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Using Class I Lasso Peptides to Inhibit the Bacterial Type III Secretion System

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BACKGROUND

Antibiotic resistance is a major issue in infectious disease treatment and prevention. In bacteria, the type III secretion system (T3SS) secretes effector proteins in the host cell, allowing the pathogen to infect. The T3SS is largely found on pathogens and not beneficial bacteria, so targeting the T3SS might have an advantage over using classic antibiotics, which disturb the beneficial human microbiome.

TECHNOLOGY DESCRIPTION

The invention includes ways to prevent infection caused by Gram-negative bacteria using lasso peptides to inhibit their growth. Researchers at UC Santa Cruz have found that class I lasso peptides inhibit T3SS activity in Gram-negative bacteria, such as *Pseudomonas aeruginosa* and *Salmonella enterica.* The extract SNE013 from *Streptomyces albovinaceus* was found to inhibit *Pseudomonas aeruginosa* T3SS gene expression, significantly protecting greater wax moth larvae from death. Siamycin I and aborycin were identified as the lasso peptides with inhibitory activity.

APPLICATIONS

- infectious disease treatment and prevention

ADVANTAGES

- reduces harm to beneficial microbiomes

INTELLECTUAL PROPERTY INFORMATION

Patent Pending

CONTACT

Jeff M. Jackson
jjackso6@ucsc.edu
tel: .

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INVENTORS

- Auerbuch-Stone, Victoria
- Bouthillette, Leah
- Braly, Micah
- MacMillan, John

OTHER INFORMATION

KEYWORDS

lasso peptide, infection, antibiotic, T3SS, siamycin, aborycin

CATEGORIZED AS

- **Medical**
  - Disease: Infectious Diseases
  - New Chemical Entities, Drug Leads
  - Therapeutics

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