Title Application of induced resistance for control of dry rot of potato tubers

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Abstract

Dry rot of potato tubers caused by *Fusarium sulphureum* is one of the most important postharvest diseases restricting potato production and incidence of disease is up to 30% during storage in northwest of China. Primary control of pathogens is reported by postharvest application of fungicides, but public concern over food safety require an investigation on the control methods with potentially less harmful to human health and the environment. Our previous studies showed that chemical elicitors including 0.25% chitosan, 100 mM sodium silicate, 100 mM, β-aminonbutyric acid, 45 mM citric acid and 70 mM K_2HPO_4 treatment significantly reduced the lesion diameter of potato tubers inoculated with *F. sulphureum.* The mechanism of induced resistance by these elicitors involved in ROS generation and antioxidative defense responses, increasing of the activity of defense enzymes such as peroxidase, polyphenoloxidase and phenylalanine ammonialyase and accumulation the contents of lignin, flavonoids and phenolics in potato tubers. Moreover 0.25% chitosan and 100 mM sodium silicate also showed higher antifungal activities. These findings suggest that induced resistance by chemical elicitors could be a promising handling as a natural fungicide to partially substitute for the synthetic fungicides in potato tubers.