Effect of citric acid on browning of soybean sprouts during storage

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Abstract

The effect of citric acid on browning of soybean sprouts was studied. Soybean sprouts soaked with water and citric acid at concentrations of 1, 2.5, 5, and 10%, and sprouts without soaking (control sample) were packed in polypropylene bags and stored at 13°C and 85% relative humidity. The browning score in hypocotyls and roots and over-all acceptance were intensively evaluated by three trained panelists. Total ascorbic acid and DPPH (diphenylpicrylhydrazyl) radical scavenging activity were monitored. Sensory qualities were also assessed by ten consumers. Though soybean sprouts soaked with 10% citric acid had the lowest browning score in the hypocotyls and roots, the over-all acceptance by trained panelists was not accepted. Conversely, 1% citric acid was the best concentration that maintained the soybean sprouts quality for 4 days. The browning score in the hypocotyls of the soybean sprouts soaked with 1% citric acid was slightly higher than that of the 10% citric acid. The total ascorbic acid content was not significantly different among the samples soaked with citric acid, but it was significantly higher compared to, both the sprouts soaked with water and the control. However, the DPPH radical scavenging activity was slightly delayed by soaking sprouts in water compared to the other samples. The sensory evaluation by consumers showed significantly, that 1% citric acid maintained the greatest crispiness and gave the highest over-all consumer preference. In conclusion, 1% citric acid was the most promising concentration, which prevented quality loss, and maintained consumer acceptance within a shelf-life of four days.