

Researchers at IIT Jodhpur develop antimicrobial peptide from snake venom

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Peptide molecule has been found to be biocompatible based on in-vitro cytotoxicity studies

Researchers at the Indian Institute of Technology (IIT) Jodhpur have conceptualised, designed, and synthesised an antimicrobial peptide molecule, SP1V3_1, from snake venom, that can kill gram-positive and gram-negative bacteria like *E. coli*, *P. aeruginosa*, *K. pneumoniae*, and MRSA (methicillin-resistant *Staphylococcus aureus*) by adopting a helical conformation while interacting with bacterial membranes.

The peptide molecule has been found to be non-toxic based on various studies. The peptide was also found to promote wound healing in the murine model and prevent on-site post-surgical infections by MRSA.

In this design strategy, the primary aim has been to reduce toxicity of the snake venom without losing its anti-microbial property. Thus, the researchers truncated the snake venom peptide and eliminated the toxic part. Further, they stitched helical short peptide at N-terminus for the smooth entry of the newly designed therapeutic inside the bacterial cell.

According to the researchers, the peptide can therapeutically be implemented as a component of an ointment (alone or in combination with other drugs/peptides) for wound disinfection and healing, as an injectable/oral drug for systemic administration, or as an aerosolised formulation to treat a wide range of respiratory bacterial pathogens.”

Due to the antimicrobial and immunomodulatory motif, SP1V3_1 can also be tested as an anticancer molecule in the future.