Preharvest chitosan oligochitosan and salicylic acid treatments enhance phenol metabolism and maintain the postharvest quality of apricots (*Prunus armeniaca* L.)

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Abstract

Self-incompatibility (SI) is one of the main factors causing seedless fruits in *Citrus*. 'Wuzishatangju' (*Citrus reticulata* Blanco) is a natural bud sport from a self-compatible and seedy cultivar 'Shatangju'. Our previous study showed that gametophytic SI caused seedlessness of 'Wuzishatangju'. However, it is not clear what factors are responsible for its SI response. In this study, pollen tube growth kinetics was observed in the pistils of 'Wuzishatangju' using pollination combination of 'Wuzishatangju' (♀) × 'Wuzishatangju' (♂) and 'Wuzishatangju' (♀) × 'Shatangju' (♂). The protein profiles of pollen between 'Wuzishatangju' and 'Shatangju' were compared by quantitative proteomics analysis based on tandem mass tag technology. Pollen tube from self-pollination of 'Wuzishatangju' vigorously germinated in stigma while stopped elongating at the upper site of the style. Pollen from 'Shatangju' germinated and pollen tube reached the base of style, suggesting that the mutation plays a role in pollen of 'Wuzishatangju'. Proteomic analysis indicated that a polyamine oxidase 2 (CrPAO2) was up-accumulated in pollen of 'Wuzishatangju' and catalyzed the spermine and spermidine oxidation leading to produce H_2O_2. The potential roles of CrPAO2 causing SI reaction in 'Wuzishatangju' were discussed.