

Title Quantitative postharvest contamination and transmission of *Penicillium expansum* (Link) conidia to nectarine and pear fruit by *Drosophila melanogaster* (Meig.) adults

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### Abstract

This research demonstrated the possibility of conidial transmission of *Penicillium expansum* by the adult flies of *Drosophila melanogaster* to mature, sound nectarine and pear fruit. This transmission was accomplished by inserting the fungal conidia adhering either to mouthparts of the contaminated flies or to their abdominal tip into mature, sound nectarine and pear fruit, while making punctures in the fruit skin either for feeding or for oviposition. Accordingly, the mean number of typical *P. expansum* lesions that appeared due to this transmission per one nectarine or pear fruit subjected to contaminated flies was 4.7 and 2.5, respectively. Also, the mean diameter of these typical lesions was 5.3 and 3.2 mm on the same types of fruit, respectively. When the eggs laid by the contaminated females of *D. melanogaster* were left to develop until adult fly emergence, the mean number of the flies that emerged per fruit at the end of the life cycle was 48.3 and 24.3 on nectarine and pear fruit, respectively. Also, the mean life cycle duration for the emerged flies was 24.3 and 28.7 days on the same types of fruit, respectively. Moreover, viability of the pathogen conidia that either adhered externally to the various body parts of the contaminated flies or were introduced into their bodies was tested by plating the conidia onto oatmeal agar plates amended with chloramphenicol, following the release of the contaminated flies onto plates or the spread of their ground suspension in saline solution onto the same type of plates. The mean number of typical *P. expansum* colonies that appeared per plate was 5.3 for external contamination of the flies and 2.4 for internal contamination. The conidia of *P. expansum* adhering to the various body parts of contaminated flies were first localized on these parts and then photographed under the light microscope after they have been correctly identified. Overall results indicate the possibility of *P. expansum* conidial transmission by *D. melanogaster* adults into sound, mature nectarine and pear fruit through their feeding and oviposition punctures.