

Abstract

Asparagus officinalis spears cv. 'Brock Improve' were fumigated with 500 ppb 1-MCP for 12 hr alone or in combination with 100 ppm ethylene exposure for 3 hr. Ethylene was applied either before or after 1-MCP treatment. Untreated spears served as control. Treatment and subsequent storage conditions were 20°C and 90% RH. 1-MCP reduced the shear-press force indicating lower degree of toughening of the spears compared to that of the untreated control. Ethylene exposure prior to 1-MCP treatment eliminated the 1-MCP effect and accelerated toughening relative to the control. Correspondingly, fiber and lignin contents and peroxidase activity were lowest with 1-MCP alone and highest with ethylene exposure prior to 1-MCP treatment. When ethylene was applied following 1-MCP treatment, the 1-MCP effect prevailed initially but later decreased. In this treatment, texture changes did not compare well with changes in fiber and lignin contents, suggesting the involvement of other cell wall and carbohydrates components in texture quality of asparagus.