

STRUCTURAL CHARACTERIZATION AND ANTI-HIV-1 ACTIVITIES OF ARGININE/GLUTAMATE-RICH POLYPEPTIDE LUFFIN P1 FROM THE SEEDS OF SPONGE GOURD (*LUFFA CYLINDRICA*)

Yang YH¹, Ng YM¹, Sze KH², Zhang X³, Zheng YT³, and Shaw PC¹

¹School of Life Sciences and Centre for Protein Science and Crystallography, The Chinese University of Hong Kong, Shatin, N.T., Hong Kong, P.R. China.

²Department of Microbiology, The University of Hong Kong, Pokfulam Road, Hong Kong, P.R. China.

³Key Laboratory of Animal Models and Human Disease Mechanisms, Kunming Institute of Zoology, Chinese Academy of Sciences, Kunming 650223, China.

yhyangbc@gmail.com

Luffin P1, the smallest ribosome-inactivating peptide from the seeds of *Luffa cylindrica* was found to have anti-HIV-1 activity in HIV-1 infected C8166 T-cell lines and be able to bind with HIV Rev Response Element. Nuclear magnetic resonance spectroscopy revealed that the Luffin P1 comprises a helix-loop-helix motif, with the two alpha helices tightly associated by two disulfide bonds. Based on our findings, we conclude that unlike the well-studied ribosome-inactivating proteins, which exert their action through N-glycosidase activities, Luffin P1 demonstrates a novel inactivation mechanism probably through the charge complementation with viral or cellular proteins. Our work also provides a new scaffold for the design of novel inhibitors from a simple helical motif.