

Accepted Manuscript

Title: 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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PII: S0166-0934(15)00287-6
DOI: <http://dx.doi.org/doi:10.1016/j.jviromet.2015.08.011>
Reference: VIRMET 12865

To appear in: *Journal of Virological Methods*

Received date: 8-6-2014
Revised date: 17-8-2015
Accepted date: 17-8-2015

Please cite this article as: Zhang, D., Huang, X., Zhang, X., Cao, S., Wen, X., Wen, Y., Wu, R., Liang, E., Construction of an oral vaccine for transmissible gastroenteritis virus based on the TGEV N gene expressed in an attenuated *Salmonella typhimurium* vector, *Journal of Virological Methods* (2015), <http://dx.doi.org/10.1016/j.jviromet.2015.08.011>

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

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14 **Highlights**

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16 1. Attenuated *salmonella typhimurium* SL7207(pVAX-N) was constructed
17 successfully.

18 2. Safety and stability of SL7207(pVAX-N) were detected.

19 3. SL7207(pVAX-N) was orally inoculated to piglets at 20-day-old.

20 4. SL7207(pVAX-N) created humoral, cellular and mucosal immune response.

21 **Abstract**

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23
24 This research aimed to develop an oral vaccine for transmissible gastroenteritis virus
25 (TGEV) based on the TGEV N gene expressed in an attenuated *Salmonella*
26 *typhimurium* vector and aimed to evaluate the vaccine's immune response in piglets.

27
28 Recombinant plasmid pVAX-N was transformed into competent cells of attenuated *S.*
29 *typhimurium* SL7207 via electroporation. After it was identified via RT-PCR and
30 double digestion, the screened recombinant bacteria presenting pVAX-N were named
31 SL7207 (pVAX-N).

32 To evaluate the safety and stability of the developed vaccine, different dosages (5×10^8 ,
33 1×10^9 , and 2×10^9 CFU/mice) of SL7207 (pVAX-N) were inoculated to 6-week-old
34 mice. Piglets below 20 days of age were dosed with 1×10^{12} CFU. Humoral
35 (neutralization titer and specific IgG), cellular (interleukin-4, γ -interferon, and
36 peripheral lymphocyte proliferation), and mucosal (sIgA) immune responses were
37 detected and evaluated.

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

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