

Repellent Activity of Estrogenic Compounds toward Zoospores of the Phytopathogenic Fungus *Aphanomyces cochlioides*

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Screening chemical compounds, we found that a xenoestrogen, bisphenol A, showed potent repellent activity against the zoospores of *Aphanomyces cochlioides*. Based on this finding, we tested a number of androgenic and estrogenic compounds (e.g. testosterone, progesterone, estradiols, diethylstilbestrol, estrone, estriol, pregnenolone, dienestrol etc.) on the motility behavior of *A. cochlioides* zoospores. Interestingly, most of the estrogenic compounds exhibited potent repellent activity (1 µg/ml or less by the “particle method”) toward the motile zoospores of *A. cochlioides*. We derivatized some of the estrogens and discussed the relationship between the structure of active molecules and their repellent activity. Apparently, aromatization of the A ring with a free hydroxyl group at C-3 position of a steroidal structure is necessary for higher repellent activity. Interestingly, methylation of diethylstilbestrol (DES) yielded completely different activity i.e. both mono- and di-methyl ethers of DES showed attractant activity. Moreover, the attracted zoospores were encysted and then germinated in the presence of di-methyl ether of DES. The potential usefulness of this repellent test is discussed for the detection of estrogenic activity of naturally occurring compounds, and the possible role of phytoestrogens in host/parasite interactions. So far, this will be the first report of repellent activity of estrogenic compounds toward trivial fungal zoospores.