Abstract
Mitotic recombination is a process involved in carcinogenesis which can lead to genetic loss through the loss of heterozygosity. The recombinogenic potentials of two anticancer drugs topoisomerase I inhibitors, camptothecin (CPT) and irinotecan (CPT-11), were evaluated in the present study. The homozygotization assay, which assess the induction of mitotic recombination and gene homozygosis, as well as the heterozygous A757//UT448 diploid strain of Aspergillus nidulans were employed. The three non-cytotoxic concentrations of CPT (3.5 ng mL⁻¹, 10.5 ng mL⁻¹ and 17.4 ng mL⁻¹) were found to induce both mitotic recombination and gene homozygosis. CPT treatment produced three diploids homozygous, for nutritional and conidia color genes, and Homozygotization Indices (HI) significantly different from negative control. On the other hand, only the highest CPT-11 concentration tested (18 g mL⁻¹), corresponding to the maximal single chemotherapeutic dose, produced HI values higher than 2.0 and significantly different from negative control HI values. The recombinogenic effects of both topoisomerase I blockers were associated with the recombinational repair of DNA strand breaks induced by CPT and CPT-11. The anticancer drugs CPT and CPT-11 may be characterized as secondary malignancies promoters in cancer patients after chemotherapy treatment.

Keywords
Anticancer drugs, homozygotization assay, homologous recombination, secondary malignancies.