

# The evaluation of neutralizing antibody titers elicited by different vaccination program of inactivated bovine ephemeral fever virus vaccine on Holstein cattle in Taiwan <sup>(1)</sup>

Yi-Ming Chen <sup>(2)</sup> Yi-Hsuan Chen <sup>(2)</sup> Kuo-Hua Lee <sup>(2)</sup> and Po-An Tu <sup>(2)(3)</sup>

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## Abstract

Bovine ephemeral fever (BEF) is an important viral disease of cattle. The protection of BEF in Taiwan mainly relies on inactivated vaccine to upgrade the vaccination protection of all cattle in times of the seasoning outbreak of BEF. To elevate the overall BEF protection of cattle, two treatment cattle groups were vaccinated with different BEF virus vaccine strains and different doses. A group (two times vaccinated per year) and B group (three times vaccinated per year). BEF virus neutralizing antibodies (NA) following vaccination with inactivated BEF vaccine were tested, and calculating the elevated NA before and after vaccinated of each group. The proportions of non-responder and weak-responder cattle were also identified. The results showed that the overall cattle herd BEFNA titers are not significantly different between A and B treatment groups at each time periods ( $P > 0.05$ ). Also, herd vaccinated with different BEF virus vaccine strains showed no significant differences in BEFNA titers ( $P > 0.05$ ). The results indicated that the administration of cattle with different BEFV vaccine does not have significant impact on the antibody titers at different stage. However, significant differences were found between the elevated BEFNA titers of A and B treatment groups at each time periods ( $P > 0.05$ ). The elevated BEFNA titers of A treatment group were 2.48, 2.68, and 1.37 times than the titer before vaccination, 3 and 6 months post 1<sup>st</sup> vaccination, and 6months post 2<sup>nd</sup> vaccination, respectively. While the elevated BEFNA titers of B treatment group were 4.22, 3.96, and 1.87 times than the titer before vaccination, 4 months post 1<sup>st</sup> vaccination, 4 months post 2<sup>nd</sup> vaccination and 4 months post 3<sup>rd</sup> vaccination, respectively. This study indicates that the vaccination program of 3 inactivated vaccine doses per year will yield higher protection effect from the neutralizing antibody titers than just 2 vaccine doses. Vaccines are expected to prolong the shelf life of milking cows and their production performance in addition to reducing economic loses, which can be taken into consideration for designing the BEF vaccination program. It may be recommended that initial vaccination will be performed twice at the age of 4 to 6 month (4 weeks apart) and then repeated every 6-month period (March and August in the north hemisphere). To achieve better protection of BEF, cattle should be vaccinated with inactivated vaccine every 4-month period, namely to reach 3 doses per year for optimal performance.

Key words: Bovine ephemeral fever, Vaccination program, Neutralizing antibody titers.

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(1) Contribution No. 2651 from Livestock Research Institute, Council of Agriculture, Executive Yuan.

(2) Hsinchu Branch, COA-LRI, Miaoli 36841, Taiwan, R. O. C.

(3) Corresponding author, E-mail: tpa@mail.tlri.gov.tw.