

Accepted Manuscript

Title: Invasive fungi-derived defensins kill drug-resistant bacterial pathogens

Authors: Jiajia Wu, Shijie Liu, Hao Wang

PII: S0196-9781(17)30355-8

DOI: <https://doi.org/10.1016/j.peptides.2017.11.009>

Reference: PEP 69864

To appear in: *Peptides*

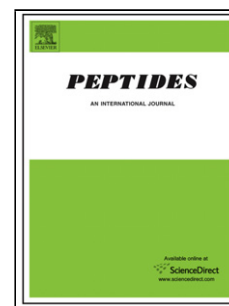
Received date: 17-8-2017

Revised date: 17-11-2017

Accepted date: 20-11-2017

Please cite this article as: Wu Jiajia, Liu Shijie, Wang Hao. Invasive fungi-derived defensins kill drug-resistant bacterial pathogens. *Peptides* <https://doi.org/10.1016/j.peptides.2017.11.009>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Invasive fungi-derived defensins kill drug-resistant bacterial pathogens

Jiajia Wu, Shijie Liu, Hao Wang*

Laboratory for Biological Effects of Nanomaterials and Nanosafety, National Center for Nanoscience and Technology (NCNST), No. 11 Beiyitiao, Zhongguancun Beijing 100190, China

* To whom correspondence should be addressed. E-mail: wanghao@nanoctr.cn

Additional information

Correspondence and requests for materials should be addressed to H.W.

Highlights

- **About 70 fungal defensin-like peptides (fDLPs) in five new genera were identified.**
- **A new synthetic defensin (scedosporisin) was characterized and found active against several clinical resistant bacteria.**
- **A local hydrophobic patch of scedosporisin-2 is experimentally identified as associated with the antimicrobial activity.**

Abstract

Fungi-derived defensins are a class of antimicrobial peptides with therapeutic potential due to their high antibacterial efficacy and low toxicity. Based on the genomic strategy, we have identified 68 fungal defensin-like peptides (fDLPs) in five new genera, including *Trichosporon*, *Apophysomyces*, *Lichtheimia*, *Beauveria* and *Scedosporium* and characterized a new synthetic defensin (scedosporisin) from an invasive fungus. It was active against Gram-positive bacteria but not active against negative bacteria. Importantly, it killed several clinical resistant isolates such as methicillin-resistant *Staphylococcus aureus* and vancomycin-resistant *Enterococci* at low molecular concentrations. Scedosporisin showed low hemolysis and cytotoxicity and high serum stability. The

Download English Version:

<https://daneshyari.com/en/article/8347570>

Download Persian Version:

<https://daneshyari.com/article/8347570>

[Daneshyari.com](https://daneshyari.com)