

PORK SAFETY

Title: Expansion of the *Salmonella* in Pork Risk Assessment: Incorporation of *Toxoplasma* in pork, and assessing the relationship between on-farm factors and risk – **NPB #08-249**

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Scientific Abstract

A farm-to-illness probabilistic model previously developed to predict risk of salmonellosis from consumption in the home of fresh, intact pork was extended to consider the additional pathogen *Toxoplasma*, and to simulate the risk from both fresh intact pork and from mixed (ground) pork represented by fresh breakfast sausage. In the extended model, the impact of an all-in/all-out production system is also included. We estimate a mean risk of toxoplasmosis per serving of intact pork or breakfast sausage from 8×10^{-7} to 8×10^{-6} , and from 7×10^{-7} to 7×10^{-6} , respectively, for r-values of 0.01 to 0.1 and assuming an exponential dose-response relationship. Based on available consumption data this is equivalent to 3,000 to 35,000 cases of toxoplasmosis annually from either of these two products. The model predicts a risk per serving due to *Salmonella* of 2×10^{-6} for intact fresh pork and 6×10^{-6} for breakfast sausage, which will result in 50,000 and 30,000 cases respectively, based on available consumption data. The risk of salmonellosis per serving from breakfast sausage is directly proportional the probability of undercooking, and inversely proportional to the log reduction achieved by antimicrobial washing of viscera. Salmonellosis risk from the intact pork and from breakfast sausage is positively associated with the proportion of pigs raised in sites practicing all-in/all-out management as opposed to continuous flow. A reduction in the risk from *Toxoplasma* in intact pork and breakfast sausage can be achieved by reducing the probability of undercooking, and/or by lowering on-farm prevalence.

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 This report has not been peer-reviewed.

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