MSP[RS]® Research Study
Study Date: June 2012

Title: Effect of supplemental diet containing MSP[RS] Resistant Starch on weaned pig performance, fecal consistency and gastrointestinal tract characteristics.

Objective: To determine and quantify the effects of MSP[RS] on weanling pig performance. To further examine the effects of MSP [RS] on the incidence of Post Weaning Diarrhea (PWD) and subsequent gastrointestinal characteristics.

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Materials and Methods: 60 pigs [(Y x LW x D) with initial BW of 7.17 kgs. ± 0.78 kgs weaned at 21 ± 2 days (1:1 gender ratio)] were assigned to treatments in a randomized design with random allocatation to 5 treatments. The assignment was 2 pigs per pen with 6 replicates. Each pen had a plastic-covered expanded metal floor, stainless-steel feeder and a low-pressure nipple drinker. Pigs had unlimited access to diet and water throughout the 4-week study. Room temperatures were maintained at 29 ± 1° C for the initial week and then decreased by 2° C in the second week. Pigs were weighed once/week for 4 weeks and feed disappearance was recorded on a weekly basis for the duration of the experiment. These two variables were used to calculate feed conversion ratio. On day 28, six pigs per treatment balanced for gender (n=30) were euthanized by intracardiac injection of sodium pentabarbital (110 mg/Kg BW) so as to collect intestinal digesta and organs.

Experimental Diets:

1) Negative Control **(NC) consisting** of maize (corn) and soybean meal based diet
2) **NC** supplemented with either 0.5% or 1.00% MSP [RS] as a powder or capsule
3) All diets contained no antimicrobial agents and all diets were formulated to meet or exceed NRC (1998 Nutrient Requirements for Pigs, weighing 7 – 20 kg BW
4) Diet composition available upon request

Sampling: The stomach, small intestine and large intestine were weighed with and without digesta to determine empty organ weight and digesta weight. Digesta was chemically analyzed with critical measurements from the ileum and cecum for pH, VFA and ammonia N concentrations.

Statistical Analysis: Treatment effects were evaluated univariately in a normal mixed-linear model using GLM procedures.

Results:

- ➔ Pig performance was very good
- ➔ MSP[RS] supplemented diets had improved fecal consistency (P = < 0.001) with the 1.0% inclusion fed pigs resulted in much harder feces (P = < 0.05) independent of dosage form
- ➔ MSP[RS] supplementation resulted in a decrease of ileal and cecal digesta pH (P = <0.05)
- ➔ MSP[RS] supplementation suggested a increase in VFA concentration
- ➔ MSP[RS] supplemented pigs had a lower concentration of BCFA (Branched Chain Fatty Acids) compared to the NC
- ➔ There was no statistical differences in ammonia-N concentrations within treatments.

Discussion: This study concludes that MSP [RS] improves fecal consistency. It also demonstrates that MSP [RS] reduces BCFA while increasing VFA's and decreases pH in the ileum and colon. This study also concludes that MSP [RS] did increase substrate for fermentation in the large intestine allowing for an improved ecological environment for the microbiota enabling improved animal performance.

The full study is available by contacting MSP Starch Products Inc. Technical Department.

MSP[RS] is available from MSP Starch Products Inc. and select North American distributors. It is produced via a proprietary process in a fully HACCP certified facility at Carberry, Manitoba, Canada. The benefits of improved pig performance and gastrointestinal health have been demonstrated to be effective when the product is used as a drying agent as well as in weaner and nursery diets.

Contact MSP Starch Products Inc. toll free at:1- 844-834-2702 email: info@mspResistantStarch.com
Or visit our website: www.mspResistantStarch.com