

Effect of Malting Duration on Proximate Composition, Total Phenolic Content and Total Flavonoid Content of Pearl Millets Grown in Sri Lanka

*Rajeetha^{1,2}, J., Sivakanthan³, S., Liyanagae⁴, R. and Madhujith^{1,5}, T.

¹Postgraduate institute of Agriculture, University of Peradeniya, Sri Lanka

²Department of Biosystem Technology, University of Jaffna, Sri Lanka

³Department of Agricultural Chemistry, University of Jaffna, Sri Lanka

⁴National Institute of Fundamental Studies, Kandy, Sri Lanka

⁵Department of Food science and Technology, University of Peradeniya, Sri Lanka

*Corresponding E-mail: rajeisantha313@yahoo.com

Pearl millet (*Pennisetum glaucum*) is one of the promising under-utilized crops in Sri Lanka. Because of its prospective nutritional composition and health benefits, it could be used to develop healthy food. Malting can increase the nutritional value of Pearl millet by increasing its induced hydrolytic activity. Therefore, this study aimed to investigate the effect of malting duration on the proximate composition of Pearl millets grown in Sri Lanka. Initially, Pearl millet (600g) was steeped in 1.2 L of water in a stainless-steel bowl for 24 hours at room temperature (28 °C) in triplicates. To prevent fermentation, the water in the bowl was replaced every 6 h with fresh water. Finally, the water was drained and grains was spread as thin layer over a moist muslin cloth for germination for different durations as treatments (12, 24, and 48 h). The germinated grain was sun-dried for 3 days, manually cleaned to remove the husk, and the malted grains were ground and sieved to obtain the flour. The samples were analyzed for moisture, protein, carbohydrate, fat, ash and fiber contents and total phenolic (TPC) and total flavonoid (TFC) contents. Pearl millets malted for 24 h contained significantly higher ($p \leq 0.05$) amounts fiber (2.654±0.46%) than the raw Pearl millet (0.925±0.13%). Pearl millets malted for 48 h contained significantly higher ($p \leq 0.05$) moisture (12.025±0.01%) and crude protein (8.495±0.02%) than from the raw pearl millet (8.025±0.01% and 7.115±0.22% respectively, whereas, carbohydrate and fat contents decreased significantly ($p \leq 0.05$) from 78.69±0.19% and 4.69±0.18% to 75.615±0.02% and 0.05±0.005%, respectively after 48 h of malting. There were no significant changes ($p \leq 0.05$) in the carbohydrate and protein contents with duration of malting. Crude fat and crude fiber contents did not show significant differences ($p \leq 0.05$) between 24 h and 48 h of malting. The significant reduction ($p \leq 0.05$) in TPC from 0.5435 ± 0.042 mg gallic acid equivalent/100g to 0.1635 ± 0.040 mg gallic acid equivalent/100g was reported after 48 h of malting, whereas the TFC was increased significantly ($p \leq 0.05$) with highest value (0.062 ± 0.003 catechin equivalent mg/100g) reported at 24h of malting. The findings of this study demonstrated that malting for 24 h could be employed as a processing technique to improve the nutritional value of pearl millets-based foods.

Keywords: Flour, Pearl millets, Malting, Healthy foods.