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# Localization of the VP2 Protein of Canine Parvovirus Type 2 on the Baculovirus Envelop and Its Immunogenicity in a Mouse Model

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## ABSTRACT

In this study, the full-length VP2 gene of canine parvovirus type 2 (CPV-2) was cloned into the pBacSC vector which possesses baculovirus transmembrane domain (gp64 TM) gene, baculovirus cytoplasmic domain (gp64 CTD) gene, and green florescence protein (GFP) gene. Baculovirus gp64 TM and gp64 CTD in the pBacSC vector were designed to display heterologous proteins on the baculovirus envelope. After cloning the VP2 gene of CPV-2 into pBacSC vector, the recombinant plasmid pBacSC-VP2 was transformed into *E. coli* DH10Bac competent cells to form recombinant bacmid DNA. One recombinant baculovirus BacSC-VP2 that expresses the VP2 protein of CPV-2 was obtained. Confocal microscopy and immunogold electron microscopy were used to verify whether VP2 expressing on baculovirus envelope or cell membrane. Immunization of BALB/c mice with recombinant baculovirus BacSC-VP2, demonstrated that serum from the BacSC-VP2 treated models had higher levels of virus neutralization titers than the control groups. The results show that the recombinant baculovirus BacSC-VP2 can induce a strong immune response in a mouse model, suggesting that the pseudotyped baculovirus BacSC-VP2 can serve as a potential vaccine against CPV infections.

## KEYWORDS

Canine Parvovirus Type 2; VP2 Protein; Baculovirus gp64 TM and CTD; Subunit Vaccine

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