

Title: Does the inclusion of distillers dried grains with soluble (DDGS) in the diet of grow-finish pigs affect their susceptibility to and colonization with *Salmonella enterica*? –
NPB #11-159 **REVISED**

Investigator: Marcos H. Rostagno

Institution: USDA, ARS, MWA, West Lafayette, IN

Date Submitted: April 1st, 2013

Scientific Abstract:

As an alternative to counteract the increased feed costs, dried distillers grains with solubles (DDGS) have been increasingly included in pig diets. Much research has been conducted recently to evaluate growth performance and carcass characteristics associated with

feeding DDGS to pigs. However, little is known about the effect of DDGS on the intestinal microbiota, and on the susceptibility to infection or colonization with pathogens. Therefore, two experiments were conducted to determine if inclusion of corn DDGS in the diet of grow-finish pigs affects their susceptibility to or the intestinal levels and shedding of *Salmonella*. In experiment 1, 36 pigs (12 pigs/treatment) were assigned to 3 treatments: Control diet with no corn DDGS, diet with 20% corn DDGS, or diet with 40% corn DDGS. After an adaptation period of 2 weeks, each pig was inoculated with *Salmonella* Typhimurium (10^4 cfu) and euthanized after 6 hours to determine their susceptibility to the challenge. In experiment 2, 40 pigs (20 pigs/treatment) were assigned to 2 treatments: Control diet with no corn DDGS or diet with 30% corn DDGS. After 2 weeks, each pig was inoculated with *Salmonella* Typhimurium (10^4 cfu); individual fecal samples were collected during 5 weeks, and pigs were euthanized at 3 and 5 weeks post-challenge to determine intestinal colonization. In experiment 1, no differences among treatments were observed on the susceptibility to *Salmonella* infection. In experiment 2, most pigs shed *Salmonella* at one of the fecal samplings during the study period, with control pigs having a significantly higher cumulative shedding frequency ($P < 0.05$) than pigs receiving the diet with 30% DDGS (80% versus 50%). The overall average *Salmonella* shedding level was 2.2 log₁₀ cfu/g of feces, with no difference between treatments ($P > 0.10$). Also, no difference between treatments was found on the frequency or levels of *Salmonella* in intestinal samples collected at 3 or 5 weeks post-challenge. In conclusion, dietary inclusion of corn DDGS does not alter the susceptibility to or colonization with *Salmonella* of grow-finishing pigs.

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.

For more information contact:

National Pork Board • PO Box 9114 • Des Moines, IA 50306 USA • 800-456-7675 • Fax: 515-223-2646 • pork.org
