

AUSKIPRA®-GN confers to piglets a complete protection against a lethal infection with a Pseudorabies virus variant in China

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INTRODUCTION

Since late 2010, Pseudorabies virus (PRV) has swept across China causing sporadic outbreaks in swine herds. PRV variants were isolated from those farms^[1-3]. The aim of this study is to check whether Bartha-K61 vaccine can confer protection in pigs infected with PRV variants under experimental conditions.

MATERIALS AND METHODS

AUSKIPRA®-(GN) from LABORATORIOS HIPRA, S.A, (Bartha-K61 vaccine strain, batch number 67XN, $10^{6.67}$ TCID₅₀/dose) was selected as a vaccine. A pseudorabies virus variant, AH02LA strain, was used as a challenge virus via intranasal route. The challenge dose was $2 \times 10^{7.1}$ TCID₅₀. Twenty piglets aged 4 weeks and serologically confirmed negative for PRV were randomly assigned to four groups: 5 piglets in each group inoculated with 2mL of GN in A3 diluent (A3 group) or 2mL GN in RED diluent (RED group) or 2mL PBS (Challenge group) at week 5 intramuscularly and then all groups were challenged at week 6 with AH02LA; 5 piglets receiving no treatment (Control group). Clinical signs and body temperature of all animals were recorded from 3 days before vaccination to 14 days post challenge (DPC). At 14 DPC, surviving piglets were euthanized to evaluate lung lesions. Nasal swabs from all piglets were collected daily post challenge for PRV titration.

RESULTS

1.Clinical signs and lung lesions

In the challenge group, high fever, sneeze, purulent nasal discharge, labored breathing and ataxia were observed between 3 to 5 DPC in all piglets; 3 piglets died between 5 to 6 DPC; pulmonary edema and hemorrhage were also observed in dead or euthanized piglets. In the other 3 groups, no morbidity and mortality were recorded, no fever or lung lesion were observed until the end of trial (Figure 1&2).

