

Oral presentation: 180

Textural profile analysis of granulated cassava pearls of two cultivars treated with conventional and microwave heating

B. E. A. U. Bulathgama*, I. Wickramasinghe, I. Wijesekara and M. A. D. Somendrika

¹Department of Food Science and Technology, Faculty of Applied Sciences,
University of Sri Jayewardenepura, Sri Lanka
*uthpalabulathgama@gmail.com

Cassava (*Manihot esculenta* Crantz) is an important food source in tropical countries, and it is a readily available root crop variety in Sri Lanka as well. Yet processed cassava (flour) is underutilized. The objective of this study was to identify the effect of conventional and microwave heating on two selected cassava cultivars namely; Kirikawadi and Muthukawadi granulated flour pearls. The granulated cassava pearls were made by the moistening and mechanical shaping of the flour by adding 50% water by weight. Then the pearls of both cultivars were subjected to conventional heating in normal cooking oven at 100°C for 20 minutes, and microwave heating in mid power for 5 minutes. The obtained pearls were then analyzed for the texture profile analysis. The morphology of flour granules were observed by microscopic image projection, where the two cultivars showed no observable difference in their granular shapes. The two cultivars; Kirikawadi and Muthukawadi flour had an initial moisture content of 8.23% and 9.00% respectively and after moistening the moisture contents were 41.95% and 38.59% respectively. After the heat treatments, the texture profiles including hardness, deformation, adhesiveness, cohesiveness and springiness were analyzed for all the samples. According to the results, the highest hardness was obtained by microwave heating method for both cultivars. The hardness of conventionally heated varieties were 200.00 g for Kirikawadi and 235.00 g for Muthukawadi, and microwave heated varieties were 19780.00 g and 10390.00 g respectively. The deformation has changed with the heating method, where the deformation of both conventionally heated varieties varied, between 0.64 - 0.66 mm and microwave heated varieties showed 1.38 mm (Kirikawadi) and 1.90 mm (Muthukawadi). Other texture properties; adhesiveness, cohesiveness and springiness showed no significant variation ($P > 0.05$) either with cultivar or heating method. According to the results of the study, the microwave heating is suggested to be more preferable over the conventional heating method, as modified forms of this type of starches have higher demand in the novel processed food industry.

Keywords: Cassava flour, conventional heating, hardness, microwave heating, texture profile