Sensory Evaluation of Puffed Rice Developed from Telangana Rice Varieties

Yasarapu Sreenidhi[1], G. Priya Sugandhi[2*], T. Kamalaja[3] and V. Kavitha Kiran[4]
[1]*P.G. Scholar, Department of Foods and Nutrition, Post Graduate and Research Center,*
Professor Jayashankar Telangana State Agricultural University, Saifabad, Hyderabad (Telangana), India.
[2]*Assistant Professor, Department of Foods and Nutrition, College of Community Science, Professor Jayashankar*
Telangana State Agricultural University (PJTSAU), Saifabad, Hyderabad (Telangana), India.
[3]*Senior Scientist, AICRP – Department of Foods and Nutrition, PGRC,*
PJTSAU, Rajendranagar, Hyderabad (Telangana), India.
[4]*Scientist, AICRP-Department of Human Development and Family Studies, PGRC,*
PJTSAU, Rajendranagar, Hyderabad (Telangana), India.

(Corresponding author: G. Priya Sugandhi*)
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ABSTRACT: Rice is one of the major grown crop in the Asian countries, due to urbanization and lack of time ready to eat snacks are becoming popular. Puffed rice is one of the most common and economically affordable ready to eat snacks. As puffed rice is most acceptable because of its crispy texture and high shelf-life. Puffed rice are gluten free and reduces the risk of celiac disease. The main objective of this study was to know about the best accepted varieties of puffed rice developed from Professor Jayashankar Telangana State Agricultural University (PJTSAU) KNM 118 (Kunaram Sannalu), JGL 18047 (Bathukamma), JGL 24423 (Jagtial Rice-1), WGL 915 (Warangal Rice-1) and RNR 2354 (Shobhini), where the puffing was done by traditional method of puffing. Among all the varieties other than control puffed rice WGL 915 is the best accepted followed by KNM 118 and RNR 2354 is least accepted variety of puffed rice.

Keywords: Puffing, puffed rice, ready to eat, sensory evaluation, celiac disease.

INTRODUCTION

Rice (*Oryza sativa* L.) is the staple food for nearly half of the world population. It is taken in regular diet by Asians after cooking, it contributes nearly about 40-80% of total calorie intake (Papillo *et al.,* 2018). The demand of processed food has been increased due to food habits, lifestyle changes, and urbanization. The popular and convenient snack foods in India are popcorn, popped and puffed rice, popped sorghum, popped wheat roasted and puffed soybean (Jaybhaye *et al.,* 2014). Puffed rice is produced from the paddy by moistening with hot water and dry heat (Bhatia 2008). Puffing process is inexpensive, simple and traditional method of dry heat application (Sullivan and Crag 1984). The rice varieties with low amylose content are sui-suitable for puffing, as the varieties with high amylose content gives low puffing index (Mariotti *et al.,* 2006). Puffed rice is being used as snack foods which have nutritional benefits and low allergic reaction potential (Lee *et al.*, 2019) and preferred by people who are suffering from overweight and celiac disease which can replace the bakery foods for its

gluten free content. Consumption of puffed rice was suggested to reduce the prevalence of celiac disease risk (FAO 2006). The resistant starch that is present in puffed rice makes to have less calories by the individuals, which is developed during the treatment of grains (starch modification) during the time of puffing process (Platel and Shurpalekar 1994). The resistant starch produced during processing of puffed rice acts as a pre biotic which makes the gut healthy by the proliferation of gut bacteria and enhances the bowel movement (Zaman and Sarbini 2016).

MATERIAL AND METHODS

Five rice varieties of PJTSAU *i.e*., KNM 118 (Kunaram Sannalu), JGL 18047 (Bathukamma), JGL 24423 (Jagtial Rice-1), WGL 915 (Warangal Rice-1) and RNR 2354 (Shobhini) had been selected for the development of puffed rice, where the rice varieties are procured from respective Agricultural Research Stations (ARS) of PJTASU. The puffing of rice was done by using a traditional method (Edmund and Lloys 2002).

Sensory evaluation. Sensory evaluation of five varieties of puffed rice was conducted to select the best

accepted puffed rice by 15 semi trained panel members. Sensory attributes like color, taste, texture, appearance, flavor and overall acceptability are included for sensory evaluation by using 9-point hedonic scale (Meligard *et al*., 1999).