Fig- 1. Survival curve for all groups

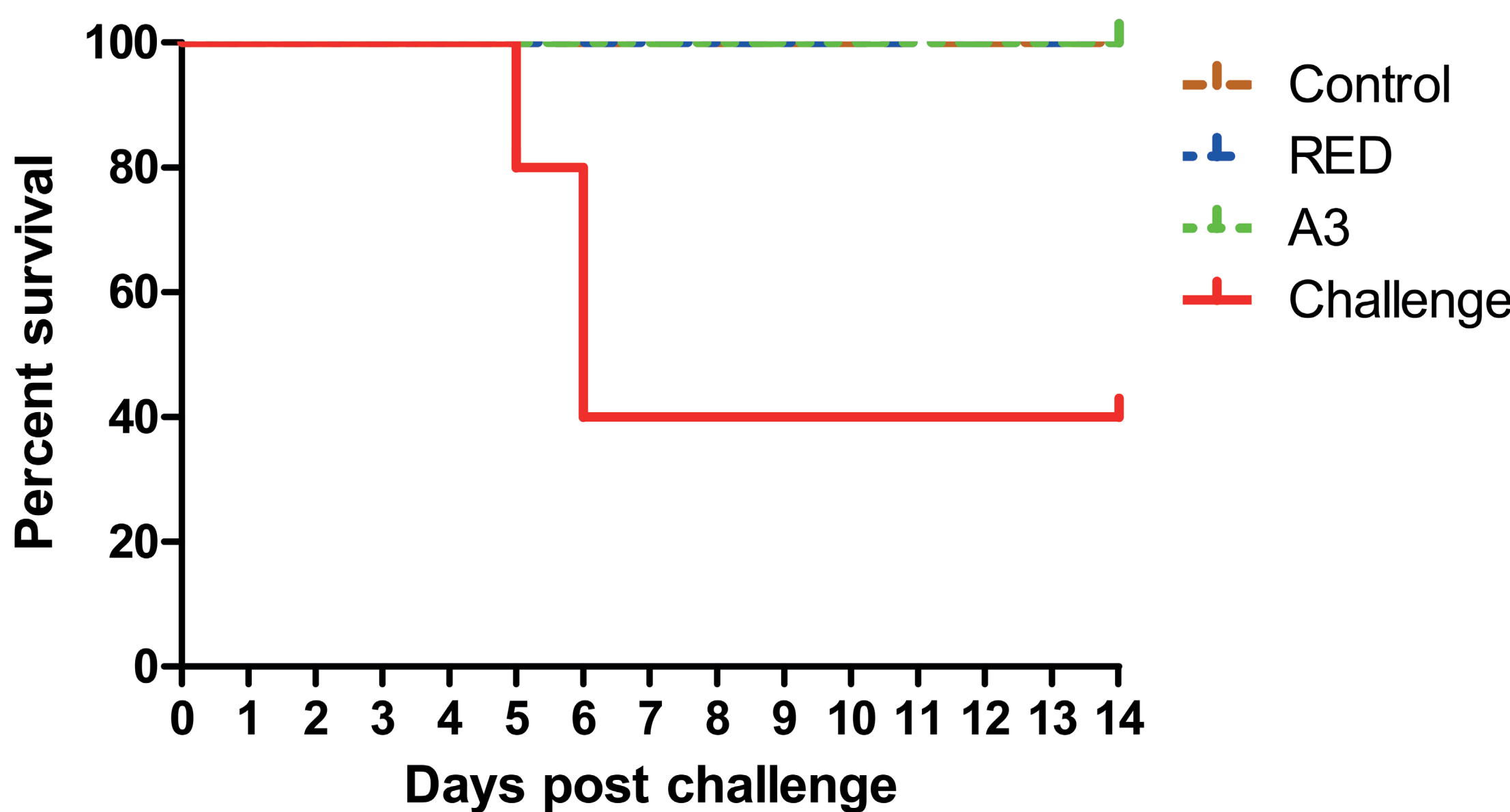
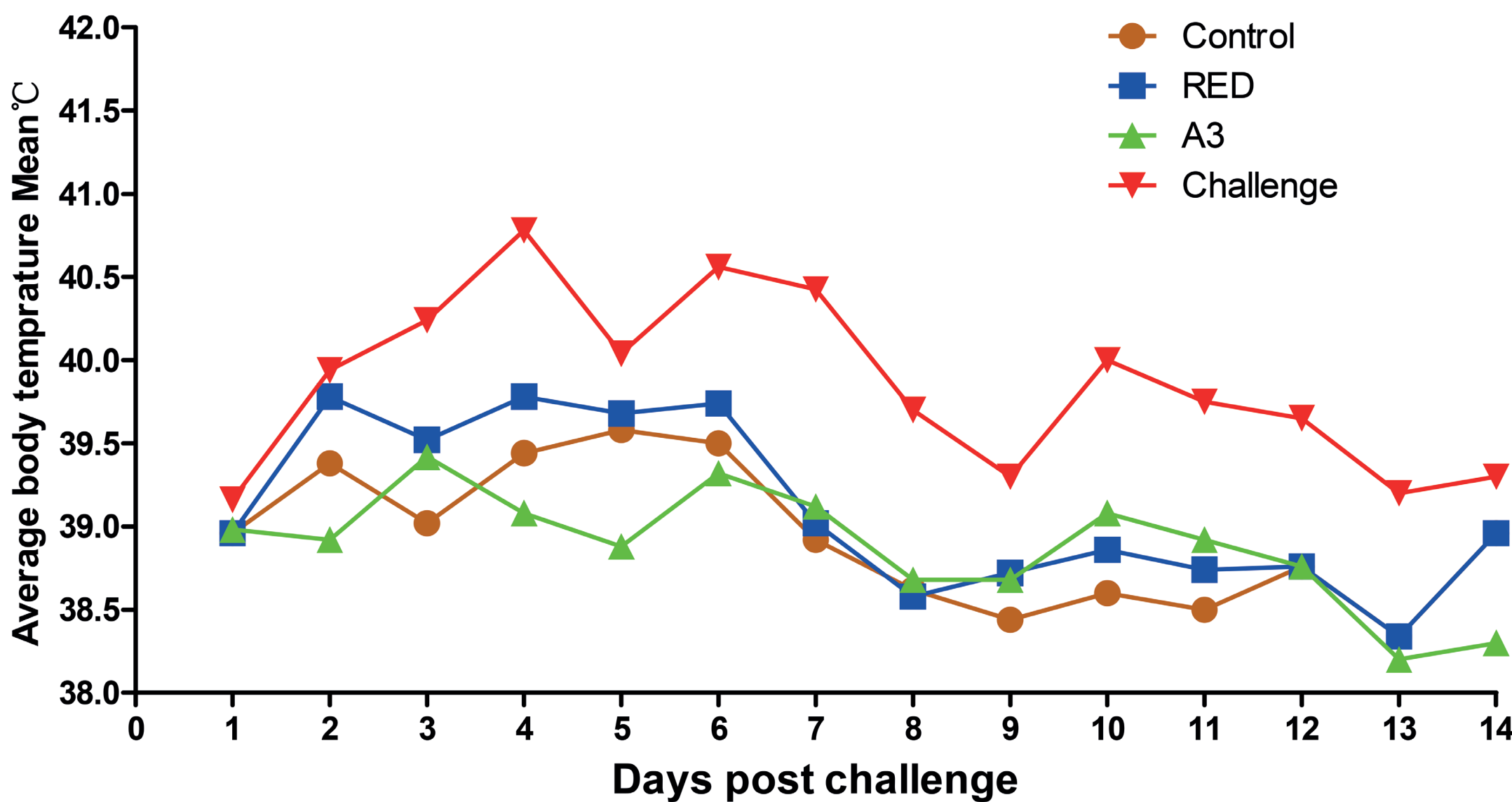


