

2023 年至 2025 年牛流行熱不活化疫苗製造與優化工作報告

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摘要

本所製造的牛流行熱不活化疫苗從 1991 年即開始推廣使用，但因為當時使用的佐劑為水質磷酸鋁膠，施打疫苗後牛隻產生中和抗體力價保護期不長，牧場為了防止疫病的發生，需要多次進行疫苗補強注射，造成牧場營運管理成本的增加。於是本所於 2019 年變更佐劑為國內研發的 w/o/w 油質佐劑 Summit-S350，變更配方後的疫苗其不僅免疫效果好、維持抗體高峰期時間更是長達 6 個月，因此每半年補強一次即可有效防止疫病大規模的發生。之後因為疫苗製造業務調整及技術人員異動，該疫苗於 2020 年暫停生產，直到 2023 年才又重新恢復生產迄今。

以 Summit-S350 為佐劑的牛流行熱疫苗雖然能延長中和抗體高峰期，但因疫苗引起的不良反應也較為明顯，因此自 2024 年起開始著手選用有大數據基礎，國際疫苗大廠 SEPPIC 系列的佐劑，對於現行的牛流行熱疫苗再次進行優化，期待未來能開發出兼具良好免疫效果及降低疫苗不良反應發生率的優質疫苗。

Report on the Manufacturing and Optimization of Inactivated Bovine Ephemeral Fever Vaccine for the Period of 2023 to 2025

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Abstract

The inactivated bovine ephemeral fever vaccine manufactured by our institute has been promoted for use since 1991. However, the adjuvant used at that time was aluminum phosphate gel, which resulted in the short duration peak of serum neutralizing (SN) antibody protection levels. To prevent the occurrence of epidemics, farms needed to administer multiple booster vaccinations, leading to increased operational management costs. In 2019, our institute changed the adjuvant into w/o/w oil adjuvant, Summit-S350. The reformulated vaccine not only demonstrated better immunization efficacy but also maintained the antibody protection level for up to six months, allowing for effective prevention of large-scale outbreaks with a booster every six months. Subsequently, due to adjustments in the vaccine manufacturing business and personnel changes, production of the vaccine was temporarily suspended in 2020 and resumed in 2023, continuing to present.

Although the bovine ephemeral fever vaccine using Summit-S350 as an adjuvant can extend the SN antibody peak duration, it is associated with more noticeable adverse reactions. Therefore, starting in 2024, we begin selecting adjuvants from the SEPPIC series, which are based on big data and developed by international vaccine manufacturers, to further optimize the current bovine ephemeral fever vaccine. We hope to develop a high-quality vaccine in the future that combines both good immunization efficacy and with a reduced incidence of adverse reactions.