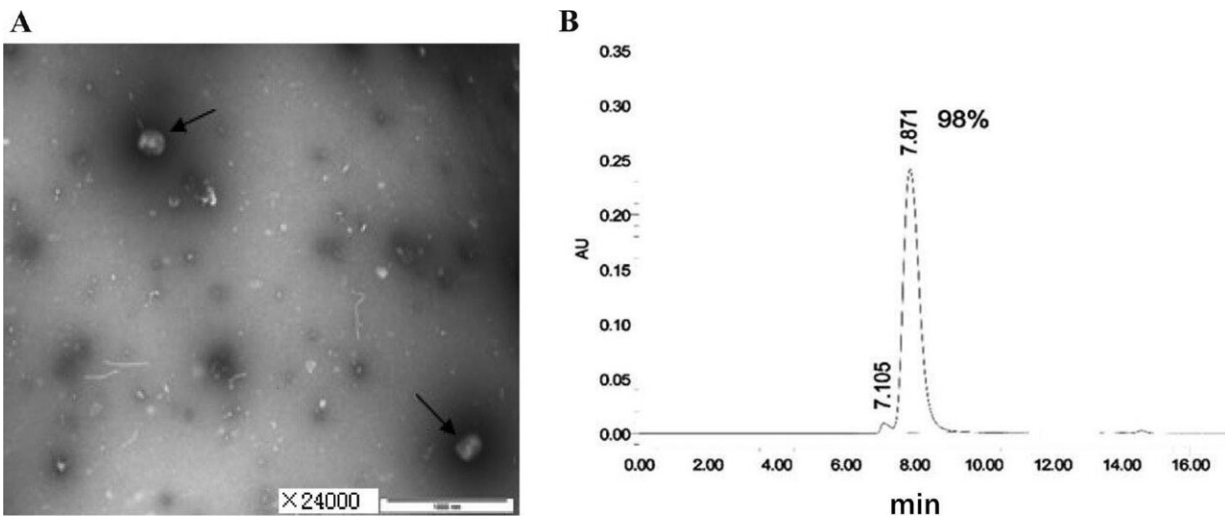


# Evaluating equine immunoglobulin F(ab')<sub>2</sub> for treatment of smallpox

February 13 2023



Detection results of purified antigens of vaccinia virus TianTan strain. (A) Transmission electron microscopy showing that the purified virus conformed to the morphology of vaccinia virus. (B) HPLC test results. The purity of the purified antigen was 98.4%. Credit: *Zoonoses* (2023). DOI: 10.15212/ZOONOSES-2022-0048

Smallpox, a severe infectious disease caused by the smallpox virus, causes a death rate as high as 30% within 15–20 days after infection. Therefore, development of an anti-smallpox product as a strategic reserve is urgently needed.

Pepsin-digested F(ab')<sub>2</sub> fragments of serum IgG from horses was prepared and tested by a team of researchers from China. Transmission electron microscopy indicated that the purified virus showed morphology consistent with VVTT. The titer was above  $1.0 \times 10^7$  PFU/mL. The purity of the antigen exceeded 90%, according to HPLC.

After purification and cleavage, the yield of the purified product F(ab')<sub>2</sub> was approximately 1.3%, its purity exceeded 90%, and the neutralizing antibody titer exceeded 1:3200. F(ab')<sub>2</sub> fragments had good preventive and [therapeutic effects](#) in mice at antibody doses of 5.2 mg/mL and 2.6 mg/mL. The viral loads of the drug-treated mice were suppressed to varying degrees, and the higher dose groups (5.2 and 2.6 mg/mL) showed a 2–3 fold lower viral load than that in the control group.

A process for producing equine immunoglobulin F(ab')<sub>2</sub> against VVTT was established. The prepared horse anti-smallpox immunoglobulin product had good neutralizing antibody effects on VVTT. The highly purified preparation may serve as a potential candidate for [smallpox](#) treatment.

The study is published in the journal *Zoonoses*.

**More information:** Bochang Shi et al, Preparation of Equine Immunoglobulin F(ab')<sub>2</sub> against Smallpox and Evaluation of its Immunoprotective Effect, *Zoonoses* (2023). [DOI: 10.15212/ZOONOSES-2022-0048](#)

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