Evaluation of attenuated *Salmonella choleraesuis*-mediated inhibin recombinant DNA vaccine in rats

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ABSTRACT. DNA vaccination has been studied intensively as a potential vaccine technology. We evaluated the effect of an attenuated *Salmonella choleraesuis*-mediated inhibin DNA vaccine in rats. First, 15 rats were treated with different doses of an inhibin vaccine to evaluate vaccine safety. Next, 30 rats were divided into 3 groups and injected intramuscularly with the inhibin vaccine two (T1) or three times (T2) or with control bacteria (Con) at 4-week intervals. The inhibin antibody levels increased [positive/negative well (P/N) value: T1 vs Con = 2.39 ± 0.01 vs 1.08 ± 0.1; T2 vs Con = 2.36 ± 0.1 vs 1.08 ± 0.1, P < 0.05] at week 2 and were maintained at a high level in T1 and T2 until week 8, although a small decrease in T2 was observed at week 10. Rats in the T1 group showed more corpora lutea compared with the Con group (10.50 ± 0.87 vs 7.4 ± 0.51, P < 0.05). Estradiol (0.439 ± 0.052 vs 0.719 ± 0.063 ng/mL, P < 0.05) and progesterone (1.315 ± 0.2 vs 0.737 ± 0.11 ng/mL, P < 0.05) levels differed significantly at metestrus after week 10 between rats in the T1 and Con groups. However, there were no
significant differences in body, ovary, uterus weights, or pathological
signs in the ovaries after immunization, indicating that this vaccine is
safe. In conclusion, the attenuated *S. choleraesuis*-mediated inhibin
vaccine may be an alternative to naked inhibin plasmids for stimulating
ovarian follicular development to increase the ovulation rate in rats.

**Key words:** Inhibin; DNA vaccine; Ovary; *Salmonella choleraesuis*;
Rat