In vitro antifungal and antibiofilm activities of new butane sulfonyl hydrazone compound against medically important yeast

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The prevalence of fungal infections has increased in the last two decades in parallel with the increasing number of immunosuppressed patients. The excessive use of antifungal agents is causing the accumulation of multi-resistance phenotypes in many fungal strains. Consequently, new alternative agents to conventional antifungal agents are urgently needed to prevent the emergence of fungal resistance. Sulfonyl hydrazone derived from sulfonamide, are well-known for their pharmacological effects, such as antifungal, antibacterial potential, and antineoplastic activity. This study aimed to investigate the antifungal and anti-biofilm activities of the new butane sulfonyl hydrazone compound (Anaf-bsh, N'-(1-3-hydroxynapthalen-2-yl)ethylidene)butane-1-sulfonohydrazide) against clinically important yeast. Fifty yeast isolates were used, of which five were reference strains and the remaining 45 clinical isolates were obtained from Gazi University Medical Mycology Laboratory, based on their phenotypic identification and API ID32C® system. Both the ITS and D1-D2 region of 50 strains were amplified by PCR and sequenced. The minimum inhibitory concentration (MIC) and the minimum fungicidal concentration (MFC) values were determined by the broth microdilution method according to EUCAST standards. The range of compound concentrations tested was between 0.5–256 µg/ml. The inhibitory effect of the synthesized compound on the biofilm formation was evaluated. Our data indicated the compound had a broad spectrum antimicrobial activity in the range 8-64 µg/ml and also inhibit biofilm formation in tested isolates. As a conclusion, it's in vitro antifungal and antibiofilm properties, this new compound Anaf-bsh is a promising new agent for the control and treatment of yeast infections.

Keywords: *Antifungal, antibiofilm, sulfonamide, sulfonyl hydrazone, yeast.*

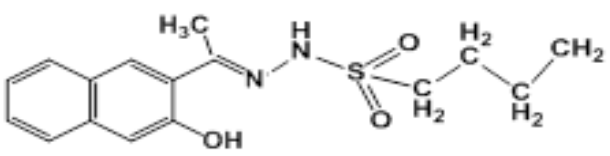

Figure 1. *Structure of Anaf-bsh.*