202/B

Formulation and characterization of Elephant Foot Yam (*Amorphophallus paeoniifolius*) flour incorporated bread

S.M. Kottage and I. Wijesekara*

Department of Food Science & Technology, Faculty of Applied Sciences, University of Sri Jayewardenepura, Nugegoda, Sri Lanka

The Elephant Foot Yam (EFY) is an underutilized yam variety with high yield potential that is known in Sri Lanka as “Kidaram”. The goal of this study was to formulate loaves of bread incorporating EFY flour that were blanched at 85 °C for 30 s, before being sun-dried at 40±3 °C for 36 h and to assess the physicochemical attributes and consumer preferences. The control loaves of bread were developed without incorporating EFY flour and the EFY flour incorporated loaves of bread were developed using Two-Factor Three-Level Factorial Design. According to the results, the volume and the specific volume have decreased and the density has increased with increasing the EFY ratio. The sensory evaluation data revealed that the bread formulated with 30% EFY and 70% wheat flour (c_2d_2) was in the acceptable range. Soluble proteins, crude fiber, ash content, DPPH radical scavenging activity and the total phenolic content (as Gallic acid equivalent GAE/g) were higher in c_2d_2 than in control breads and the values were 0.5080±0.0057 mg/ml, 2.5695±0.0623 g/100 g, 3.714±0.318 g/100 g, 1.8148±0.0396 mg/ml and 14.298±0.228 mg GAE/g, for c_2d_2, and 0.442±0.019 mg/ml, 0.295±0.019 g/100 g, 1.019±0.157 g/100 g, 12.872±0.237 mg/ml and 6.468±0.347 mg GAE/g for control bread, respectively. Furthermore, the total plate count and the yeast and mold count for c_2d_2 were $18x10^2$ CFU/g and $18x10^2$ CFU/g, respectively on the 6th day under ambient conditions and the values were within the safe level for consumption. The control bread made with 100% wheat flour expressed to be unacceptable for consumption after 4 days of production. Collectively, this study shows the potential application of underutilized EFY flour as an ingredient in the formulation of value-added loaves of bread.

Keywords: Bakery food, elephant foot yam, traditional yams, value-addition

Email: isuruw@sci.sjp.ac.lk