PACKED COOKED LOW PROTEIN RICE: LOW PROTEIN RICE FOR HEALTHY KIDNEYS

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INTRODUCTION

"One Filipino develops chronic renal failure every hour or about 120 Filipinos per million population per year."

- National Kidney and Transplant Institute

- The Low Protein Rice is a pre-cooked and protein-reduced rice intended for patients with chronic kidney disease.
- It helps in delaying the progression of the kidney disease and delay the need for dialysis.
- It can provide a balanced intake of protein and calorie.
- It gives a healthier and better quality of life.

OBJECTIVE

to determine the quality of packed cooked low protein rice

1. physicochemical properties
2. heavy metals (As, Hg, Cd, Pb)
3. protein content
4. sensory properties (9-Point Hedonic Rating)
5. microbiological properties (APC, Total E. coli, Total Coliform, Molds and Yeast, B. cereus, Mesophilic and anaerobic spore-formers)

Figure 1. Objectives of the study

MATERIALS & METHODS

1. Standardization
2. Shelf-life

Figure 2. Flow diagram of the study

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The L-value represents the lightness and darkness of a sample. The L values obtained ranged from 73.56 (Production 1) to 75.27 (Production 6) indicating that samples are white or lighter. Statistical evaluation of the L-values obtained showed significant differences between production dates as seen in Figure 3.

Color was rated from 'Like moderately' (7) to 'Like very much' (8) for both samples as shown in Figure 5.

The normal protein content of milled rice contains approximately 2.5 g per 100 g sample. The final production sample has a value of 0.3 g protein per 100 g sample which is acceptable based on standard range of 0.24 to 0.36 g per 100 g protein as set by the Biotech Japan Corporation as seen in Figure 4.

General acceptability was rated 'Like moderately' (7) for both samples as shown in Figure 6.
RESULTS

Table 1. Nutrient content of packed cooked low protein rice.

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Amount per serving</th>
<th>% RENI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calories (kcal)</td>
<td>340</td>
<td>15</td>
</tr>
<tr>
<td>Total fat (g)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Saturated fat (g)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Trans fat (g)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Cholesterol (mg)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Sodium (mg)</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Total Carbohydrate (g)</td>
<td>84</td>
<td></td>
</tr>
<tr>
<td>Dietary Fiber (g)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Sugar (g)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Total Protein (g)</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Iron (mg)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Calcium (mg)</td>
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<td>0</td>
</tr>
<tr>
<td>Potassium</td>
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<td></td>
</tr>
<tr>
<td>Manganese (mg)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Phosphorus (mg)</td>
<td>30</td>
<td>4</td>
</tr>
</tbody>
</table>

Figure 7. Packed cooked low protein rice sample.

CONCLUSION & RECOMMENDATION

- Physicochemical properties such as color, pH, water activity, and moisture were stable during storage.
- Microbiological and heavy metals analyses suggest that low protein rice is safe for human consumption.
- The protein content of a 200g serving size of low protein rice was significantly lowered (0.6 g) than the traditional cooked milled rice.
- The nine-point hedonic rating result reveals that low protein rice is acceptable.
- Low Protein Rice has a shelf-life of 6 to 9 months.
- Raw materials with lower protein content be used for the production to ensure that the final protein content falls within the company’s standard.
- Protein content of the product must be monitored regularly to obtain acceptable protein content of 0.3g per 100g or 0.6g per 200g serving size.
- Awareness seminars should be organized in different parts of the country to promote the use of low protein rice in patients with chronic kidney diseases.

ACKNOWLEDGEMENT

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