Supplementary materials

The effect of imidazolium ILs based on of (1*R*,2*S*,5*R*)-(−)-menthol was evaluated on clinical, fluconazole(FLC)-resistant and FLC-sensitive *C. albicans* isolates. *C. albicans* Gu4 and Gu5 strains were isolated from a patient before and after fluconazole administration, respectively. Azole-resistance of Gu5 origins in overexpression of *CDR1* and *CDR2*. *C. albicans* B3 and B4 strains were isolated from a patient before and after fluconazole administration, respectively. Azole-resistance of B4 results from overexpression of *MDR1*. The strains were generous gifts from Prof. S. Milewski (Gdańsk, Poland) and Prof. J. Morschhäuser (Wurzburg, Germany). They are originally referenced in: *Franz, R., Ruhnke, M. & Morschhäuser, J. Molecular aspects of fluconazole resistance development in Candida albicans. Mycoses 42, 453–458, (1999)*.

Table S1 summarizes the minimal inhibitory and fungicidal concentration (MIC_{90} and MFC, respectively) values of ILs tested against the *C. albicans* isolates (for ILs structures see section 5.2. in the main text). No difference in case of MIC_{90} values between the strains was observed. However, MFC values were two-fold lower for the compounds **1b** and **2a** in case of B3 and B4 isolates. The MFC value of the compound **1a** was two-fold higher only in case of Gu5 strain.

Table S1. Minimal inhibitory concentrations (MIC_{90}; μM) and minimal fungicidal concentrations (MFC; μM) of ionic liquids (ILs) or fluconazole (FLC) towards clinical *C. albicans* isolates.

		***C. albicans* clinical isolate**			
		Gu4	**Gu5**	**B3**	**B4**
1a	MIC	12.5	12.5	12.5	12.5
	MFC	25	50	25	25
1b	MIC	25	25	25	25
	MFC	50	50	25	25
2a	MIC	12.5	12.5	12.5	12.5
	MFC	25	25	12.5	12.5

For the evaluation of ILs on the *C. albicans* isolates adhesion concentrations corresponding to 1, 2 and 4 times the MIC_{90} values were used (Figure S1). In most cases, IL **1a** did not influence the adherent properties of *C. albicans* isolates. Only in the highest concentrations **1b** have reduced Gu5, B3 and B4 adhesion by ~10% (not statistically significant). IL **1b** reduced the adhesion of Gu4 by ~20%, regardless of the concentration. Additionally, in higher concentrations (2 x MIC and 4 x MIC), **1b** reduced Gu5 and B4 adhesion by 15-20%. IL with alkoxymethyl chain (**2a**) reduced the adhesion of Gu4 and Gu5 ~20-35%, regardless of the concentration. In case of B3 and B4 strains, **2a** was active only in the highest concentration (4 x MIC), resulting in ~25% adherence reduction.

