

**P011** The antimicrobial properties of a novel alpha helical peptide Sarah R. Dennison<sup>1</sup>, Leslie G.H. Morton<sup>2</sup>, Frederick Harris<sup>2</sup> and David A. Phoenix<sup>1</sup>,

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The antimicrobial action of some  $\alpha$ -AMPs involves membrane destabilisation *via* the use of lipid interactive, oblique orientated  $\alpha$ -helical structure. Here, toxicity assay showed a novel synthetic peptide, VP1 (3 mM), to kill both *Escherichia coli* and *Staphylococcus aureus* whilst sequence analysis predicted that the peptide is a candidate oblique orientated  $\alpha$ -helix former. Fourier transform infrared spectroscopy (FTIR) showed VP1 to be  $\alpha$ -helical (> 40%) in the presence of vesicles formed from total lipid extracts of these respective organisms. The peptide induced decreased fluidity in membranes formed from these *E. coli* lipid extracts, consistent with penetration of the membrane hydrophobic core, and the disintegration of monolayers of similar extracts. However, VP1 killed *S. aureus* at half the rate of *E. coli*, induced increased membrane fluidity in membranes formed from *S. aureus* total lipid extracts and stable surface pressure changes of 7.5 mN m<sup>-1</sup> in monolayers of similar extracts. These data support the conclusion that VP1 functions as an  $\alpha$ -AMP and kills Gram-negative organisms *via* membrane destabilisation through lipid interactive oblique orientated  $\alpha$ -helical structure. However, variation in the efficiency with which the peptide appeared to kill Gram-positive emphasise that both the structural characteristics of the peptide and the composition of the membrane target determine antimicrobial efficacy.