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# Competitive Exclusion Products for Reducing Pathogens in Poultry

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# Extension Extra

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## Competitive Exclusion Products for Reducing Pathogens in Poultry

*by Kelly Namminga SDSU food science graduate assistant, with review by  
William Epperson, DVM, SDSU veterinarian extension specialist*

Salmonella is an important foodborne pathogen that may contaminate up to 90% of poultry. Contamination of poultry begins on the farm -- very early in the chick's life. Most research by the poultry industry to decrease Salmonella contamination has been focused in this area.

It's believed that the Salmonella organism penetrating the eggshell during incubation is the most important link in the transmission of Salmonella to young birds. Bacterial reservoirs of Salmonella in commercial poultry hatcheries (where eggs are incubated to hatch chicks) have become established as a result of ideal conditions (heat, humidity, and nutrient supply) for bacterial multiplication during the incubation of eggs.

Studies have revealed that it only takes one Salmonella-contaminated egg to spread the bacteria throughout the entire hatchery. Each year, approximately 7.5 billion eggs are hatched through incubating facilities in the United States.

Once a chick becomes infected, the level of Salmonella can multiply to high numbers in a relatively short period. The chicks become infected and shed the organism in the feces, thereby spreading the infection to other chicks in the hatchery or to other members of the flock during the 6-8 week growing period. Continual infection during the growing period is carried to slaughter and, subsequently, to consumer products.

**Controlling intestinal colonization of Salmonella in chicks is a priority** for improving animal health and efficiency of growth and for reducing contamination of poultry products. **The most effective way to partially control Salmonella in newly hatched chicks may be the use of competitive exclusion products to prevent intestinal colonization.**

Competitive exclusion products contain mixtures of harmless, live bacteria obtained from healthy chickens free of specific pathogens. The mixture is sprayed on newly hatched chicks. The chicks ingest this bacteria by preening (grooming) themselves. The bacteria then colonize the intestinal wall and reduce the opportunity for Salmonella to attach to and colonize the intestinal tract. Because these products are free of known pathogens, they have been shown to pose no threat to animal or human food safety.

To make a competitive exclusion product more successful in reducing the incidence of Salmonella contamination in young chicks, considered these factors:

- **The product must be administered before the chicks are exposed to the Salmonella organism.** Chicks already colonized with the Salmonella organism prior to treatment may shed sufficient amounts of the organism to reduce the effectiveness of competitive exclusion treatments.
- **Competitive exclusion products are less effective when chicks are exposed to subtherapeutic levels of antibiotics** (for disease prevention) either in the hatchery or in starter feeds. Use of antibiotics in both subtherapeutic and therapeutic (disease treatment) levels during the growout phase may also reduce or eliminate populations of competitive exclusion bacteria and allow Salmonella to colonize and multiply.

These two factors clearly show that competitive exclusion products are not a complete solution to Salmonella reduction in chickens. **Competitive exclusion products are intended for prevention, not treatment of Salmonella colonization**, and should be considered part of a multi-faceted Salmonella control program.

For more information on PREEMPT™, a competitive exclusion product available for use in chicks, contact the FDA's website at . . .

<http://www.fda.gov/ohrms/dockets/98fr/050798a.pdf>

or the USDA's website at . . .

<http://www.ars.usda.gov/is/pr/preemptq&a0398.htm>

*Use of trade names is for educational purposes only and does not imply endorsement by the South Dakota Cooperative Extension Service of one product or service over another.*

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