

Regulation effects of 1-MCP combined with flow microcirculation of sterilizing medium on peach shelf quality

Meijun Du, Xiaoyu Jia, Jiangkuo Li, Xihong Li, Jianan Jiang, Haideng Li, Yanli Zheng, Zhenyuan Liu, Xiantao Zhang and Jiangming Fan

Scientia Horticulturae 260: 108867. (2020)

Abstract

Physiological senescence and quality deterioration of peach after harvest were the restrict factors of peach shelf quality. As an ethylene inhibitor, 1-Methylcyclopropene (1-MCP) can effectively delay fruit ripening and senescence, and improve storage quality. However, studies showed that the effect of fruit preservation by only using 1-MCP is unsatisfactory. Therefore, in this study, 1-MCP combined with sterilizing medium including ozone, TiO₂ photocatalytic and epsilon-polylysine (ϵ -PL) was applied for enhancement of preservative ability with safety and pollution-free. The flow microcirculation was used for enhancing the effect of sterilizing medium. Results showed that all these three treatment methods can enhance the shelf quality of peach fruit. Among them, the combination treatment of 1-MCP and ozone played a more active role in inhibiting decay, respiration, ethylene production, decline of nutrients such as organic acids and soluble solids. Moreover, it maintained bright color value and cell integrity of peach fruit. In addition, the combined treatment of 1-MCP and ozone had significant effects on inducing resistance in fruit and slowing down membrane lipid peroxidation. In conclusion, 1-MCP combined with ozone was an effective method to delay the senescence and improve the storage shelf quality of fruit, which is beneficial to the guidance of production practice and has potential application prospects in fruit preservation.