Fig- 2. Average body temperature curve for all groups



2. Virus shedding

Virus shedding was detected in all 5 piglets in challenge group for 3-5 days and a peak titer of $10^{3.88}$ TCID₅₀/0.1mL (Table 1). However, virus shedding was detected partially with a shorter duration and a much lower titer in A3 group (3/5; $10^{0.25}$ TCID₅₀/0.1mL) and RED group (4/5; $10^{1.13}$ TCID₅₀/0.1mL.)

Table 1. Virus titer in nasal swabs from piglets post challenge.

Treatment	No. (a/b)	Duration (day)	Titer (TCID ₅₀ /0.1mL)
A3	3/5	1	10 ^{0.13} ~10 ^{0.25}
RED	4/5	1~3	10 ^{0.25} ~10 ^{1.13}
Challenge	5/5	3~5	10 ^{0.25} ~10 ^{3.88}
Control	0/5	/	/

Note: “a” piglets that have virus shedding “b” number of piglets of the group.

DISCUSSION AND CONCLUSION

Recent phylogenetic analysis assigned Bartha K61 to genotype I whereas AH02LA to genotype II^[4]. Nevertheless, a complete protection against PRV variant was demonstrated in this study. Moreover, this trial has been repeated three times independently with the same results (data not published), adding power to the above observation. In a previous study, fever and anorexia were observed in 2 out 3 vaccinated piglets against a PRV variant challenge^[5]. Different vaccine and diluents used in this study might be responsible for the improved protection. Although AUSKIPRA GN with either A3 or RED diluent can provide complete protection against PRV variant AH02LA strain, virus shedding was reduced further in A3 group in relation to RED group. Carbomer and Levamisole in A3 diluent might contribute to the additional improvement^[6-7].

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