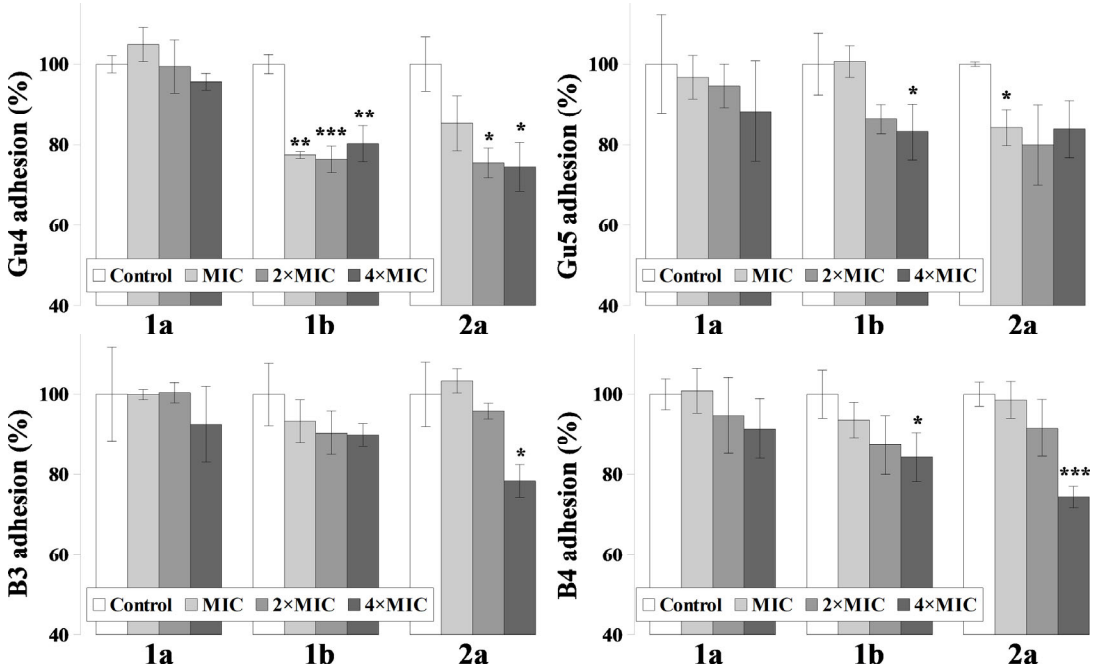

Figure S1. Detachment of adherent *C. albicans* clinical isolates after 2 h incubation on polystyrene surfaces by ionic liquids (ILs) (means ± SD; n = 3). Results are presented as percentage of adherent cells relative to untreated controls (100% adhesion). Statistical analysis of detachment at each concentration was performed towards corresponding control experiments (isolates untreated by ILs=100% adhesion) (*, $p < 0.05$; **, $p < 0.01$ and ***, $p < 0.001$).

We selected *C. albicans* B4 and Gu5 isolates for evaluating the ability of ILs to eradicate biofilm formation on acrylic dental crowns (Figure S2). Both the strains were chosen due to their FLC-resistance status. An IL concentration of 25 μM was selected for this investigation. In each condition, a *C. albicans* biofilm was formed after 72 h incubation, and the collected biomass was microscopically evaluated for the presence of hyphae, pseudohyphae and blastoconidia characteristic of *C. albicans* (Figure S2). Next, the materials were treated with ILs for 2 h and stained with crystal violet (CV). In the presence of salts with alkyl chains (**1a** and **1b**), residual CV staining was observed on each of the tested dentures. IL with alkyloxymethyl substituent (**2a**) protected acrylic dental crowns from biofilm formation.

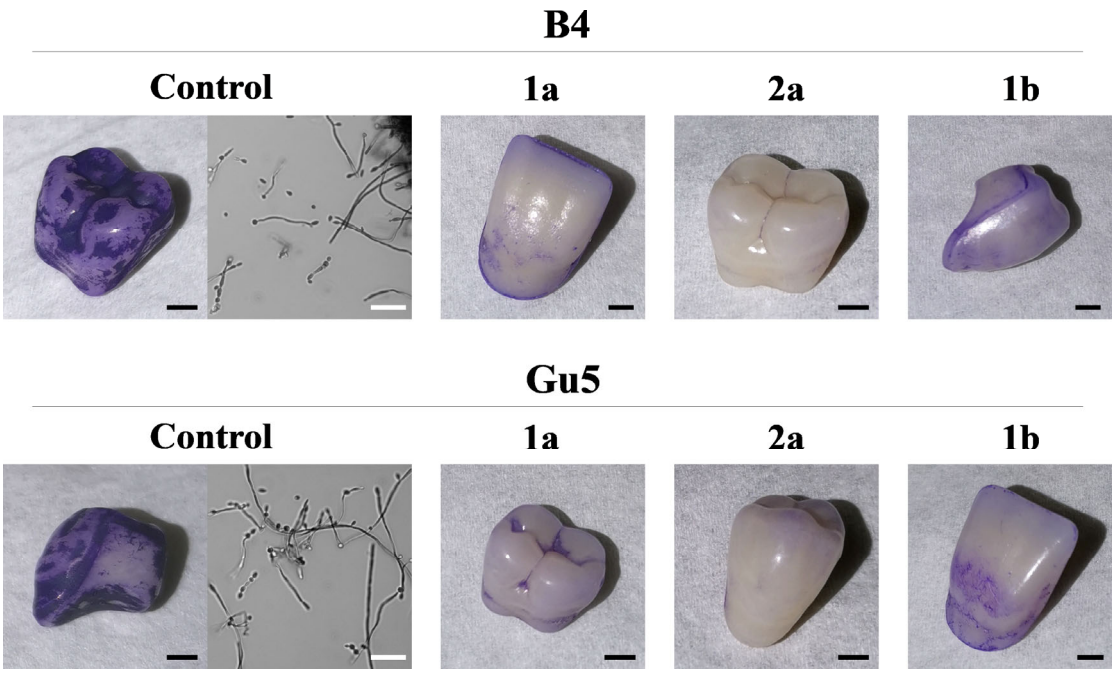

Figure S2. *C. albicans* clinical isolates (B4 and Gu5) biofilm formation visualized by crystal violet (CV) dye on acrylic dental crowns. Scale bar = 2 mm. Biofilm mass formed on control probes was observed under microscope (40x), scale bar = 50 μm. Samples were treated with ILs (**1a**; **2a**; **1b**) for 2 h to formed *C. albicans* biofilm.