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Investigation of gene expression of GX-12, a new DNA vaccine for HIV infection, in reproductive organs in SD rats.

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GX-12 is a naked DNA vaccine developed by Dong-A pharmaceutical company for the treatment of HIV infection. GX-12 consists of four separate plasmids. This study was performed to evaluate the biodistribution and expression of GX-12 mRNA in gonadal tissues, and to investigate the histopathological changes in rats after repeated intramuscular injection.

GX-12 was injected into the left anterior tibialis of both male and female SD rats once a week for four weeks at the dose of 400 μg/head. On day 1, 5, 15, 30 and 45 after final administration, gonadals tissues (testes, epididymis, seminal vesicles, penis, prostate glands, ovaries, vagina, uterus) and injection site (muscle) were harvested and examined for the expression of mRNA by reverse transcriptase polymerase chain reaction (RT-PCR). In addition, histopathological examination was performed at each time points for the reproductive organs and injection site. At the injection site, mRNA expression of GX-12 was detected only at early time points (1-15 days after injection) but not thereafter. However, in gonadal tissues, mRNA expression was not identified at all time points both in male and female rats. There were no histohathological changes in all reproductive organs and muscle.

Based on these results, it is unlikely that the plasmid DNA of GX-12 was distributed to- and expressed in gonadal tissues, suggesting that the chance of germline integration and transmission is negligible.

Keyword : GX-12, DNA vaccine, gonadal tissue, reverse transcriptase polymerase chain reaction