

Mitotic crossing-over induced by two commercial herbicides in diploid strains of the fungus *Aspergillus nidulans*

R.A. Cardoso¹, L.T.A. Pires², T.D. Zucchi³, F.D. Zucchi⁴ and T.M.A.D. Zucchi⁴

¹Centro Universitário do Triângulo, Uberlândia, MG, Brasil

²Centro Universitário Moura Lacerda, Ribeirão Preto, SP, Brasil

³Departamento de Entomologia e Acarologia, ESALQ, Universidade de São Paulo, Piracicaba, SP, Brasil

⁴Departamento de Parasitologia, Instituto de Ciências Biomédicas e Centro de Pesquisas em Biotecnologia, Universidade de São Paulo, São Paulo, SP, Brasil

Corresponding author: T.M.A.D. Zucchi

E-mail: tzucchi@uol.com.br

Genet. Mol. Res. 9 (1): 231-238 (2010)

Received October 7, 2009

Accepted December 13, 2009

Published February 9, 2010

ABSTRACT. Some herbicides are suspected of promoting teratogenic, carcinogenic and mutagenic events. Detection of induced mitotic crossing-over has proven to be an indirect way of testing the carcinogenic properties of suspicious substances, because mitotic crossing-over is involved in the multistep process of carcinogenesis. We examined mitotic crossing-over induced by two commercial herbicides (diuron and trifluralin) in diploid strains of *Aspergillus nidulans* based on the homozygotization index. Low doses (2.5 µg/mL) of diuron were sufficient to increase the mean homozygotization index in 2.1 and 11.3 times for UT448//UT196 and *Dp* II-I//UT196, respectively, whereas the same dose of trifluralin increased this mean only 1.2 (UT448//UT196) and 3.5 (*Dp* II-I//UT196) times, respectively. The lower homozygotization index value found for trifluralin could be due to its interference with mitotic crossing-over in eukaryotic cells. We concluded that the diploid *Dp* II-I//UT196 of *A. nidulans* is more sensitive to organic compounds than UT448//UT196;

these compounds cause recombinational events at a greater frequency in the latter diploid. This system holds promise as an initial test for carcinogenicity of organic compounds, including herbicides.

Key words: Diuron; Trifluralin; Herbicides; Mitotic crossing-over; *Aspergillus nidulans*; Genotoxic agents