Variation in Chemotactic Preferences of *Aphanomyces cochlioides* Zoospores to Flavonoids

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The zoospores of the phytopathogenic *Aphanomyces cochlioides* are chemotactically attracted by a host-specific flavone, cochliophilin A (5-hydroxy-6,7-methylenedioxyflavone), and repelled from the mammalian estrogens or estrogenic compounds. This study further examined the responses of *A. cochlioides* zoospores to some flavonoids structurally related to cochliophilin A or compounds known as phytoestrogens. The bioassay revealed that some synthetic flavones (such as 6-methyl-4'-methoxyflavone, 3-hydroxy-4'-methoxyflavone, 7-hydroxy-5-methylflavone, 3-hydroxy-4'-methoxy-6-methylflavone) elicited attractant activity at concentrations as low as picomolar (10 pM), which was an 100-fold lower concentration than that of the threshold concentration of the host-specific attractant cochliophilin A. Apparently, a hydrophobic B-ring with an alkylated (methylated) A-ring or a methoxylated B-ring with an unsubstituted A-ring in the flavone skeleton played a significant role in higher attractant activity. On the other hand, all known estrogenic flavonoids (such as equol, 3'- or 8-prenylated naringenins) displayed potent repellent activity toward zoospores. Surprisingly, zoospores were attracted by non-estrogenic 6-prenylated naringenin indicating that repellent activity is linked to the estrogenic activity of the phytoestrogens.

Key words: Chemotaxis, Flavonoids, Peronosporomycete Zoospore