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Title: Development of recombinant goatpox virus expressing *Echinococcus granulosus* EG95 vaccine antigen

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Research paper

Title:

Development of recombinant goatpox virus expressing *Echinococcus granulosus* EG95 vaccine antigen

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Highlights

- Construction of recombinant goatpox virus by TK gene-based homologous recombination
- Expression of *E. granulosus* EG95 antigen *in vitro* by the recombinant goatpox virus
- Potential of bivalent vaccine in preventing goatpox disease and cystic hydatidosis

Abstract

Goatpox disease and cystic hydatidosis may be simultaneously endemic in a given area. Their pathogens are goatpox virus (GPV) and *Echinococcus granulosus* (*E. granulosus*), respectively. Both *E. granulosus* EG95 subunit vaccine and live-attenuated GPV AV41 vaccine have been widely used for prevention of both diseases in China. However, it has been rarely reported that a bivalent vaccine is developed to prevent both diseases. The GPV is an ideal vector for developing recombinant multivalent vaccines to deliver immunogenic proteins in animals. In this study, we constructed an EG95 antigen-expressing recombinant GPV by the thymidine kinase gene-based homologous recombination *in vitro*. The recombinant GPV was purified and then proven to be able to express the

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