

## **A Comparative Study on the Nutritional and Sensory Qualities of Biscuits Supplemented with Brown Rice and White Rice Flour from Selected Rice Varieties**

**S.N.T.A.R. Wijerathna<sup>1\*</sup>, T. Mahendran<sup>1</sup> and B.M.K. Senarathna<sup>2</sup>**

<sup>1</sup> Department of Agricultural Chemistry, Faculty of Agriculture, Eastern University, Chenkalady, Sri Lanka

<sup>2</sup> Rice Research and Development Institute, Department of Agriculture, Bathalagoda, Sri Lanka

### **Abstract**

Rice (*Oryza sativa*) is the staple food of Sri Lankans and more than 60% of the global population which directly supply more than 42% of calories consumed by the entire human population. As staple foods, rice provides a greater proportion of carbohydrate, dietary fiber and protein. In addition, rice is a rich source of vitamin B, vitamin E and minerals, such as calcium, magnesium, iron, zinc and phosphorus. Rice and rice products provide a large number of phytochemicals and antioxidants, which exert protection against gastrointestinal cancers and cardiovascular diseases. Therefore, a research was conducted to assess the nutritional and sensory qualities of biscuits supplemented with brown and white rice flour of selected varieties namely Suwandel, At 309 and Bg 94-1. Rice bran has better nutritional value therefore the biscuits were prepared using whole grain rice flour with 1:2 proportion of brown rice and white rice flour. For the preparation of biscuits, sugar and margarine were mixed to produce a creamy mixture. Then, the rice flour, baking powder, corn flour, margarine, sunflower oil, brown sugar, salt, and vanilla essence were added and thoroughly mixed to form a consistent hard dough. The dough was spread, cut into circular shapes of 4cm diameter and baked in an oven at 180°C for 25 minutes. The baked products were stored in metallized laminated pouches under ambient conditions of 30°C and 70-80% RH for 2 months. During the storage period, the biscuits were subjected to nutritional and sensory analysis at 2 weeks intervals. The sensory evaluation was carried out by 30 experienced panelists using a 7-point hedonic scale. Results revealed that the biscuits which were prepared with Suwandel obtained the highest overall acceptability value of 6.88±0.21 compared to other varieties. Nutritional analysis proved that the biscuits made with Suwandel rice variety had the highest fiber, protein and ash contents of 1.83%, 6.28% and 1.41%, respectively and Bg 94-1 variety poses the highest fat content of 12.3%. Based on the nutritional and sensory evaluation, biscuits prepared from Suwandel rice variety was considered as the best among the tested rice varieties.

**Keywords:** Biscuits, Nutritional quality, Rice flour, Sensory analysis, Staple food

**Corresponding Author:** ayodhyawijerathna1994@gmail.com