

Title Effect of mild heat treatment on fresh asparagus quality
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Abstract

While per capita consumption of processed asparagus is steady or declining, consumption of the fresh product is increasing, and this increase exceeds that of any other fresh vegetable. This increase has provided the incentive for the asparagus industry to increase its output to the fresh market. Adding value to the fresh asparagus industry by developing a fresh-cut or minimally processed product is important to improve competitiveness with imports. Some studies have reported that mild heat treatment improves asparagus quality, but no study has reported the level of phenolics, which is related to nutritional quality. Our objective was to evaluate the effect of mild heat treatment on fresh asparagus appearance, geotropism, texture, and total phenolics. Michigan asparagus spears were heated within 5 hr of harvest at 47.5 °C for one min and then stored at 2 °C and 15 °C for up to 24 d. Spear samples were taken at intervals of 2-4 d over 24 d to measure visual appearance, geotropism, shear force, and total phenolics, measured by the Folin-Ciocalteu method. Results showed that mild heating improved visual appearance of spear, and extended shelf-life by 4 and 6 d at 2 °C and 15 °C storage, respectively. However, mild heating unexpectedly increased geotropism 10-28 °C, depending on storage temperature and spear diameter. The increased geotropism is opposite from what has been reported by other researchers. Our results may be different because our asparagus was heated 5 hr after harvest, a typical lag time for Michigan producers. Shear force slightly decreased. Total phenolics did not change significantly. When considering using a mild heat treatment, asparagus producers should know the lag time from harvest to heating, and the type of asparagus grown. Michigan asparagus growers considering mild heat treatment should weigh the advantage of increased shelf-life (4-6 d) versus the disadvantage of increase spear curvature.