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Flow cytometry susceptibility testing for conventional antifungal drugs and Comparison with the NCCLS Broth Macrodilution Test

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Abstract

Introduction: During the last decade, the incidence of fungal infection has been increased in many countries. Because of the advent of resistant to antifungal agents, determination of an efficient strategic plan for treatment of fungal disease is an important issue in clinical mycology. Many methods have been introduced and developed for determination of invitro susceptibility tests. During the recent years, flow cytometry has developed to solving the problem and many papers have documented the usefulness of this technique. Materials and methods: As the first step, the invitro susceptibility of standard PTCC (Persian Type of Culture Collection) strain and some clinical isolates of Candida consisting of Candida albicans, C. dubliniensis, C. glabrata, C. kefyer and C. parapsilosis were evaluated by macrodilution broth method according to NCCLS (National Committee for Clinical Laboratory Standards) guidelines and flow cytometry susceptibility test. Results: The data indicated that macro dilution broth methods and flow cytometry have the same results in determination of MIC (Minimum Inhibitory Concentration) for amphotericin B, clotrimazole, fluconazole, ketoconazole and miconazole in C. albicans PTCC ٥٠٢٧ as well as clinical Candida isolates, such as C.albicans, C.dubliniensis, C.glabrata C.kefyr, and C.parapsilosis. Discussion: Comparing the results obtained by macrodilution broth and flow cytometry methods revealed that flow cytometry was faster. It is suggested that flow cytometry susceptibility test can be used as a powerful tool for determination of MIC and administration of the best antifungal drug in treatment of patients with Candida infections.

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Author keywords

Flow cytometry; Macrodilution; NCCLS; Susceptibility

Indexed Keywords

EMTREE drug terms: amphotericin B; clotrimazole; fluconazole; ketoconazole; miconazole

EMTREE medical terms: article; broth dilution; Candida albicans; Candida dubliniensis; Candida glabrata; Candida kefyr; Candida parapsilosis; controlled study; drug sensitivity; flow cytometry; fungus growth; growth inhibition; minimum inhibitory concentration; nonhuman

Chemicals and CAS Registry Numbers: amphotericin B, ۱۳۹۷-۸۹-۳, ۳۰٦٥۲-۸۷-۰; clotrimazole, ۲۳٥۹۳-۷٥-۱; fluconazole, ۸٦۳۸٦-۷۳-٤; ketoconazole, ٦٥۲۷۷-٤۲-۱; miconazole, ۲۲۹۱٦-٤۷-۸
Manufacturers:Drug manufacturer: Pars Daru;Sigma;behvazan rasht.

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