Quality of dehydrated potato flakes in long-term storage

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ABSTRACT

To assess the shelf life of dehydrated potato flakes for long-term storage, a comprehensive study was conducted to evaluate the influence of processing and storage conditions on potato flakes. Samples were collected from various sources in the United States and stored under different conditions. The objective of this study was to evaluate the quality of dehydrated potato flakes under different conditions and determine the optimal storage conditions for up to 30 years.

A total of 13 samples of dehydrated potato flakes were selected from nine donors throughout the United States. The samples were stored under different conditions, including ambient temperature, humidity, and light exposure, for up to 30 years. The following parameters were evaluated:

- Appearance
- Aroma
- Texture
- Vitamin C content
- Water activity
- Headspace hexanal
- Oxygen absorption

The results showed that the quality of dehydrated potato flakes was maintained for up to 12 years under optimal storage conditions. Beyond 12 years, the quality began to degrade, and by 26 years, the quality was significantly reduced. After 28 years, the quality was no longer suitable for consumption. Therefore, it is recommended that dehydrated potato flakes be stored at ambient temperatures and low humidity to maintain their quality for up to 12 years.

RESULTS AND DISCUSSION

Table 1: Comparison of hedonic scores for appearance (A), aroma (A), texture (T), and overall acceptance (OA) for dehydrated potato flakes stored at ambient temperature under different conditions.

<table>
<thead>
<tr>
<th>Sample #</th>
<th>Appearance</th>
<th>Aroma</th>
<th>Texture</th>
<th>Overall Acceptance</th>
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<td>5.95</td>
<td>5.90</td>
<td>5.75</td>
</tr>
<tr>
<td>2</td>
<td>6.00</td>
<td>5.95</td>
<td>5.95</td>
<td>5.95</td>
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<tr>
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<tr>
<td>5</td>
<td>6.00</td>
<td>5.95</td>
<td>5.95</td>
<td>5.95</td>
</tr>
</tbody>
</table>

As shown in Table 1, hedonic scores for appearance (A), aroma (A), texture (T), and overall acceptance (OA) for dehydrated potato flakes stored at ambient temperature under different conditions are presented. The results indicate that the quality of dehydrated potato flakes was maintained for up to 12 years under optimal storage conditions. Beyond 12 years, the quality began to degrade, and by 26 years, the quality was significantly reduced. After 28 years, the quality was no longer suitable for consumption. Therefore, it is recommended that dehydrated potato flakes be stored at ambient temperatures and low humidity to maintain their quality for up to 12 years.

CONCLUSIONS

The results of this study indicate that dehydrated potato flakes can be stored for up to 12 years under optimal conditions and still maintain their quality. The storage conditions include ambient temperature, low humidity, and low light exposure. Beyond 12 years, the quality begins to degrade, and by 26 years, the quality is no longer suitable for consumption. Therefore, it is recommended that dehydrated potato flakes be stored at ambient temperatures and low humidity to maintain their quality for up to 12 years. After 26 years, the quality is no longer suitable for consumption. It is recommended that dehydrated potato flakes be consumed within the first 12 years to maintain their quality.

REFERENCES


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