

Delivering vaccines chicks can gobble up

January 29 2014, by Sandra Avant



At the Animal Parasitic Diseases Laboratory in Beltsville, Maryland, newly hatched chicks ingest gelatin beads, a new vaccine delivery system, to protect them from the disease called “coccidiosis.” Inside the beads are *Eimeria* oocysts. Credit: Stephen Ausmus

An alternate vaccine delivery system for newborn chicks has been developed by U.S. Department of Agriculture (USDA) scientists to improve vaccination against intestinal diseases like coccidiosis.

A common and costly poultry disease, [coccidiosis](#) is caused by tiny,

single-celled parasites that belong to the genus *Eimeria*. Infected birds spread disease by shedding oocysts, the egglike stage of the parasite. The infected birds are slower to gain weight and grow, and sometimes die.

Traditional poultry [vaccine](#) methods involve vaccinating chicks in trays on a conveyor with an electronic sprayer. However, some chicks may be missed by these methods and consequently have little defense against diseases.

The alternate system, developed by scientists at the Agricultural Research Service (ARS) Henry A. Wallace Beltsville Agricultural Research Center (BARC) in Beltsville, Md., and Southwest Research Institute (SwRI) in San Antonio, Texas, involves putting low doses of live *Eimeria* oocysts inside gelatin beads, which are fed to birds.

Microbiologist Mark Jenkins and zoologist Ray Fetterer, in BARC's Animal Parasitic Diseases Laboratory, examined the gelatin bead vaccine effectiveness in chicks of layer hens and broilers. One-day-old chicks were immunized by ingesting gelatin beads or with a hand-held sprayer. The group that swallowed the gelatin beads had a greater vaccine uptake than the group that received the vaccine in spray form, and was better protected against coccidiosis.

In another experiment, chicks were reared similarly to birds in a poultry house, vaccinated with the gelatin beads and later given a dose of *Eimeria* oocysts. The vaccine-bead-fed [chicks](#) had greater weight gains than an unvaccinated group and were more capable of converting feed into body mass.

ARS and SwRI scientists have filed a patent application for this research and are working on a gelatin bead vaccine delivery device for commercial poultry houses.

ARS is USDA's principal intramural scientific research agency.

More information: [Read more](#) about this research in the January 2014 issue of Agricultural Research magazine.

Provided by Agricultural Research Service

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