

**Title** Bacteriocin-like substance inhibits potato soft rot caused by *Erwinia carotovora*

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### Abstract

Soft rot is a major problem encountered in potatoes during postharvest storage. The soft rot bacterium *Erwinia carotovora* was inhibited by a novel bacteriocin-like substance (BLS) produced by *Bacillus licheniformis* P40. The BLS caused a bactericidal effect on *E. carotovora* cells at  $30 \mu\text{g mL}^{-1}$ . Transmission electron microscopy showed that BLS-treated cells presented wrinkled bacterial surfaces and shrinkage of the whole cell, indicating plasmolysis. *Erwinia carotovora* cells treated with BLS were analyzed by FTIR showing differences in the  $1390 \text{ cm}^{-1}$  and  $1250\text{-}1220 \text{ cm}^{-1}$  bands, corresponding to assignments of membrane lipids. BLS was effective in preventing *E. carotovora* spoilage on potato tubers, reducing the symptoms of soft rot at  $240 \mu\text{g mL}^{-1}$  and higher concentrations. Soft rot development was completely blocked at  $3.7 \text{ mg mL}^{-1}$ . This BLS showed potential to protect potato tubers during storage.