

Antifungal properties of Aloe vera through in vitro and in vivo screening against postharvest pathogens of papaya fruit

ABSTRACT

Postharvest fruit disease in papaya (*Carica papaya*L.) caused by fungus is one of the major problems in the fruit industry. The aim of the study is to determine the major postharvest fungal pathogen isolated from papaya fruit and to investigate the antifungal effects of Aloe vera on those pathogens. In this study, the fungi were isolated and identified through molecular identification as *Fusarium* sp., *Lasiodiplodia theobromae*, *Aspergillus niger*, and *Colletotrichum gloeosporioides* which are believed to be responsible for postharvest decay in papaya fruits. Two types of Aloe vera extract (*Aloe barbadensis* Miller); fresh Aloe vera and food grade were used to evaluate their efficacy in inhibiting fungal growth thereby slowing down fruit decay. Both Aloe vera with different concentrations (0, 15%, 25%, and 50% (v/v)) were tested against mycelium growth of four pathogenic fungi of papaya fruit. Mycelial growth of fungi was inhibited by both fresh filtered and food grade Aloe vera amended with PDA media in a dose-response manner. Both fresh and food grade Aloe vera gel were able to prevent wound infection on papaya fruit inoculated with *Fusarium* sp., *Aspergillus niger*, *Colletotrichum gloeosporioides*, and *Lasiodiplodia theobromae* for 72 h after inoculation of the fungi. In summary, the study paves the way for Aloe vera as a potential edible coating for controlling the postharvest fungus of papaya fruit.

Keyword: Aloe vera; Postharvest; Papaya; Antifungal; Inhibition