

Mycobiota of apple fruit: effects on bitter rot caused by *Colletotrichum acutatum*

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Abstract

Colletotrichum acutatum is a pathogenic fungus causing bitter rot on fruit, including apple. Biological control of post-harvest diseases of fruit has emerged as a promising alternative to chemical applications. The objective of this study was to test the antagonistic potential of mycobiota of apple fruit ('Malang' and 'Manalagi') against *C. acutatum*. Fruit were collected from several traditional markets and supermarkets in Bogor and Jakarta, and from an orchard in Batu ('Malang'). Test fungi were isolated using a dilution method, followed by a pour-plated method on malt extract agar (MEA) containing chloramphenicol. The test of antagonism was conducted using the direct opposition method on MEA; the pathogenicity of test fungi was done by inoculating fungal isolates onto the two apple cultivars. The potential antagonistic fungus was evaluated by inoculating a 0.1 ml conidial suspension with different concentrations (1×10^6 ; 2×10^6 ; 4×10^6 ; 6×10^6 ; 8×10^6 ; 1×10^7 conidia/ml) onto the apples. Forty-nine isolates of test fungi were isolated from the apples. Eight out of 49 test fungal isolates inhibited growth of *C. acutatum* by more than 50%, and 6 out of 8 fungal isolates prevented disease developing on the inoculated apples. One of the antagonistic fungus, i.e., *Pestalotiopsis guepinii* with different concentrations of conidial suspensions were not able to control bitter rot effectively. Nevertheless, *P. guepinii* (4×10^6 conidia/ml) inoculated together with a 0.1-ml conidial suspension of *C. acutatum* (1×10^6 conidia/ml) inhibited bitter rot by 39.5%.