

## NONPATHOGENIC BACTERIA, PAENIBACILLUS ALVEI, USEFUL AS A NATURAL BIOCONTROL AGENT FOR ELIMINATION OF FOOD-BORNE PATHOGENIC BACTERIA

### Technology Summary

Tomatoes are a primary vehicle for foodborne infections caused by *Salmonella Newport* and other *Salmonella* serovars. The naturally occurring bacteria *Paenibacillus alvei* (strains A6-6i and TS-15) demonstrated antimicrobial activity against *Salmonella* and 10 other bacterial pathogens linked to foodborne illness outbreaks. Bactericidal compounds within both *Paenibacillus alvei* strains were chemically isolated, purified, and identified.

**The invention is a novel class of antimicrobial peptides**, specifically cyclic peptides, with broad antibacterial activity to control strains of Gram-positive and Gram-negative bacteria, including MRSA, VRSA, Salmonella, and carbapenem resistant Enterobacteriaceae. The antimicrobial cyclic peptides have amphiphilic properties that disrupt cell membranes. The compounds have low minimum inhibitory concentration profiles (MIC) and can inhibit growth or proliferation of deadly bacteria.

### Potential Commercial Applications

- Next generation class of novel antimicrobials.

### Competitive Advantages

- New class of antimicrobials with potent activity against carbapenem-resistant and MRSA strains.
- Broad antimicrobial spectrum (low MIC) against both Gram-negative and Gram-positive bacteria, including clinical isolates.

**Development Stage:** *in vitro*

### Intellectual Property:

United States patent: US [10,118,948](#) B2, issued 11.06.2018

United Kingdom patent: 3152224, issued 07.25.2018

France patent: 3152224, issued 07.25.2018

Germany patent: 602015014037.0, issued 07.25.2018

Switzerland patent: 3152224, issued 07.25.2018

Japan patent application: JP 2017530088, filed 06.09.2015

Canada patent application: CA 2951386, filed 06.09.2015

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**Product Area:** Drugs, Bacterial infectious disease, Antimicrobial,

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