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Abstract

Forty-eight feeder pigs were used in an experiment to determine Virginiamycin's effectiveness in preventing swine dysentery. Thirteen of 24 controls and one of 24 that received the antibiotic at either 25 or 50 grams per ton of feed died of swine dysentery or complications. Feed conversion ratio was markedly improved by the antibiotic. Virginiamycin was judged effective in preventing clinical cases of swine dysentery, but it has not been cleared for use in swine. Swine dysentery, also known as bloody dysentery, vibrionic dysentery, bloody scours, or black scours, is a infectious, enteric disease of swine. It is serious in many areas of the Midwest and is assumed to be present wherever swine are raised in the United States. For years the etiology of the condition was thought to be Vibrio coli; however, recent work has indicated Treponema hyodysenterrae-instead.; Swine Day, Manhattan, KS, November, 1973

Keywords

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Efficacy of Virginiamycin as a Prophylactic Drug to Prevent Swine Dysentery*

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Summary

Forty-eight feeder pigs were used in an experiment to determine Virginiamycin's effectiveness in preventing swine dysentery. Thirteen of 24 controls and one of 24 that received the antibiotic at either 25 or 50 grams per ton of feed died of swine dysentery or complications. Feed conversion ratio was markedly improved by the antibiotic. Virginiamycin was judged effective in preventing clinical cases of swine dysentery, but it has not been cleared for use in swine.

Swine dysentery, also known as bloody dysentery, vibrionic dysentery, bloody scours, or black scours, is a infectious, enteric disease of swine. It is serious in many areas of the Midwest and is assumed to be present wherever swine are raised in the United States. For years the etiology of the condition was thought to be Vibrio coli; however, recent work has indicated Treponema hyodysenteriae instead.

The epidemiology of many swine dysentery outbreaks has not been fully explained. Infected pigs may carry dysentery into a previously uninfected herd; however, other outbreaks have been reported where no new swine were added. There is no known vaccination against swine dysentery; consequently, preventing it in areas where it is widespread can be difficult. The only effective method of preventing outbreaks on chronically contaminated farms has been based on using prophylactic medication in feed or water.

Sodium arsenilate and arsenilic acid have been quite effective in preventing swine dysentery among animals not previously on the drug. Because arsenilic acid also is used as a growth stimulant, many animals have been on the drug before dysentery appears. Several antibiotics, including bacitracin, streptomycin, tylosine, and chlorotetracycline have been used with varying degrees of success. Several nitrofurans, including nitrofurazone and furazolidone, in feed or water also have been used. Considerable research done with another chemical therapeutic agent, Carbadox (Mecadox), indicates that it is effective in many outbreaks, but

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it has not been cleared by the Food and Drug Administration for use in pigs exceeding 75 pounds.

Reported here is a study to determine if Virginiamycin, an antibiotic, prevents dysentery in swine exposed to a virulent artificial (induced) infection. The drug has not been cleared for use in swine.

Procedures

Forty-eight Yorkshire pigs averaging approximately 50 pounds were penned in groups of six (three barrows and three gilts). Four pens were controls. Rations in four pens carried Virginiamycin-25 grams per ton in two pens, 50 grams per ton in two pens.

After approximately five days on the antibiotic, all pigs were challenged with the infective agent. The ration, fed free choice, contained milo, soybean meal, dehydrated alfalfa, vitamins, and minerals.

All pigs were given cecal and colon scrapings from pigs with clinical signs of dysentery in a field outbreak with high mortality. Both the Vibrio and Treponema organisms were demonstrated on dark-field examination just before dosing the pigs with the infectious agent.

The eight pens were rated daily for changes in fecal consistency (diarrhea, mucus, or blood). They were weighed weekly for 12 weeks. Medicated groups received the antibiotic 10 weeks, then unmedicated feed two more weeks, to determine if swine dysentery would occur after Virginiamycin was removed. In Table 7.1. are beginning and final weights, death losses, and feed conversion during the 10 weeks the antibiotic was fed. Deaths among control pigs were zero the first week following innoculation, five the second week, five the third week, then only one pig per week the next five weeks, compared with only one death among treated pigs.

Table 7.1. Summary of Ten-week Period after Virginiamycin was Added to Ration

	Number of pigs	Beginning weight	Final weight	Deaths*	Feed conversion
Controls	24	47	146	14*	3.36
Virginiamycin					
25 grams per ton	12	49	140	1	3.03
50 grams per ton	12	48	147	0	2.77

*One control died of abscess of pericardial sac. All other deaths attributed to swine dysentery.

Thirteen of the 14 controls that died were diagnosed as having either acute swine dysentery or complications that resulted directly from swine dysentery. A large pericardial sac abscess killed one.

Several pigs on the antibiotic developed clinical swine dysentery during the two weeks after the antibiotic was removed from the feed. Two that had received the higher level of antibiotics first showed clinical signs on day 11 after the antibiotic was removed and died on day 14. Necropsy lesions of swine dysentery and the spirilliform organisms were noted on dark field. Several other pigs in pens that had been on the antibiotic showed evidence of swine dysentery in type of feces passed, raised temperature, and other clinical signs. All were treated with tylosin injected or in drinking water after the two-week observation period. No deaths occurred after tylosin therapy was started.

Discussion

Swine dysentery is a severe problem for swine raisers. In many outbreaks, available antibiotics and therapeutic agents are of limited value. This experiment was to determine if Virginiamycin would prevent swine dysentery.

The majority of the pigs not receiving the antibiotic sickened and died within three weeks with death losses continuing through the eighth week of the experiment. Several pigs whose ration included 25 grams of Virginiamycin per ton showed some clinical signs of swine dysentery (diarrhea or mucus and blood in feces), but only one died. None that received the 50 grams of Virginiamycin per ton of feed showed any clinical signs of swine dysentery during ten weeks they were on the antibiotic. Within two weeks after the antibiotic was removed, several pigs from both levels of antibiotic showed clinical signs of the disease. Two that had received 50 grams per ton of feed showed severe bloody dysentery starting the 11th day after the antibiotic was removed. Both died on day 14. One control pig that had shown no clinical sign of swine dysentery developed a severe clinical case and lost 24 pounds (from 173) during week 12 of the experiment. The two off 50 grams of antibiotics that died during week 12 weighed 142 and 165 pounds each. The results of this experiment indicate that swine dysentery should be considered a problem disease from early life throughout the fattening period. Occurrence of dysentery two weeks after medication stopped indicates that the antibiotic should be fed throughout the feeding period on farms where the disease is prevalent. The marked improvement in feed conversion by pigs receiving the antibiotic offsets its cost, not counting lives of pigs saved.