Application of Garlic (*Allium sativum*) extract as biodegradable edible coating to maintain the quality and to extend the shelf life of Tomatoes

S. Yanenthini* and T. Mahendran

Department of Agricultural Chemistry, Faculty of Agriculture, Eastern University, Sri Lanka

Abstract

Postharvest technology has been key to maintain and extend the shelf life of perishables and reduce food losses. Garlic has been used for a long time as a spice and traditional medicine. That contains allicin, which is one of the active principles of freshly crushed *garlic* act as a *antimicrobial* properties. The present research was carried out on the application of garlic extract on tomatoes, which act as an edible coating and disinfection activity with environmentally friendly technology. The freshly harvested, mature green tomatoes (var. 'KC-1') were dipped into 8, 12, and 16% (w/v) of garlic extract for 10 min, air-dried and stored at 15℃ and 30℃. The physico-chemical parameters such as pH, ascorbic acid content, total soluble solids (TSS as ºBrix) and shelf life of tomatoes were assessed once in 3 days intervals. It was observed that the tomatoes contained ascorbic acid, and total soluble solids were decreased, whereas their titratable acidity was increased during storage. There were significant ($p < 0.05$) differences were observed for ascorbic acid content during ripening of tomatoes, whereas the changes for pH and TSS were non-significant ($p > 0.05$). Sensory attributes including color, taste, texture, aroma and overall acceptability were evaluated by 20 semi-trained panelists by using a 7-point hedonic scale to assess the preference. Based on the quality assessment, tomatoes treated with 12% garlic extract was found to be the best concentrations, that was showed the highest retention of ascorbic acid, total soluble solids and pH, which were 7.67 mg%, 4.8 ºBrix and 3.7 respectively, following 21 days of storage at 15℃. Tomatoes treated with 16% garlic extract had the lowest scores for sensory quality due to decay and browning. From the results of Tukey's Studentized Range Test, the highest overall acceptability was found for the 12% garlic treated tomatoes at 15℃. The results of this study revealed that the tomatoes treated with 12% garlic extract and stored at 15℃ was found to be as the best treatment with the shelf life of 21 days owing to delayed ripening with highest overall acceptability.

Keywords: Garlic extract, Nutritional quality, Refrigerated storage, Sensory attributes

****Corresponding Author***:1995prapujana@gmail.com