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Design and characterization of antimicrobial peptides with high anticancer activity and selectivity

Jya-Wei Cheng[1], **Hung-Lun Chu**[1], **Bak-Sau Yip**[2], **Hui-Yuan Yu**[1], **Hsi-Tsung Cheng**[1], **Ya-Han Chih**[1] and **Kuan-Hao Chen**[1]
[1]National Tsing Hua University, Taiwan
[2]National Taiwan University Hospital Hsin-Chu Branch, Taiwan

We describe a strategy to boost anticancer activity and reduce normal cell toxicity of short antimicrobial peptides by adding positive charge amino acids and non-nature bulky amino acid β-naphthylalanine residues to their terminal. The designed peptide displayed salt resistance and small toxicity to hRBCs and human fibroblast. Fluorescence microscopic studies indicated that the FITC-labeled peptide preferentially binds cancer cells and causes apoptotic cell death. Moreover, a significant inhibition in human lung tumor growth was observed in the xenograft mice treated with designed peptide. Our strategy provides new opportunities in the development of highly effective and selective antimicrobial and anticancer peptide-based therapeutics.

jwcheng@life.nthu.edu.tw

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