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Czech J. Genet. Plant Breed.

The effects of silver on microbial contamination of agar medium and on interactions between mildew and barley leaf segments with and without the *mlo* gene

Czech J. Genet. Plant Breed., 38 (2002): 82-86

Segments of primary leaves of several barley varieties with and without the *mlo* gene were placed in Petri dishes on an agar medium containing benzimidazole, mineral nutrients and 0, 0.1, 0.3, 1 and 3 ppm of AgNO₃. Three Petri dishes were prepared of each concentration. The segments were uniformly inoculated with 10³ conidia/cm² of the partially *mlo*-virulent powdery mildew culture PV-32. Subsequently, one open Petri dish of each Ag-concentration was exposed for 1 hour to a different potential con-

tamination environment: one in the laboratory (low load), one in a humid cellar close to stored vegetables (medium load) and one on the top of a compost heap of decaying garbage (heavy load). Germination of mildew spores on the medium surface declined slightly with increasing concentration of AgNO₃. Mildew infection was evaluated 7 days after inoculation. The number of mildew colonies per leaf segment and the differential interaction of the *Mlo*- and *mlo*-varieties with the mildew culture was apparently not affected by the AgNO₃ concentration. Contamination of the medium by airborne micro-organisms was evaluated 12 days after exposure both microscopically and by eye. The contamination of the medium increased with environmental load and with decreasing AgNO₃ concentration. 0.1 ppm AgNO₃ markedly retarded the growth of contaminant colonies from all three environments, but did not prevent contamination. At 1 ppm AgNO₃, no contamination was observed on the media exposed to low and medium load, but several dozen small contaminant colonies developed on the medium

exposed to heavy load. At 1 ppm AgNO₃, only three small contaminant colonies developed on the medium exposed to heavy load, while the media exposed to medium and low load remained clean. It can be concluded that adding 1 ppm AgNO₃ to a mineral-agar medium efficiently suppresses its contamination under low and medium load, without apparently affecting the growth of mildew or the interaction between mildew and *mlo*-barley on leaf segments placed on the medium.

Keywords:

contamination; silver; AgNO₃; barley; leaf segments; powdery mildew; *mlo*

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