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**The construction and the immune effect evaluation of a gene deficient strain of feline calicivirus**

Wen Yu1,Endong Bao2\*

1 Nanjing Agricultural University, China

2 b＿endong@njau.edu.cn, Nanjing Agricultural University, China

**Abstract:**

**Background:**This study was based on the feline calicivirus isolated from the Hangzhou area. A reverse genetic system for feline calicivirus was established, and partial genes of feline calicivirus were designed to be deleted in order to obtain candidate strains for an attenuated feline calicivirus vaccine.

**Methods:**The full genome sequence of feline calicivirus was recombined into a plasmid vector using homologous recombination. The recombinant feline calicivirus, rBF2, with gene sequences identical to the parental strain, was rescued on F81 cells.An F81-VP1 cell line was constructed to express specific gene sequences of feline calicivirus, assisting in the rescue of gene-deleted viruses. The rescued viruses were then validated both in vitro and in vivo.

**Results:** The gene-deleted viral strain exhibited weaker replication, proliferation, and invasion abilities in vitro compared to the parental strain. Animals infected with the gene-deleted virus showed milder clinical symptoms and less body damage compared to those infected with the parental strain.

**Conclusion:**The reverse genetic system allows for the precise deletion of genes from RNA viruses. With the assistance of helper cell lines, the rescue of viruses can be accelerated, facilitating subsequent continuous validation and use. The deletion of the LC gene sequence in feline calicivirus affects the virus's replication rate and virulence, which is beneficial for further developing a gene-deleted attenuated vaccine against feline calicivirus.

**Keywords:** Feline calicivirus; Reverse genetics; Gene deletion；Pathogenicity research; cat