Identification of Antimicrobial Peptides from Soy ProteinÐ

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- Pharmaceuticals

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- Animal Health & Nutrition
- Antibiotics
- Antimicrobials
- Compounds
- Drug Resistance
- Food Safety
- Listeria
- Medical/Health
- Pharmaceuticals
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Antimicrobial peptides (AMPs) can inactivate bacteria, enveloped viruses, and fungi. AMP is a viable alternative for overcoming antibiotic resistance, which poses a serious threat to public health globally. Naturally occurring AMPs are expensive and have limited availability. Developing synthetic AMPs is also expensive given the extensive screening process of potential candidates and risk of toxicity. There is a need for an inexpensive process that can identify naturally occurring AMPs.

Purdue University researchers have developed a method to identify naturally occurring AMPs based on the physical characteristics of the peptide and the interactions of the peptides with a mixed phospholipid layer, which mimics bacterial cells, using molecular dynamics simulation. Compared to other research methods, this method is based on the physical characteristics of the compound rather than empirical and bioinformatics data. This research method was validated by the discovery of a peptide segment derived from soy protein with antimicrobial properties. Effects of the peptide were demonstrated against Gram-positive Listeria and Gram-negative E. coli.

Characteristics of the soy peptide allow its use in a number of applications such as an antibiotic replacement to address antimicrobial resistance, a supplement to animal feed, and in antimicrobial packaging in food safety applications. In addition, this method can serve as a research tool for the discovery of more peptides with antimicrobial properties in the future.

Advantages:
-Research based on physical characteristics

-Soy peptide has antimicrobial properties
-Demonstrated effects against Listeria and E. coli

Potential Applications:
-Medical/Health
-Pharmaceutical research
-Food packaging
-Animal feed supplement

Related publication:
Methodology for identification of pore forming antimicrobial peptides from soy protein subunits beta-conglycinin and glycinin. Peptides, Volume 85, November 2016, Pages 27-40.

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