

Title Antifungal efficacy of *Aloe vera in vitro* and its use as a preharvest treatment to maintain postharvest table grape quality

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Abstract

Aloe vera gel was added at several concentrations on potato dextrose agar (PDA) to test its efficacy on inhibiting mycelium growth of two common fungi responsible for fruit decay (*Penicillium digitatum* and *Botrytis cinerea*). For both fungi, the inhibition of mycelium growth rate increased with *Aloe* concentration, although to gain the same inhibition the necessary *A. vera* gel concentration was 3-fold higher for *B. cinerea* than *P. digitatum*. Overall, the dose of 250 mL L⁻¹ led to 4- and 2-log reductions of mycelium growth for *P. digitatum* and *B. cinerea*, respectively. Based on these results, *A. vera* gel at 250 mL L⁻¹ was applied as a preharvest treatment to table grape vineyards 1 or 1 and 7 days before harvesting. Fruit were cold-stored for 35 days and sampled weekly. Respiration rate and weight loss were significantly reduced in treated samples, while ripening parameters such as colour and fruit firmness were significantly delayed. Both mesophilic aerobics and mould and yeasts counts were significantly lower at harvest in treated samples, the effect being persistent during storage. At the end of the experiment, the percentage of rotted berries was significantly lower in treated than in control fruit. From these results it could be inferred that *A. vera* could be considered as a promising preharvest treatment to maintain table quality during postharvest storage.