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O1072 Phenotypic characterisation of pan-drug/multidrug-resistant *Pseudomonas aeruginosa* clinical isolates and their susceptibility to antimicrobial peptides

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Background: *Pseudomonas aeruginosa* is an important pathogen frequently implicated in healthcare-associated infections. Rates of antibiotic resistance in this species are increasing worldwide. Besides, *P. aeruginosa* is a highly diverse species with versatility to cause varied infection types. Thus, phenotypic characterization and evaluation of susceptibilities to alternative antimicrobials might help to improve the treatment outcomes.

Materials/methods: *Pseudomonas aeruginosa* ATCC-27853, one PDR and three colistin or colistin/ceftazidime sensitive *P. aeruginosa* clinical strains obtained from patients with orthopedic implant-associated infections and chronic osteomyelitis were characterize in terms of motility on agar, biofilm formation by microplate colorimetric assay employing crystal violet, isothermal measurements of metabolic heat rates and susceptibility to antimicrobial peptides by colony-counting.

Results: Data are reported in table 1. Motility was variable across the clinical strains but all showed less swarming and swimming motilities compared to that observed ATCC. After 24h incubation, all strains formed biofilm to various degrees, based on optical density. Overall, the majority of strains were weak biofilm producers with the exception of ATCC-27853, Pa1 and Pa2 strains. Growth curves revealed considerable variability in the growth dynamics of the clinical isolates compared to the ATCC strain, except Pa1. Isolates Pa3 and Pa4 had analogous growth dynamic. The antimicrobial peptide CM12 showed the higher bactericidal activity against all strains.

Conclusions: This study showed the remarkable diversity seen across *P. aeruginosa* as a species even between only four isolates and underlines the potential of antimicrobial peptides as promising therapeutic strategies for multidrug resistant bacteria. Further studies should evaluate the potential development of resistance to antimicrobial peptides.

Table 1. Summary of phenotypes

Strain	Susceptibility	Swarming-diameter (mm)	Swimming-diameter (mm)	Biofilm-formation	Heat-Flow	MBC[c] (µM)	
					P_{max}[a] (µW)	T_{max}[b](h)	CM12	1018
ATCC-27853	Not assayed	45.0	Spread all over plate	Strong	481.7	7.2	4	8
Pa1	none	19.7	58.0	Moderate	479.8	8.5	4	8
Pa2	colistin	15.7	59.7	Strong	184.3	19.6	4	8
Pa3	colistin	14.3	13.7	Weak	81.6	21.6	4	4
Pa4	colistin/ ceftazidime	14	15.3	Weak	85.9	21.9	4	4

[a]Highest value of the heat power-time curve

[b]Time at which the peak heat-flow is reached

[c]Minimum bactericidal concentration