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Construction of an oral vaccine for transmissible gastroenteritis virus based on the TGEV N gene expressed in an attenuated *Salmonella typhimurium* vector

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Highlights

1. Attenuated *salmonella typhimurium* SL7207(pVAX-N) was constructed successfully.
2. Safety and stability of SL7207(pVAX-N) were detected.
3. SL7207(pVAX-N) was orally inoculated to piglets at 20-day-old.
4. SL7207(pVAX-N) created humoral, cellular and mucosal immune response.

Abstract

This research aimed to develop an oral vaccine for transmissible gastroenteritis virus (TGEV) based on the TGEV N gene expressed in an attenuated *Salmonella typhimurium* vector and aimed to evaluate the vaccine's immune response in piglets.

Recombinant plasmid pVAX-N was transformed into competent cells of attenuated *S. typhimurium* SL7207 via electroporation. After it was identified via RT-PCR and double digestion, the screened recombinant bacteria presenting pVAX-N were named SL7207 (pVAX-N).

To evaluate the safety and stability of the developed vaccine, different dosages (5×10^8, 1×10^9, and 2×10^9 CFU/mice) of SL7207 (pVAX-N) were inoculated to 6-week-old mice. Piglets below 20 days of age were dosed with 1×10^{12} CFU. Humoral (neutralization titer and specific IgG), cellular (interleukin-4, γ-interferon, and peripheral lymphocyte proliferation), and mucosal (sIgA) immune responses were detected and evaluated.

The three immunizing dosages were determined to be safe for mice and were