In vitro antibacterial and antibiofilm activities of chlorogenic acid against clinical isolates of stenotrophomonas maltophilia including the trimethoprim / sulfamethoxazole resistant strain

ABSTRACT

The in vitro antibacterial and antibiofilm activity of chlorogenic acid against clinical isolates of Stenotrophomonas maltophilia was investigated through disk diffusion, minimum inhibitory concentration (MIC), minimum bactericidal concentration (MBC), time-kill and biofilm assays. A total of 9 clinical S. maltophilia isolates including one isolate resistant to trimethoprim / sulfamethoxazole (TMP/SMX) were tested. The inhibition zone sizes for the isolates ranged from 17 to 29 mm, while the MIC and MBC values ranged from 8 to 16 g mL-1 and 16 to 32 g mL-1. Chlorogenic acid appeared to be strongly bactericidal at 4x MIC, with a 2-log reduction in viable bacteria at 10 h. In vitro antibiofilm testing showed a 4-fold reduction in biofilm viability at 4x MIC compared to 1x MIC values (0.085 < 0.397 A 490 nm) of chlorogenic acid. The data from this study support the notion that the chlorogenic acid has promising in vitro antibacterial and antibiofilm activities against S. maltophilia.

Keyword: In vitro; Stenotrophomonas maltophilia; Chlorogenic acid; Trimethoprim/Sulfamethoxazole; Minimum inhibitory concentration(MIC); Minimum bactericidal concentration(MBC)