Impact of non-thermal processing on antioxidant activity, phenolic, ascorbic acid and color of winter melon puree

Wan Saidatul Syida, Noriham Abdullah, Wan Kamarudin, Zainal Samicho, Khairusy Syakirah Zulkifli and Nurain Aziman
Faculty of Applied Sciences, Universiti Teknologi MARA, Malaysia

In the last decade, non-thermal processing for inactivating microorganisms have been developed in response to the worldwide interest for more fresh and improved quality of food products. Due to degradation of fresh flavor and highly perishable, winter melon has become strong candidate for the application of non-thermal process. The present study was undertaken to assess the effect of non-thermal processing on antioxidant activity, level of key antioxidant groups (polyphenols and ascorbic acid) and the color of winter melon puree. Bioactive compounds (phenolic was measured using Folin-Ciocalteau reagent and ascorbic acid was determined using 2,6-dichlorophenol-indophenol titration method) and antioxidant activity using different type of assays namely ferric reducing antioxidant potential (FRAP), oxygen radical absorbance capacity (ORAC), 2,2-diphenyl-1-picryl hydrazyl (DPPH) and β-carotene bleaching were measured in winter melon puree subjected to slight aw reduction (0.96) and pH adjustment (pH 3.0 and pH3.5) with incorporation of potassium sorbate. Samples were assessed immediately after the processing. For phenolic content (TPC), pH3.5 puree (28.5±1.3 GAE/g fresh weight) exhibited high in phenolic content as compared to pH3 puree and unprocessed puree. In contrast, unprocessed puree contains high ascorbic acid (AA) content (35.9 ± 1.8 mg/100 g fresh mass) as compared to pH 3.0 and pH3.5 purees. In general, antioxidant activities for all assays of pH 3.0 and pH3.5 purees were significantly higher (p<0.05) than unprocessed puree. Color changes (∆E) were minor between pH 3.0 and pH3.5 purees. Therefore, processing winter melon puree by non thermal processing could be an efficient method to preserve winter melon puree quality. Hence, non thermal processing by combining preservation method may be appropriate way to produce nutritious and fresh like purees.

Biography

Wan Saidatul Syida Wan Kamarudin was born in Kelantan, Malaysia in Sept 12, 1986. She receives B.Sc (2010) in Applied Chemistry from Universiti Teknologi MARA, Malaysia. She is currently postgraduate student (M.Sc) at Universiti Teknologi MARA in Food Science and Technology. Her research is focused on processing, packaging and storage of winter melon puree and its bioactive compounds.