Synthesis and Structure/Function Study of a Peptide Extracted from the Frog *Hypsiboas albopunctatus*

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The emergency of bacteria that are resistant to multiple antibiotics has led to research novel antimicrobial molecules. Castro´s group isolated and determined the sequence of the peptide GWLDVAKKIGKAAFNVAKNFI-NH_2 of skin secretion from the frog *Hypsiboas albopunctatus* which showed antimicrobial activity. The aim of this work was to evaluate 3 analogues to supply information about the relation regarding the structure/biological activity. The peptides were synthesized by SPPS and their antimicrobial activities were measured. The conformational properties were investigated by fluorescence and CD techniques in water, TFE and in zwitterionic micelle (LPC). The result showed that the SPPS proved to be useful, and the peptides Hy-D-V^{16}, Hy-D-$V^{5,16}$ and Hy-K^{9} were obtained with high purity. The CD studies demonstrated that peptides in water had random coil structure, acquiring high amount of α-helix in the presence of TFE e LPC. The interactions peptide/membrane mimetics indicated that all interacted strongly with micelles, but not with vesicles, exception for “wild type” peptide. The biological results demonstrated that all peptides had antimicrobial activity, nevertheless, the “wild type” showed lower MIC values. In addition, these data suggest that peptides Hy-D-V^{16}, Hy-D-$V^{5,16}$ and Hy-K^{9} are potential molecules for the development of new drugs, therefore these analogues have higher relation concerning the antimicrobial/hemolytic activity. The findings highlight the importance of single α-amino acid modification as a tool to modulate the activity of AMPs, but do not show any direct correlation with interaction data or structural studies, showing that the mechanism of action of these peptides is not a closed topic. Supported by: FAPESP and CNPq.