

Effect of Cucumber Fruit Peel Extracts on Inhibition of *Phytophthora capsici* Growth and Infection

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Cucumbers are an important vegetable crop and an important source of income for farmers of Michigan. The oomycete pathogen *Phytophthora capsici* causes fruit rot in cucumbers and a wide variety of other vegetables. Previous research in this lab found that certain cucumber cultivars demonstrated increasing resistance to *P. capsici* after their stage of rapid elongation, transitioning at 10–12 days post-pollination (dpp). This increase of resistance with age is called age-related resistance (ARR). Studies showed that the fruit peel is associated with ARR. Reports from other laboratories indicate that cucumbers are capable of producing methanol-soluble antimicrobial compounds. In this work, bioassays were conducted to evaluate the effect of aqueous and methanolic extracts of cucumber fruit peel on pathogen growth and to test for a difference in effects of varying ages and genotypes of cucumber. Vlaspi (ARR +) 8-dpp (pre-ARR) and 16-dpp (post-ARR) and Gy14 (ARR –) 16-dpp cucumbers were peeled, peel was sequentially extracted twice each with water and methanol, and extracts were lyophilized. OP97, NY 0664-1, NY 0664-1 RA (red fluorescence), and NY 0664-1 GA (green fluorescence) isolates were used to prepare inoculum with a concentration of 10^5 zoospores/mL. Inoculum and extracts redissolved in water or 10% methanol at 25 µg/µL were added to a 96-well plate filled with V8 media. Methanolic extracts inhibited the growth of *P. capsici*, but aqueous extracts had a stimulatory or no effect. Differences in age and genetic capacity for ARR did not produce observable differences in *P. capsici* growth.

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