

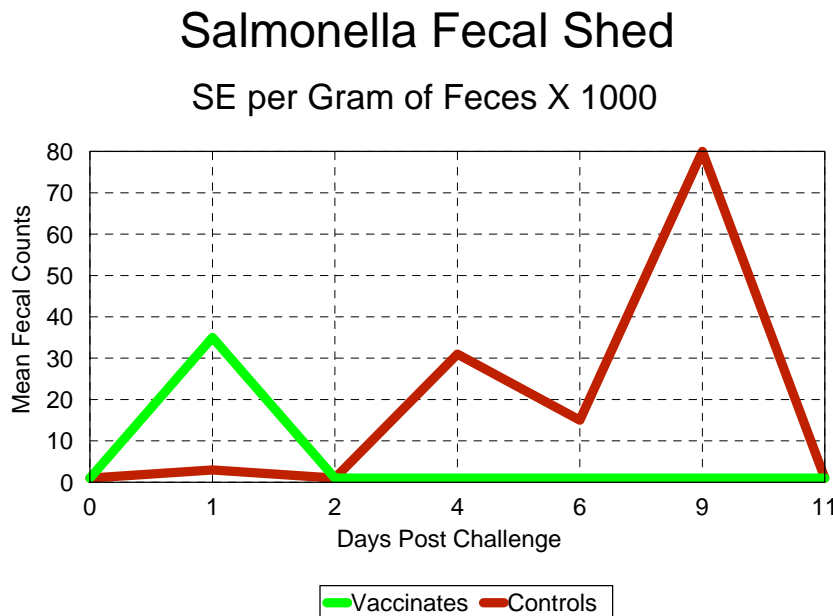
INACTI/VAC® SE4

When we first started working with Salmonella Enteritidis (SE) years ago, very little was known by anyone about the infection in poultry. It was certain, however, that SE was a serious threat to the safety of our food supply. Since then, Lohmann Animal Health International (LAHI) has undertaken a massive research effort to understand SE infection in the field and learn how to control it. We devoted much of our research and development resources and worked closely with outside researchers, government agencies and customers to unravel the unknown factors regarding this organism. Our goal was not to be the first to produce a licensed SE vaccine. Instead, we wanted to learn as much as possible about the organism to develop a product that would be safe and provide the best protection. After years of producing high quality autogenous SE bacterin, conducting extensive research and collaborating with expert scientists, we developed **Inacti/Vac SE4**.

SE has been a problem for the layer industry for many years and remains a serious threat today. Eggs continue to be associated with human SE outbreaks. Since it has been determined that SE cannot be eradicated, it will continue to be a threat. The USDA SE Pilot Project has found that 50% of tested flocks are positive on environmental sampling. Concerned producers in Pennsylvania participate a voluntary program that includes testing eggs from environmentally positive farms. If the eggs are positive for SE they are diverted to breakout. This practice has been estimated to prevent over 100,000 SE positive eggs from reaching the market. In doing so, it has also sent 360 million eggs to breakout and pasteurization.

Inacti/Vac SE4 decreases SE colonization of the cecum. Field trials show that multiple houses remained negative on environmental sampling with the help of SE vaccination. In contrast, several intermixed houses with non-vaccinated layers turned positive within 10 weeks of housing. In controlled studies, we have shown that vaccinating with an SE bacterin decreases fecal shed, which can help keep a house negative. Figure 1 shows the results of SE fecal shed after a severe oral challenge in vaccinated and non-vaccinated birds.

Figure 1.

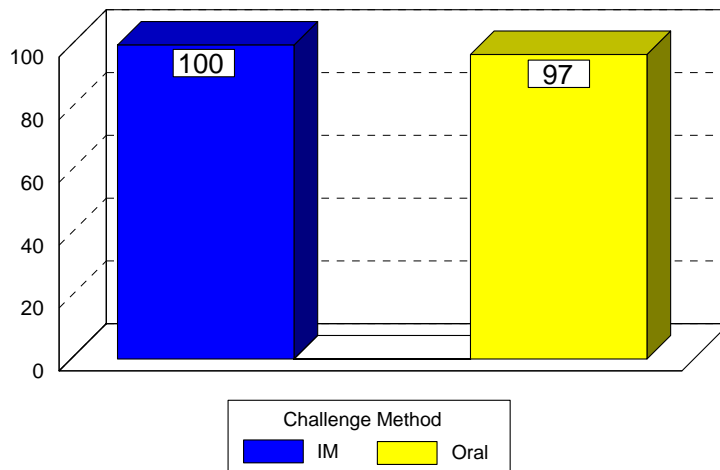


The vaccinated group sheds SE for the first 24 hours as SE bacteria pass through the intestinal tract, unable to colonize the protected mucosal layer. Intestinal culture results confirm that vaccination controls colonization. At 14 days post challenge, intestinal tract culture results reveal 100% protection against colonization. In contrast, SE colonized the intestinal tract of birds in the control group after oral challenge. Subsequently, SE multiplication in the intestinal tract leads to increased fecal shed. When this occurs in a flock, the increased fecal shed allows the house to be seeded down with SE and birds are continuously exposed to the organism. Beyond decreasing environmental contamination, protection of the intestinal tract decreases the chance of eggshell contamination.

SE vaccination also helps decrease internal egg contamination by protecting the reproductive tract from SE colonization. Figure 2 shows the protection against reproductive tract colonization following a severe oral and intramuscular (IM) challenge. **Inacti/Vac SE4** provides 100% protection following IM challenge with over one million SE bacteria. Following oral challenge with more than 10 million SE bacteria, **Inacti/Vac SE4** provides 97% protection. Although this method of challenge is much more severe than field exposure it does demonstrate the high level of protection you receive by using **Inacti/Vac SE4**.

Figure 2.

Reproductive Tract Protection



LAHI studied phage type cross protection during development of this bacterin. Our research demonstrated that cross protection exists between phage types. Independent researchers have confirmed these studies; but we did not stop there. We conducted many experiments with various single and multiple isolate vaccines to decide which gives the best protection. To provide optimum protection, we have incorporated four specific phage types into **Inacti/Vac SE4**. This combination provides antigenic diversity to protect your flock from its specific field challenge. The four phage types are also the most common isolates found in field samples from our customers. Furthermore, the incorporation of four isolates provides a large amount of antigen to produce a strong immune response.

Inacti/Vac SE4 is designed to aid in the protection of your operation from producing SE contaminated eggs. Vaccination of replacement pullets should be used in combination with testing, cleaning, disinfection, rodent control and biosecurity. A total SE program is another way to assure that the US food supply is the safest in the world. It also shows that your company cares about the consumers of your product. Our years of experience producing high quality autogenous SE bacterins, conducting extensive research and collaborating with expert scientists have helped developed **Inacti/Vac SE4**. We are proud to continue playing a role in lowering this human health risk associated with SE.