Statistical Analysis. To test the significance, statistical analysis was carried out in percentages, means, standard deviations and analysis of variance (ANOVA) technique (Rao, 2018).

RESULTS AND DISCUSSION

Puffed rice developed from the rice varieties (KNM 118, JGL 18047, JGL 24423, WGL 915 and RNR 2354) were given for sensory evaluation for 15 semi trained panel members. The nine point hedonic rating scale indicating (9-1) Like extremely-9, Like very much-8, Like moderately-7, Like slightly-6, Neither like nor dislike-5, Dislike slightly-4, Dislike moderately-3, Dislike very much-2, Dislike extremely-1 was used to give the sensory scores for attributes *i.e.*

color, appearance, texture, taste, flavor and overall acceptability.

Color. For the sensory attribute color of five selected varieties (KNM 118, JGL 18047, JGL 24423, WGL 915 and RNR 2354) of puffed rice mean scores ranged from 7.40±0.13 to 9.00±0.01. Among all the varieties WGL 915 (9.00±0.01) has the highest score for the sensory attribute.
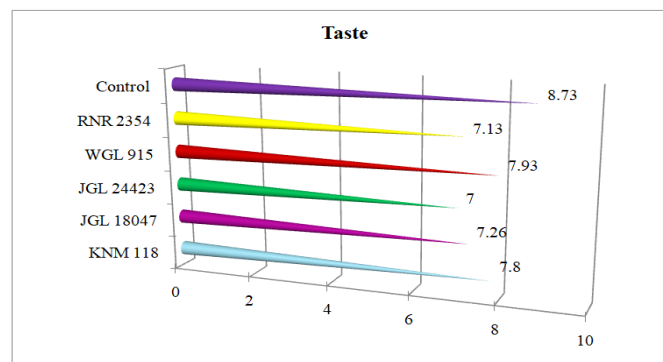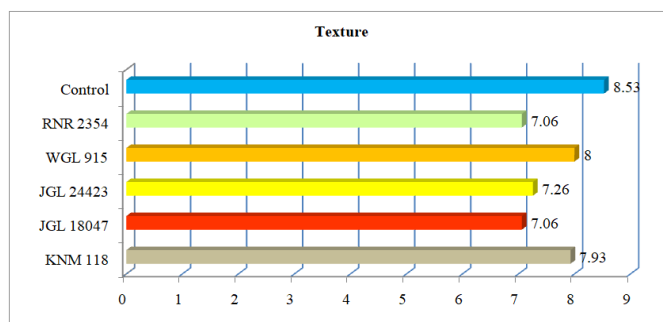
Statistically significant difference (p ≤ 0.01) was observed among the sensory attribute color in all the five varieties of puffed rice.

Appearance. The mean scores for the sensory attribute appearance of five selected varieties (KNM 118, JGL 18047, JGL 24423, WGL 915 and RNR 2354) of puffed rice ranged from 8.66±0.12 to 7.06±0.06. WGL 915 and control (8.66±0.12) has highest score of appearance. There was statistically significant difference (p ≤ 0.01) was analyzed among sensory attribute appearance of all the five varieties of puffed rice.
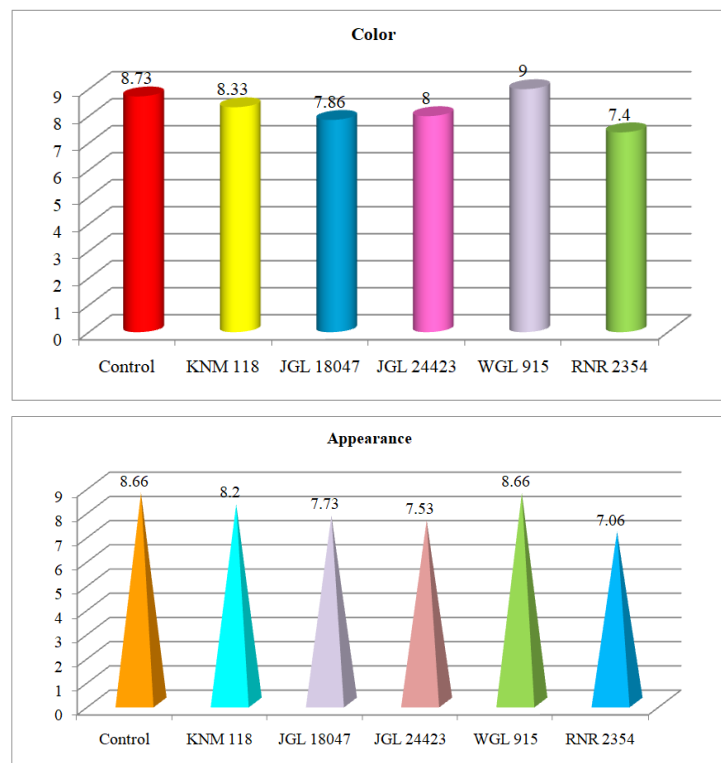

