



ANTIFUNGAL ACTIVITY OF POLYPHENOLS FROM MANGO PEELS AGAINST PHYTOPATHOGENIC FUNGI

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Introduction. Postharvest period of fruits and vegetables implies significant losses of the quality levels. In developing countries, postharvest losses are often more severe due to inadequate storage and transportation facilities. Synthetic fungicides are primarily used to control postharvest decay loss (El-Ghaouth *et al.*, 2004; Korsten, 2006; Singh and Sharma, 2007; Zhu, 2006). However, the global trend appears to be shifting towards reduced use of fungicides on produce and hence, there is a strong public and scientific desire to seek safer and eco-friendly alternatives for reducing the decay loss in the harvested commodities (Mari *et al.*, 2007).

The objective of this study was to evaluate the antifungal properties of polyphenols from mango peels against four important phytopathogens: *Colletotrichum gloeosporioides*, *Mucor sp.*, *Sclerotinia sclerotiorum* and *Fusarium oxysporum*.

Methods. The phytopathogens were obtained from the Department of Food Science and Technology, University of Coahuila, School of Chemistry, Saltillo Coahuila, México.

To evaluate the mycelial growth inhibition, three different concentrations of purified polyphenols from mango peels were proved. The concentrations were 0 ppm as a control, 150, 300 and 450 ppm. These compounds were added in four flasks with PDA, sterilized and placed in petri dishes. A PDA agar disk of a pure culture of fungi was placed in the center of the agar plates and maintained at 30°C. Daily radial growth measurements were taken with a Vernier until the end of the experiment. For *Colletotrichum gloeosporioides* the measures were taken at the 24, 48, 72, 96 and 120 hours; for *Sclerotinia sclerotiorum* and *Mucor sp.* the measures were made at the 8, 16, 24, 32, 40 and 48 hours; and for *Fusarium oxysporum* measures were made at 24, 48, 72 and 96 hours. Data were calculated as percentage inhibition of mycelial growth using the following equation (Yenjit *et al.*, 2010):

$$\text{Inhibition (\%)} = \left[\frac{(\text{mm growth in control} - \text{mm growth in treatment})}{\text{mm growth in control}} \right] * 100$$

Results. The antifungal activity of the polyphenols against the different phytopathogens was demonstrated in an *in vitro* study. The results showed that the polyphenols had activity against the mycelial growth of the phytopathogens proved. These compounds presented an inhibition of 11.95% at 48 h with 150ppm, 39.58% at 24h with 300ppm and 43.73% at 48h with a 450ppm to *Colletotrichum gloeosporioides*. With *Mucor sp* the inhibition percentages

were 1.58% with 150ppm, 10.65% with 300ppm and 27.81% with 450ppm at 24 hours. For *Fusarium oxysporum* the inhibition was of 6.06% with 150ppm, 13.49% with 300ppm and 12.00% with 450ppm at 48 hr. And finally to *Sclerotinia sclerotiorum* we had 13.96% at 150ppm, 33.48% at 300 ppm and 23.12% at 450ppm at 16 hours of study.

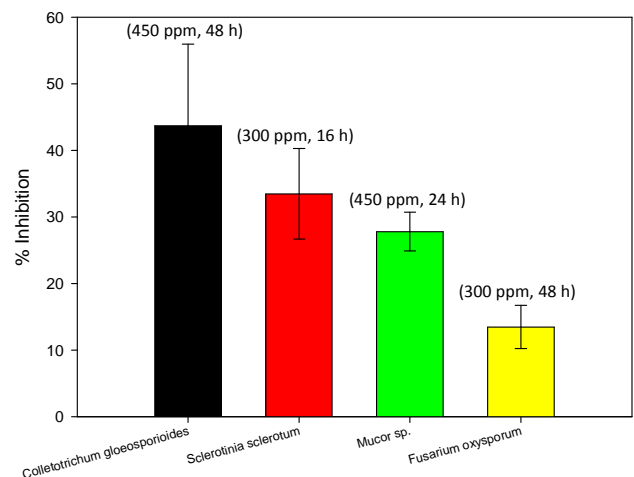


Fig. 1. Inhibition percentage of phytopathogens

Conclusion. It can be generally observed an antifungal activity higher at 450ppm to *C. gloeosporioides* and *Mucor sp.*, and at 300 ppm to *S. sclerotiorum* and *F. oxysporum*.

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