Activity of of S-type pyocins against drug resistant bacterial biofilms

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The ability of bacteria to form multi-drug resistant biofilms during chronic infection can render some bacterial pathogens untreatable with existing antibiotics. Despite obvious clinical need, few new antibiotics have entered clinical practice in recent years and for ‘difficult to treat’ Gram-negative bacteria such as Pseudomonas aeruginosa and Escherichia coli the requirement is urgent. An alternative strategy for antibiotic discovery is to utilise the narrow spectrum antibiotics used by bacteria for intraspecies competition. In P. aeruginosa these take the form of high molecular weight protein antibiotics, known as the S-type pyocins. We have shown that S-type pyocins have excellent activity against bacterial biofilms and show no toxicity against human cells, suggesting they may be useful therapeutics for the treatment of chronic P. aeruginosa infection.