmness
Bio chemical parameters
WHOLE ONION

PEELED AND CUT ONION

ONION DIP TREATMENT

POUCH PACKAGING

SURFACE DRYING
RESULTS

Samples packed in 50 µm was found better than 25µm in terms of

Shelf life of the sample - 12 days

Intact rings and less dryness

Lesser weight loss (3.99%)

Higher firmness (1.42 kgf/cm²)

Lower respiration rate

Higher pyruvic acid content (6.48 µmol/g)
Effect of packaging and storage on the physico chemical qualities minimally processed onion at the end of the storage period.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>PP 25 µm</th>
<th>PP 50 µm</th>
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<tbody>
<tr>
<td>Weight loss (%)</td>
<td>3.99</td>
<td>3.44</td>
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<tr>
<td>Firmness (kgf/cm²)</td>
<td>1.47</td>
<td>1.42</td>
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<tr>
<td>TSS (°Brix)</td>
<td>7.0</td>
<td>7.67</td>
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<tr>
<td>Acidity (%)</td>
<td>0.042</td>
<td>0.044</td>
</tr>
<tr>
<td>Pyruvic acid (µmol/g)</td>
<td>5.49</td>
<td>6.48</td>
</tr>
<tr>
<td>Reducing Sugars (%)</td>
<td>3.76</td>
<td>3.92</td>
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<td>Total Sugars (%)</td>
<td>5.14</td>
<td>5.45</td>
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CONCLUSION

Onion cultivar Arka Sona sliced with plain sharp knife, pre-treated with 2% calcium lactate, surface dried and packaged in polypropylene bag of size 250 x 125 mm of 50 µm thickness and stored at 10±°C with 83% RH retained better quality, freshness and nutritive value upto 12 days.
THANK YOU