Texture. The textural mean scores for the five varieties (KNM 118, JGL 18047, JGL 24423, WGL 915 and RNR 2354) of puffed rice ranged from 7.06±0.06 to 8.53±0.13. Among all the varieties maximum score for texture was observed in control (8.53±0.13) followed by WGL 915 (8±0.09). Statistically significant difference (p ≤ 0.01) was observed among sensory attribute texture of all the five varieties of puffed rice.

Taste. The mean scores for the sensory attribute taste of the five varieties (KNM 118, JGL 18047, JGL 24423, WGL 915 and RNR 2354) of puffed rice ranged from 7.00±0.01 to 8.73±0.11. Highest score of taste was observed in control (8.73±0.11) followed by WGL 915 (7.13±0.09). Statistically significant difference (p ≤ 0.01) was noticed among the sensory attribute taste of all the five varieties of puffed rice.

Texture

Taste

Flavor. The sensory attribute flavor for the five varieties (KNM 118, JGL 18047, JGL 24423, WGL 915 and RNR 2354) of puffed rice ranged from 7.01±0.01 to 8.40±0.16. The panelists has given high score of for control (8.40±0.16) followed by WGL 915±0.13. Statistically significant difference (p ≤ 0.01) was observed among sensory attribute flavor of all the five varieties of puffed rice.

Overall acceptability. The mean scores for the overall acceptability of five varieties of puffed rice ranged from 6.13±1.08 to 8.8±0.10, where the highest overall acceptability other than control was for WGL 915 (8.8±0.10). Statistically significant difference (p ≤ 0.01) was found among sensory attribute the overall acceptability of all the five varieties of puffed rice.

Flavor

Overall acceptability
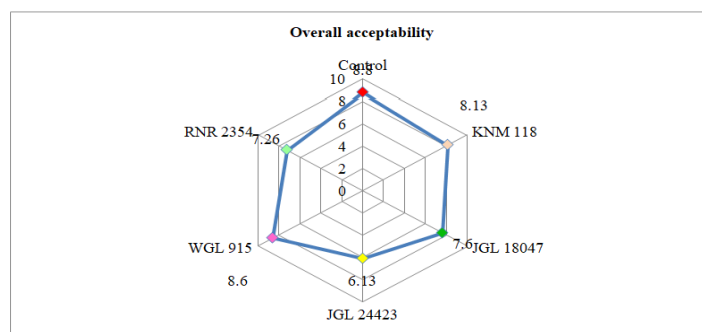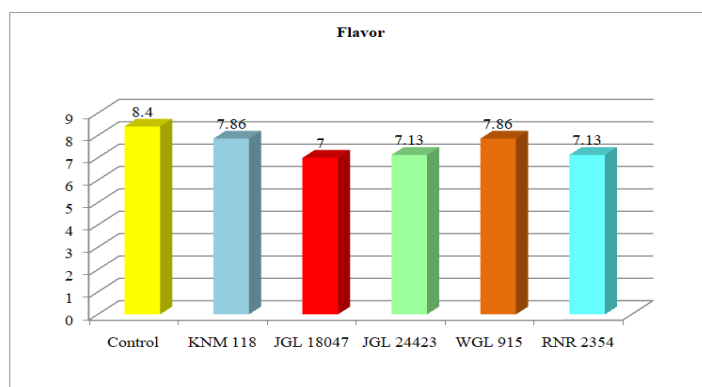
CONCLUSION

Among all the five varieties of puffed rice, other than control WGL 915 variety of puffed rice is the best accepted based on all the respective sensory characters. KNM 118 variety of puffed rice is the second most accepted and RNR 2354 is least accepted variety of puffed rice.

FUTURE SCOPE

Puffing of rice varieties can be done in different puffing methods and can compare their nutritive value.

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