Bacillus mojavensis intensifies the accumulation of maize fungitoxic APO in the presence of _Fusarium verticillioides_

C. W. BACON (2), D. M. Hinton (2), A. E. Glenn (2), F. A. Macias (1), D. Marin (1)
(1) Depart. Organic Chemistry, University of Cadiz, Cadiz Spain; (2) USDA, ARS, Russell Research Center, Athens, GA, USA

Phytopathology 97:S6

The benzoxazolinones and specifically benzoxazolin-2 (3H)-one (BOA) are important transformation products of cyclic hydroxamic acids of maize. These natural products of maize can provide resistance to maize from pathogens and pest. However, maize pathogens such as *Fusarium verticillioides* are capable of detoxifying the benzoxazolinones to 2-aminophenol (AP), producing less toxic N-(2-hydroxyphenyl) malonamic acid (HPMA) and 2-acetamidophenol. Since biocontrol strategies utilizing a species of endophytic bacterium, *Bacillus mojavensis*, are considered efficacious as a control of this *Fusarium* species, the *in vitro* transformation products and effects of BOA on growth of this bacterium were examined. The results showed that there was an increased production of a red pigment on BOA amended media when wild type and specific genetic crosses of *F. verticillioides* were co-cultured with this bacterium. The red pigment was identified as 2-amino-3H-phenoxazin-3-one (APO), which is a highly toxic and stable product of AP. The results indicate that the bacterium interacts with the fungus preventing it from transforming BOA to the non-toxic HPMA, resulting in an accumulation of APO, which is very toxic to *F. verticillioides* and other organisms, but nontoxic to *B. mojavensis*. Thus, an enhanced biocontrol is suggested by this *in vitro* study.