

Antimicrobial Peptides: Their Mechanisms of Action and Applications

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Antimicrobial peptides (AMPs), which are responsible for part of the innate immunity of animals and plants, are promising candidates for new therapeutics because their antimicrobial spectra are broad and the development of bacterial resistance against them is difficult. They are typically composed of < 50 amino acid residues, cationic, and amphiphilic. Most AMPs kill bacteria by permeabilizing membranes by such as the Shai-Matsuzaki-Huang model, although intracellular targets have also been suggested for certain peptides. Positively charged AMPs selectively interact with bacterial cells, which are negatively charged, without exerting significant cytotoxicity against host cells. Potent AMPs can be developed by increasing positive charges and introducing Pro residues at the same time or by conjugation with antibiotics. Applications of AMPs as anticancer agents will be also discussed.