Influence of pre-harvest foliar spray of fungal culture filtrates on post-harvest biology of date fruit harvested at Khalal stage

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Abstract

There is a high prevalence of saprophytic fungi in date fruit and date fruit products. Some of these fungi isolated from the infected plants in date palm orchards were identified as *Aspergillus* niger and Rhizophus *oryzae*. These fungi cause fruit loss during later stages of maturation and are responsible for severe post-harvest losses of date fruit. They may also deteriorate the overall health of plants. The fungal culture filtrates (FCF) from *A. niger* (ANFCF) and *R. oryzae* (ROFCF) were prepared and used as elicitors for the experimentation. These FCFs were foliar sprayed on the date palm plants in the field after the fruit set. Various quality attributes such as weight, firmness and total soluble solids and biochemical properties like total sugars, total proteins, total phenols, ascorbic acid, and antioxidant activity of fresh date fruit (khalal stage) harvested from the FCF treated and untreated plants were studied. The fruit harvested from plants treated with ROFCF showed enhanced levels of total sugar, total proteins, ascorbic acid, and DPPH scavenging activities followed by the fruit from plants treated with ANFCF in comparison to fruit collected from untreated plants. The shelf life of fruit from plants treated with ROFCF and ANFCF increased beyond 14 d at room temperature while the fruit from untreated plants started to deteriorate after 7 d from harvest. The study indicates that the use of fungal culture filtrates as elicitors can help the plant to build up its defense mechanism by elevating the activity of protective enzymes like, Peroxidase (POX), Polyphenol oxidase (PPO) and Phenylalanine ammonia lyase (PAL). It also enhances the growth of plant and improve the quality as well as increases shelf life of fruit.