

Combined treatments of chitosan and sodium silicate to inhibit *Alternaria alternata* pathogens of postharvest winter jujube

Jingru Zhang, Xiaowen Cheng, Lulu Chang, Lele Zhang and Shaoying Zhang

Food Science and Biotechnology 30: 589–597. 2021.

Abstract

Alternaria alternata is a pathogenic fungus that infects jujube fruit and leads to serious economic losses. In this paper, the antifungal activity of chitosan combined with sodium silicate against *A. alternata* in vitro and in vivo was investigated, and the possible antimicrobial mechanisms were explored. Results showed that the spore germination and colony expansion of *A. alternata* were significantly inhibited by chitosan. Chitosan treatment induced the leakages of intercellular electrolytes, nucleic acids, and soluble protein of *A. alternata*. Meanwhile, chitosan damaged the cell morphology and membrane integrity of *A. alternata*. The combination of chitosan and sodium silicate was more effective than chitosan alone. In addition, the effect of chitosan and sodium silicate could significantly decrease natural rot rate and delay lesion expansion of winter jujube. Collectively, chitosan combined with sodium silicate had the potential to control postharvest diseases of fruit caused by *A. alternata*.