In Vitro Antifungal Activity of (1)-N-2-Methoxybenzyl-1,10-phenanthrolinium Bromide against Candida albicans and Its Effects on Membrane Integrity

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Abstract	Metal-based drugs, such as 1,10-phenanthroline, have demonstrated anticancer, antifungal and antiplasmodium activities. One of the 1,10-phenanthroline derivatives compounds (1)-N-2-methoxybenzyl-1,10-phenanthrolinium bromide (FEN), which has been demonstrated an inhibitory effect on the growth of Candida spp. This study aimed to explore the in vitro antifungal activity of FEN and its effect on the membrane integrity of Candida albicans. The minimum inhibitory concentration (MIC) and the minimum fungicidal concentration (MFC) of FEN against planktonic C. albicans cells were determined using the broth microdilution method according to the Clinical and Laboratory Standards Institute guidelines. Cell membrane integrity was determined with the propidium iodide assay using a flow cytometer and were visualized using scanning electron microscopy (SEM). Planktonic cells growth of C. albicans were inhibited by FEN, with an MIC of 0.39-1.56 mu g/mL and a MFC that ranged from 3.125 to 100 mu g/mL. When C. albicans was exposed to FEN, the uptake of propidium iodide was increased, which indicated that membrane disruption is the probable mode of action of this compound. There was cells surface changes of C. albicans when observed under SEM.
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