

P017 Antimicrobial Activity of Defb14, the Murine Orthologue of Human Beta Defensin 3
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The respiratory tract possesses an array of defence mechanisms to resist infection. Using airway liquid interface (ALI) primary cultures from mouse tracheal cells, we can demonstrate effective killing of *Burkholderia cenocepacia*, a cystic fibrosis-associated multi-resistant pathogen. In an effort to determine whether this activity is attributable to antimicrobial peptides we investigated the presence of β -defensins in these cultures. β -defensins are small, cationic antimicrobial peptides with a characteristic six cysteine motif. RT-PCR of RNA from C57Bl/6 mouse tracheas revealed that *Defb1*, *Defb2*, *Defb14* and *Defr1* were all expressed. *Defb14*, one of the expressed genes, is the clear murine orthologue of human beta defensin 3 (*DEFB103*). We chemically synthesised Defb14 by solid phase methodology and analysed its activity against a spectrum of both gram positive and negative organisms. Defb14 displayed potent antimicrobial activity against a range of pathogens, *Pseudomonas aeruginosa* PAO1 (MBC = 1.5 μ g/mL), *Escherichia coli* ATCC 25922 (MBC = 1.5 μ g/mL) and *Staphylococcus aureus* ATCC 25923 (MBC = 3.13 μ g/mL). Gel electrophoresis and Q-ToF mass spectrometry highlighted Defb14 as monomeric and upon reduction the antimicrobial properties remained. We propose that the ability of ALI cells to kill *B.cepacia* is unlikely to be due to Defb14 in isolation (MBC = 100 μ g/mL), but its antimicrobial activity in synergy with other respiratory peptides remains to be evaluated.