

PORK SAFETY

Title: Use of cationic peptides as feed additives to improve innate immunity and reduce gut colonization with *Salmonella* and *Campylobacter* in weaned pigs - NPB #09-099

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Scientific Abstract

A novel gram-positive bacterium *B. texasporus* (ATCC PTA-5854) previously isolated produces BT/TAMUS 2032 (BT), a group of related cation amphipathic peptides of 13 amino acid residues. The BT peptide has been previously shown to reduce *Salmonella* and prime the innate immune system in chickens. In the present study, BT was fed to weaned pigs at 12 and 24 ppm as part of a balanced ration. In *Salmonella* studies, piglets were challenged with *Salmonella typhimurium* (ST) and monitored for shedding and weight gain over a 7 day period. Pigs were then humanely sacrificed and intestinal and organ samples were cultured for the presence of ST. Pigs fed the BT peptide had significant reductions in fecal shedding and in tissue invasion of ST as compared to control pigs. Average daily weight gain was also found to be higher in pigs fed BT compared to control pigs. The BT peptide did not significantly reduce the carriage of *Campylobacter* in the swine gut when fed against an preexisting infection. On days 3, 5, and 7, leukocytes from pigs fed the BT peptide had significantly higher production of an oxidative burst when compared to control levels ($P > 0.05$). Leukocyte degranulation was not found to differ between groups. The data suggest that the BT peptide may be an effective immunomodulator with subsequent effects on the carriage of *Salmonella* in both the swine gut and tissues.

These research results were submitted in fulfillment of checkoff-funded research projects. This report is published directly as submitted by the project's principal investigator. This report has not been peer-reviewed.

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