

Title Induction of resistance to *Penicillium digitatum* in grapefruit by beta-aminobutyric acid
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Abstract

b-Aminobutyric acid (BABA), an inducer of pathogen resistance in plants, induced disease resistance in reproductive parts of the plant, such as grapefruit peel tissue. Application of BABA to specific wound sites on the fruit peel surface induced resistance to *Penicillium digitatum*, the main postharvest pathogen of citrus fruit, in a concentration-dependent manner, being most effective at 20mM, and rather less effective at either higher or lower concentrations. The effect of BABA in inducing resistance to *P. digitatum* in the fruit peel surface was local and limited to the vicinity (within 1–2cm) of the BABA-treated site. In addition to inducing pathogen resistance, increasing concentrations of BABA (from 1 to 100mM) also exhibited direct antifungal activity and inhibited *P. digitatum* spore germination and germ tube elongation *in vitro*. The induction of resistance to *P. digitatum* by BABA was accompanied by the activation of various pathogen defense responses in grapefruit peel tissue, including activation of chitinase gene expression and protein accumulation after 48h, and an increase in phenylalanine ammonia lyase (PAL) activity after 72h.