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Metabolism of the Flavonoid Epicatechin by Laccase of *Colletotrichum gloeosporioides* and Its Effect on Pathogenicity on Avocado Fruits. R. Guetsky, I. Kobiler, X. Wang, N. Perlman, N. Gollop, G. Avila-Quezada, I. Hadar, and D. Prusky. First, second, fourth, fifth, and eighth authors: Department of Postharvest Science of Fresh Produce, Institute for Technology and Storage of Agricultural Products, the Volcani Center, Agricultural Research Organization, Bet Dagan 50250; sixth author: Centro de Investigacion en Alimentación y Desarrollo A.C. Unidad Delicias, Chihuahua, México C.P. 33089, and seventh author: Department of Plant Pathology and Microbiology, Faculty of Agriculture, the Hebrew University of Jerusalem, Rehovot 74100, Israel. R. Guetsky and I. Kobiler contributed similarly to this manuscript. Phytopathology 95:1341-1348. Accepted for publication 28 June 2005.

During avocado fruit ripening, decreasing levels of the flavonoid epicatechin have been reported to modulate the metabolism of preformed antifungal compounds and the activation of quiescent *Colletotrichum gloeosporioides* infections. Epicatechin levels decreased as well when *C. gloeosporioides* was grown in the presence of epicatechin in culture. Extracts of laccase enzyme obtained from decayed tissue and culture media fully metabolized the epicatechin substrate within 4 and 20 h, respectively. Purified laccase protein from *C. gloeosporioides* showed an apparent MW of 60,000, an isoelectric point at pH 3.9, and maximal epicatechin degradation at pH 5.6. Inhibitors of fungal laccase such as EDTA and thioglycolic acid reduced *C. gloeosporioides* symptom development when applied to ripening susceptible fruits. Isolates of *C. gloeosporioides* with reduced laccase activity and no capability to metabolize epicatechin showed reduced pathogenicity on ripening fruits. On the contrary, Mexican isolates with increasing capabilities to metabolize epicatechin showed early symptoms of disease in unripe fruits. Transcript levels of *cglac1*, encoding *C. gloeosporioides* laccase, were enhanced during fungal development in the presence of epicatechin at pH 6.0, where avocado fruits are susceptible to fungal attack. But transcript increase was not detected at pH 5.0, where the fruit is resistant to fungal attack. The present results suggest that biotransformation of epicatechin by *C. gloeosporioides* in ripening fruits is followed by the decline of the preformed antifungal diene compound, resulting in the activation of quiescent infections.