



ISSN (E): 2277- 7695  
ISSN (P): 2349-8242  
NAAS Rating 2017: 5.03  
TPI 2017; 6(9): 458-460  
© 2017 TPI  
www.thepharmajournal.com  
Received: 15-07-2017  
Accepted: 16-08-2017

#### Hajerah Khan

Post Graduate and Research Centre, Department of Foods and Nutrition, Professor Jayashankar Telangana State Agricultural University, Rajendranagar, Hyderabad, India

#### S Suchiritha Devi

Post Graduate and Research Centre, Department of Foods and Nutrition, Professor Jayashankar Telangana State Agricultural University, Rajendranagar, Hyderabad, India

#### K Aparna

Post Graduate and Research Centre, Department of Foods and Nutrition, Professor Jayashankar Telangana State Agricultural University, Rajendranagar, Hyderabad, India

#### SL Kameswari

Department of Home Science Extension & Communication Management, College of Home Science, Saifabad, Hyderabad, India

#### Correspondence

#### Hajerah Khan

Post Graduate and Research Centre, Department of Foods and Nutrition, Professor Jayashankar Telangana State Agricultural University, Rajendranagar, Hyderabad, India

## 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 moisture content in the puffed rice is measured by 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 processed 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 ( $\geq 0.05\%$ ) 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) [11].

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 significant difference ( $\geq 0.05\%$ ) 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 ( $\geq 0.05\%$ ) 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 ( $\geq 0.05\%$ ) 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 WGL283 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 ( $\geq 0.05\%$ ) among all the three varieties of puffed rice.

**Table 1:** Means of moisture, carbohydrate, protein, fat and ash of the three rice varieties of Telangana state.

	Moisture (%)	Carbohydrate (g)	Protein (g)	Fat (g)	Ash (%)
WGL 44	1.37 <sup>a</sup> ± 0.01	78.57 <sup>a</sup> ± 0.06	6.33 <sup>c</sup> ± 0.05	0.95 <sup>a</sup> ± 0.02	0.23 <sup>c</sup> ± 0.02
WGL 283	1.15 <sup>b</sup> ± 0.01	76.70 <sup>b</sup> ± 0.10	6.55 <sup>ab</sup> ± 0.01	0.94 <sup>ab</sup> ± 0.02	0.73 <sup>a</sup> ± 0.02
RNR 2458	1.18 <sup>bc</sup> ± 0.02	75.50 <sup>c</sup> ± 0.10	6.58 <sup>a</sup> ± 0.02	0.92 <sup>b</sup> ± 0.02	0.42 <sup>b</sup> ± 0.02
Mean	1.23	76.92	6.49	0.94	0.46
CD	0.03	0.07	0.06	0.02	0.02
CV% value	1.08	0.04	0.43	1.12	2.30

### Note

- ± shows mean and standard deviation of triplicate value of each variety
- The superscripts shows the significance difference at  $\geq 0.05$ .

The dietary fibre of the three different puffed rice varieties of Telangana state WGL 44, WGL 283 and RNR 2458 ranged from 0.88 to 0.92 mg. The highest dietary fibre was observed in WGL 44 and the lowest in RNR 2458. The dietary fibre in WGL 283 was 0.91 mg. Table 2 shows the dietary fibre content of the three puffed rice varieties. There was no significant difference ( $\geq 0.05\%$ ) between the three varieties of the puffed varieties in their dietary fibre. Slightly more amount of dietary fibre was reported by Gajula *et al.* (2008) [8] where the dietary fiber was 1.5 to 2.5% in bran flour extrudates.

**Table 2:** Dietary fibre of the three varieties of puffed rice.

	Dietary fibre (g)
WGL 44	0.92 <sup>ac</sup> ± 0.02
WGL 283	0.91 <sup>ab</sup> ± 0.01
RNR 2458	0.88 <sup>bc</sup> ± 0.02
Mean	0.91
CD	0.04
CV% value	2.05

### Note:

- ± shows mean and standard deviation of triplicate value of each variety
- The superscripts shows the significance difference at  $\geq 0.05$ .

## 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

1. AOAC. Estimation of Fat. Association of Official Analytical Chemists. Gaithersburg, USA. 1981; 48(2):471-474.
2. AOAC. Official Methods of Analysis of the Association of Official Analytical Chemists. 15<sup>th</sup> edi. Avinctar Virginia: Association of Official Analytical Chemists, 1990.
3. AOAC. Determination of Dietary Fiber and Carbohydrate Composition of Food by a Modified Version of Englyst Method. Association of Official Analytical Chemist. Gaithersburg, USA. 1996; 79(1):54- 59.
4. AOAC. Official Method of Analysis. Association of Official Analytical Chemist. Washington, DC. USA. 2005; 432:24-28.
5. Chandramitra B. Puffed Rice Nutritional Facts. 2013. <http://www.buzzle.com/articles/puffed-rice-nutritional-facts.html>
6. Edmund WL, Lloys WR. Snack Food Processing. CRC Publishing Press.US. 2002, 446-448
7. Food and Agricultural Organization. 2006. Food and Agricultural Organization of the UN, Rome. July. <http://faostat.fao.org>
8. Gajula H, Alavi S, Adhikari K, Herald T. Precooked Bran Enriched Wheat Flour Using Extrusion Dietary Fibre Profile and Sensory Characteristics. Journal of Food Science. 2008; 73(4):173-179.
9. Hoke K, Housova J, Houska M. Optimum Condition of Rice Puffing. Czech Journal of Food Science. 2005; 23: 1-11.
10. Jayabhaye RV, Pardeshi IL, Vengaiah PC, Srivastav PP.

Processing and Technology for Millet Based Food Products: A Riview. Journal of Ready to Eat Food. 2014; 1(2):32-48.

11. Lakshmi DN, shobha S, sajid A. Unpublished Data from Export Submitted to ANGRAU of the Research Project Entitled 'Utilization of Extraction Technology for the Development of Millet based Weaning and Ready to Eat Snacks for Children. 2009, 28-36.
12. Prasad K, Prakash P, Prasad KK. Rice Based Functional Cookies for Celiac: Studies on its Formulation, Lambert Academic Publishing, Gernamy. 2010, 128.