Membrane Disruption Mechanism of Antimicrobial Peptide KIN

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bacteria by forming pores which increase membrane permeability to ions or larger
molecules. It has been proposed that PG-1 selectively induces stable membrane
pores in bacterial membranes over mammalian membranes. To study the mechanism
of action of PG-1, we directly visualize the topological changes induced by PG-1 in
model membranes via atomic force microscopy for the first time. PG-1 induces
structural transformations in supported lipid bilayers, progressing from bilayer edge
instability, to the formation of pores, and finally to a network of wormlike micelles in
a zwitterionic dimyristoylphosphatidylcholine model membrane with increasing PG-
1 concentrations. The structural transformation can be understood in the framework
of the action of 1d detergent, with PG-1 acts as a line active agent. The results
elucidate the mechanism by which PG-1 uses to induce leakage in bacterial cells.