

Cytotoxicity effect of curcumin nanoparticles on azol resistant of Candida albicans strains and evaluation of MDR1 gene expression

ayda bejari*, bahram soltani tehrani,

Introduction : *Candida albicans* is a diploid, polymorphic, pathogenic yeast that is a common cause of candidiasis infections. Restrictions in treatment of fungal diseases such as side-effects of drugs and drug resistance led to investigate new drugs, especially herbal medicines. Curcumin is a highly potent, nontoxic, bioactive agent with anti-inflammatory and anti-cancer properties that nowadays researchers survey its anti-microbial function. Aim of the study was to investigate the anti-fungal potential of curcumin nano-particles, against clinical isolates of *Candida albicans* in combination with fluconazole. **Materials and methods:** herein, we isolated 23 clinical strains of *Candida albicans* patients in Guilan province. After determination of antibiogram by disc diffusion and MIC methods , 20 fluconazole (FLC) resistant isolates were treated by fluconazole only and in the combination with curcumin nano-particles. Antifungal activity of curcumin nano-particles was assessed by MFC method. After RNA extraction and cDNA synthesis, MDR1 expression investigated in treated and untreated cells by curcumin nano-particles and fluconazole. **Results:** 86.95% of isolates were resistant to fluconazole and the highest re-sistance for fluconazole (FLC) was determined in 2048 µg/ml. Also Q-RT-PCR analysis revealed that curcumin nano-particles in combination with fluconazole led to downregulation of MDR1, subsequently increase of fluconazole efficiency in resistance isolates. **Discussion:** our results suggested that curcumin nano-particles could be inhibits fungal growth through different mechanisms such as MDR1 downregulation in combination with lower dose of fluconazole (1/2 MIC).

Keywords : Keywords: Fluconazole, MDR1, *Candida albicans*, curcumin nano-particles, MIC.

