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Structural insight to develop a novel peptide antibiotics from Ranidae

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Many of the therapeutic antibiotics available today are made of byproducts of fungi such as penicillins and other unicellular organisms. Unfortunately, resistant strains have evolved, as they will almost inevitably do, given sufficient time of exposure. A promising solution to this resistance problem may reside in new antibiotics as different as possible from those that have lost their effectiveness. Since antimicrobial peptides isolated from many living organisms have been thought to act completely unlike traditional antibiotic agents, they might fulfill that requirement and thus be more durable remedies. To find the optimal candidate of peptide antibiotics, we investigated the structure-activity relationship of several antimicrobial peptides, gaegurins and nigrocins, isolated from Korean frog family of Ranidae. Structure-based design of their analogues to enhance the activity and to decrease the side effect was also performed, giving insight into development of the new peptide antibiotics.