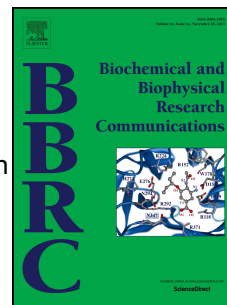


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Identification and Target-modifications of Temporin-PE: A Novel Antimicrobial Peptide in the Defensive Skin Secretions of the Edible Frog, *Pelophylax kl. esculentus*

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Abstract ¹

A potent natural antimicrobial peptide named temporin-PE was identified and encoded from the skin secretions of *Pelophylax kl. esculentus* via “shotgun” cloning and LC-MS/MS fragmentation analysis. Target-modifications were carried out to further enhance the antimicrobial and anti-proliferative bioactivities, whilst decreasing the hemolytic effect. A range of bioassays demonstrated that replacing a proline with a tyrosine residue resulted in a loss of the bioactivity against Gram-negative bacteria, but dramatically improved the hemolytic and anti-proliferative activity, indicating the FLP- motif influences the hemolytic activity of temporins. Moreover, the coupling of TAT to the peptide dramatically improved its antimicrobial activity, indicating coupling TAT to these peptides could be considered as a potential tool to improve their antimicrobial activity. Overall, we have shown that targeted modifications of this natural antimicrobial peptide can adjust its bioactivities to help its development as an antibiotic or anti-proliferative agent.

Abbreviations: AMP, antimicrobial peptide; GM, the geometric mean; TI, the therapeutic index

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