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Comparative analysis, target specificities and plant protection potential of antimicrobial peptides isolated from *Xenorhabdus* species

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Research conception: *Xenorhabdus* species entomopathogenic nematode-symbiotic bacteria produce NRP (non-ribosomal peptides) antimicrobial peptides to protect the monoxenic nematode-bacterium symbiotic complex in soil condition. The HPLC and MALDI analysis show that the profiles of the different species are not the same. We supposed that the target specificities of the different peptides are different, even if there must be some overlaps.

Aim: We determined the target specificities of MALDI fractions of the antimicrobial peptide-rich fractions (APF) uniformly prepared from antibiotics-producing strains.

Method: We prepared antibiotic peptide fractions (APF) from *X. budapestensis* AF13, X. *marinarium* HGB2199, *X. szentimaii* HGB0836, *X. bovienii* HGB2185 and *X. nematophila* ATTC61019. We compared the HPLC and MALDI profile and also the antimicrobial activities of the different fractions against Gram positive (*S. aureus*) and Gram negative (*E. coli, Agrobacterium tumefaciens*) bacteria; fungi (*Candida*) and Oomycete (*Phytophthora infestans*).

Results: We discovered antibiotic peptides active against (i) only Gram positive bacteria; (ii) Gram-positive, Gram-negative; oomycete and fungal target. The identification of the molecules is on the way. The plant protection potential of *X. budapestensis* is demonstrated by in vitro and in planta experiments on fire-blight infested apple flowers.

Significance: The spreading multidrug resistance occurring in both prokaryotic and eukaryotic pathogens urge the researchers to find new compound of strong antimicrobial potential and of novel mechanisms of action The *Xenorhabdus* species used this study are a golden mine of such compounds.

Biography

Andras Fodor has completed his PhD from Eotvos University of Budapest, Hungary. He is a Visiting Research Professor (a Fulbright Research Grantee) at the Department of Bacteriology of the University of Wisconsin-Madison. The research team is focusing on antimicrobial peptides of entomo-pathogenic nematode symbiotic bacteria. He has published more than 40 papers in reputed journals.

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