Nutritional properties of three selected varieties of puffed rice: WGL44, WGL283 and RNR2458

Hajerah Khan, S Suchiritha Devi, K Aparna and SL Kameswari

Abstract

Puffed rice along with taste impart some health benefits to the individual making it more effective for consumption. The proximate analysis was performed with three varieties of puffed rice. The moisture content of WGL 44 (1.37%) was observed to be highest and lowest moisture content in WGL 283 (1.15%). The highest total carbohydrate value was observed in WGL 44 (78.57g/100g) and lowest in RNR 2458 (75.50g/100g). The protein content was highest in RNR 2458 (6.58g/100g) and lowest in WGL 44 (6.33g/100g). The fat content was highest in WGL 44 (0.95g/100g) and lowest in RNR 2458 (0.92g/100g). The ash content was highest in WGL 283 (0.73%) and lowest in WGL 44 (0.23%). The dietary fibre and resistant starch were analysed. The dietary fibre was observed to be highest in WGL 44 (0.92g /100g) and lowest in RNR 2458 (0.88 g/100g).

Keywords: Nutritional properties, WGL44, WGL283, RNR2458

Introduction

Lifestyle changes, food habits and urbanization have increased the demand of processed food in India. Convenient snack foods like popcorn, popped and puffed rice, popped sorghum, popped wheat roasted and puffed soybean are very popular in India and worldwide (Jayabhae et al., 2014) [10]. Puffed rice provides less calories compared to cook rice, making it a better option for those who are considering losing weight that is low in calorie and as well as nutritious. Puffed rice contain no cholesterol or sodium, making it suitable for everyone. It is known to provide minerals like potassium, iron, phosphorus, calcium and trace amounts of zinc, manganese, fluoride and selenium. It also provides vitamin B-thiamine, riboflavin, niacin, pantothenic acid (Chandramitra, 2013) [5]. According to FAO (2006) [7] consumption of puffed rice was suggested to reduce prevalence of disease risk. Due to the absence of gluten, puffed rice can easily take over the place other bakery foods which are source of gluten and can cause discomfort especially people with celiac disease (Prasad et al., 2010) [12].

Materials and method:

The three rice varieties of Telangana state WGL44, WGL 283 and RNR 2458 was puffed by a traditional method of puffing (Edmund and Lloys, 2002) [6].

Estimation of Moisture:
The method AOAC, 2005 [4].

Estimation of carbohydrate:
The total carbohydrate content of the processed sample was determined, using AOAC (1996) [3].

Estimation of protein:
The protein content of the processed sample was determined, using the method of AOAC (2005) [4].

Estimation of fat:
The fat content of the processed samples was determined, using the method of AOAC (1981) [1].

Estimation of ash content:
The ash content of the sample was determined by using the method of AOAC (2005) [4].

Estimation of dietary fibre:
The Dietary fibre of the sample is assessed by method of AOAC 1990.
Results and discussion
The moisture content of the three varieties of puffed rice WGL 44, WGL 283 and RNR 2458 are 1.37, 1.15 and 1.18% respectively, (table 1) show the moisture content of three puffed rice. There was significant difference (≥0.05%) between the varieties WGL 44 and WGL 283 but there was no significance difference between the varieties WGL 283 and RNR 2458. This is desirable for puffed rice to maintain the crispness of the product. Similar results (0.7 to 2.7g) were reported for extrudates made from sorghum and rice (Lakshmi et al., 2009) [1].

The carbohydrate content of the three puffed rice varieties WGL 44, WGL 283 and RNR 2458 are 78.57, 76.70 and 75.50g respectively. The highest carbohydrate level was found to be in WGL 44 and the lowest was observed in RNR 2458. Table 1 shows the carbohydrate content of the accepted puffed rice varieties. There was significance difference (≥0.05%) between all the three varieties of puffed rice.

The protein value of the three varieties WGL 44, WGL 283 and RNR 2458 are 6.33, 6.55 and 6.58 g. Table 1 shows the protein content of the three accepted varieties of puffed rice. There was no significant difference (≥0.05%) between the varieties WGL 283 and RNR 2458 varieties of puffed rice.

Similar results were reported by Hoke et al (2005) [9], the protein content of twelve different rice varieties ranged from 5.04 to 8.40 g. The highest protein content was observed in RNR 2458 and lowest in WGL 44.

The fat content of the three puffed rice varieties ranged from 0.92 to 0.95g. Table 1 shows the fat content of the selected three varieties of puffed rice. The highest fat content was found to be in WGL 44 and the lowest content in RNR 2458.

The fat content of WGL 283 was 0.94g. There was no significant difference (≥0.05%) between the varieties WGL 283 and RNR 2458.

The ash content of the rice varieties ranged from 0.23 to 0.73%. The highest ash content was observed in WGL 283 and the lowest was observed in WGL 44. The ash content of RNR 2458 was 0.42%. Table 1 shows proximate analysis of the three varieties of puffed rice. There was significant difference (≥0.05%) among all the three varieties of puffed rice.

<table>
<thead>
<tr>
<th>Moisture (%)</th>
<th>Carbohydrate (g)</th>
<th>Protein (g)</th>
<th>Fat (g)</th>
<th>Ash (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WGL 44</td>
<td>1.37± 0.01</td>
<td>78.57± 0.06</td>
<td>6.33± 0.05</td>
<td>0.95± 0.02</td>
</tr>
<tr>
<td>WGL 283</td>
<td>1.15± 0.01</td>
<td>76.70± 0.10</td>
<td>6.55± 0.01</td>
<td>0.94± 0.02</td>
</tr>
<tr>
<td>RNR 2458</td>
<td>1.18± 0.02</td>
<td>75.59± 0.10</td>
<td>6.58± 0.02</td>
<td>0.92± 0.02</td>
</tr>
<tr>
<td>Mean</td>
<td>1.25</td>
<td>76.92</td>
<td>6.49</td>
<td>0.94</td>
</tr>
<tr>
<td>CD</td>
<td>0.03</td>
<td>0.07</td>
<td>0.06</td>
<td>0.02</td>
</tr>
<tr>
<td>CV% value</td>
<td>1.08</td>
<td>0.04</td>
<td>0.43</td>
<td>1.12</td>
</tr>
</tbody>
</table>

Note:
- ± shows mean and standard deviation of triplicate value of each variety
- The supercripts shows the significance difference at ≥0.05.

Conclusion
Different parameters were examined of the three selected puffed rice varieties. Based on the results obtained, the variety that was observed to be better suited for puffing based on the average of the results of nutritional analysis was WGL44. This variety of puffed rice i.e. WGL44 was observed to slightly better than WGL 283.

Reference
10. Jayabhaye RV, Pardeshi IL, Vengaiah PC, Srivastav PP.
