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Oral presentation

Development of an Inactivated Vero Cell-derived Vaccine Against Crimean-Congo Hemorrhagic Fever Virus

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Abstract:
Crimean-Congo hemorrhagic fever virus (CCHFV) is a tick-borne virus that causes severe hemorrhagic disease in humans. The first clinical Crimean-Congo hemorrhagic fever (CCHF) infection was recognized in 2002 in Turkey. Increased number of cases, the high mortality rates, considered to be as a bioterrorism agent and lack of effective therapy making CCHF a serious threat to public health. Therefore, development of a safe and effective vaccine against CCHFV should be considered. This present study evaluates the immunogenicity of potential CCHFV vaccines, based on purified from Vero E6 cell culture and mice brain, inactivated with formalin and formulated with alum adjuvant. In this study, six groups (n=6 each) of 4 to 6 week old BALB/c mice were immunized via the intraperitoneal (i.p.) route with 5, 10 and 20 µg of the cell culture-based or the mouse brain-derived vaccines adjuvanted with alum. Booster injections with same formulation were given on 21, and 42 days after first immunization. Serum antibody titer induced by cell culture-based and mouse brain derived vaccines increased in a dose dependent manner. Serum antibody titer induced by cell culture-based vaccine with all three concentrations was significantly higher than those obtained from in mice immunized with mouse brain derived vaccine. The mean of neutralization antibody levels at 12 month post-vaccination in 5 µg dose in mice immunized with culture-based vaccine was as same as the mean of neutralization level at 4 month post-vaccination in mice immunized with the same dose of mouse brain derived vaccine. These results clearly indicate that the cell culture-based vaccine against CCHFV has more potential protective efficacy than mouse brain derived vaccine.

Keywords: Crimean-Congo hemorrhagic fever virus, inactivated vaccine, adjuvants, protective response, long-term immunity.

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