



האוניברסיטה העברית - הפקולטה לחקלאות המכון לביוכימיה, מדעי המזון והתזונה



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הנושא:

Towards the design of effective antibacterial agents

המפגש יתקיים

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מועדון סגל

Abstract:

Pathogenic infections represent a persistent threat to human health. The rapid development of resistance to drug therapies creates a continuing need for developing new anti-infective agents. Host-Defense Peptides (HDPs) represent a potential source of inspiration for development of new antibacterial agents. These peptides are produced by eukaryotes as part of the innate immune response to bacterial infection. We used racemic crystallization to obtain the crystal structure of an analogue of the widely-studied HDP, magainin 2 (1).

The broad molecular diversity among HDPs suggests that their prokaryotic-selective activity is not tightly coupled to specific features of amino acid sequence or peptide conformation. This situation has inspired the development of several families of sequence-random hydrophobic-cationic copolymers that display antibacterial behavior with varying levels of hemolytic activity. We developed a new experimental approach for exploring the impact of sample diversity on the biological activity profiles of mixtures (2-4).

1. Hayouka, Z. Chakraborty, S. Liu, R. Gellman, H.S. (2013). Interplay Among Subunit Identity, Composition, Chain Length and Stereochemistry in the Activity Profile of Sequence-Random Oligomer Mixtures. *J. Am. Chem. Soc.* 135(32):11748-5.

2. Hayouka, Z. Mortenson, D.E. Kreidler, D.F. Weisblum, B. Forest, K.T. Gellman, H.S. (2013). Evidence for Phenylalanine Zipper-Mediated Dimerization in the X-Ray Crystal Structure of a Magainin 2 Derivative. *J. Am. Chem. Soc.* In press.

3. Liu, R. Chakraborty, S. Hayouka, Z. Gellman, H.S. (2013). Nylon-3 polymer as antifungal agent. *J. Am. Chem. Soc.* 135, 5270-3.

4. Chakraborty, S. Liu, R. Hayouka, Z. Gellman, H.S. (2013). Studying the effect of cyclic versus acyclic nylon-3 polymers. *ACS macro letter*.

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