

عنوان مقاله:

Adhesion of *Penicillium italicum* and *Penicillium digitatum* spores to materials commonly used in the citrus packaging chain

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خلاصه مقاله:

Purpose: The purpose of this study was to investigate the adhesion of *Penicillium italicum* and *Penicillium digitatum* spores on four materials commonly used in the citrus packaging chain (plastic, PVC, stainless steel, 316L and wood). **Research methods:** The physicochemical characterization of spores and material surfaces was carried out using the contact angle method. The number of adhered spores was estimated after being detached from supports in an ultrasonic bath. The results showed that all citrus materials processes were classified as hydrophobic except for the wood packaging. Surface spores of *P. digitatum* presented a relatively hydrophobic character, and surface spores of *P. italicum* presented a hydrophilic character. Both of the spores and all materials presented high electron donor/acceptor characters. **Findings:** The results showed that *P. digitatum* and *P. italicum* spores could adhere to all the studied substrates. Furthermore, the highest adhesion was observed by *P. italicum* and *P. digitatum* spores on wood packaging (5.8×10^6 CFU/cm²) and (4.5×10^6 CFU/cm²), respectively. The wood packaging was the least hygienic material concerning the adhesion ability of *P. digitatum* and *P. italicum* spores, followed by plastic packaging, PVC, and 316 L stainless steel. A correlation between substratum physicochemical properties and spore adhesion was also examined, while a good correlation was observed between spore adhesion and donor electron character. **Research limitations:** There were no limitations to this study. **Originality/value:** This research studied the adhesion of spores on materials commonly used in the citrus packaging chain.

کلمات کلیدی:

Adhesion, Citrus packaging materials, Spores

