

Title: Toxicity of Triadimefon Racemate and Enantiomers to Black Fly Larvae

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#### Abstract

Triadimefon is a conazole fungicide commonly used for commercial and agricultural fungal control on trees, ornamentals and fruits. It is a chiral compound, existing as R-(-) and S-(+) enantiomers and used as the racemate. This is of interest since the triadimefon enantiomers can have varying degrees of toxicity to non-target organisms. Results of earlier 48 hr LC<sub>50</sub> tests at pH 7.6, reported as the median with fiducial limits, showed that triadimefon racemate (+/-) is toxic to the black fly larvae [LC<sub>50</sub> = 6113 µg/L (5792-6430)]. In the current study, the triadimefon racemate and its enantiomers were evaluated separately to determine their respective 48 hr LC<sub>50</sub> values to black fly (Diptera: Simuliidae) larvae using an orbital shaker toxicity bioassay. Previous research had shown that triadimefon enantiomerizes in water at near neutral pHs, so the pH was maintained at near 5 to prevent enantiomer conversion. Preliminary data at pH 5 indicates the (-) enantiomer to be two-fold more toxic than the racemate, while the (+) enantiomer LC<sub>50</sub> falls in between the racemate and (-) values. Future work will focus on final LC<sub>50</sub> toxicity assessments of triadimefon, its enantiomers, and its metabolites, as well as investigations into triadimefon metabolic pathways and mechanisms relative to black fly larvae. Although this work was reviewed by EPA, it may not necessarily reflect official Agency policy. Mention of trade names or commercial products does not constitute endorsement or recommendation for use.