

PATHOGENICITY OF RSIV-II AND ISKNV-I AND CROSS PROTECTION EFFICACY OF RSIV-II VACCINE AGAINST ISKNV-I IN GIANT GROUPER *Epinephelus lanceolatus*

Kittipong Thanasaksiri*, Chiho Taniguchi, Sumire Mitarai, Kohei Fukuda, Bambang Hanggono, Ujang Komarudin AK.

*Kyoritsu Seiyaku Corporation, Japan

Background

- Iridoviral disease in fish is mainly caused by red seabream iridovirus (RSIV) and infectious spleen and kidney necrosis virus (ISKNV).
- Giant grouper (*Epinephelus lanceolatus*) is one of the main marine cultured fish species in Asian countries such as Taiwan and Indonesia.
- In this study, we investigated the pathogenicity of RSIV genotype II (RSIV-II) and ISKNV genotype I (ISKNV-I) in giant grouper. Efficacy of PISCIVAC™ Irido Si, a commercially available inactivated vaccine containing red seabream iridovirus (RSIV genotype II) and *Streptococcus iniae* antigens, against ISKNV-I infection in giant grouper was also evaluated.

Results

Both RSIV-II and ISKNV-I caused 100% mortalities in giant grouper after infection

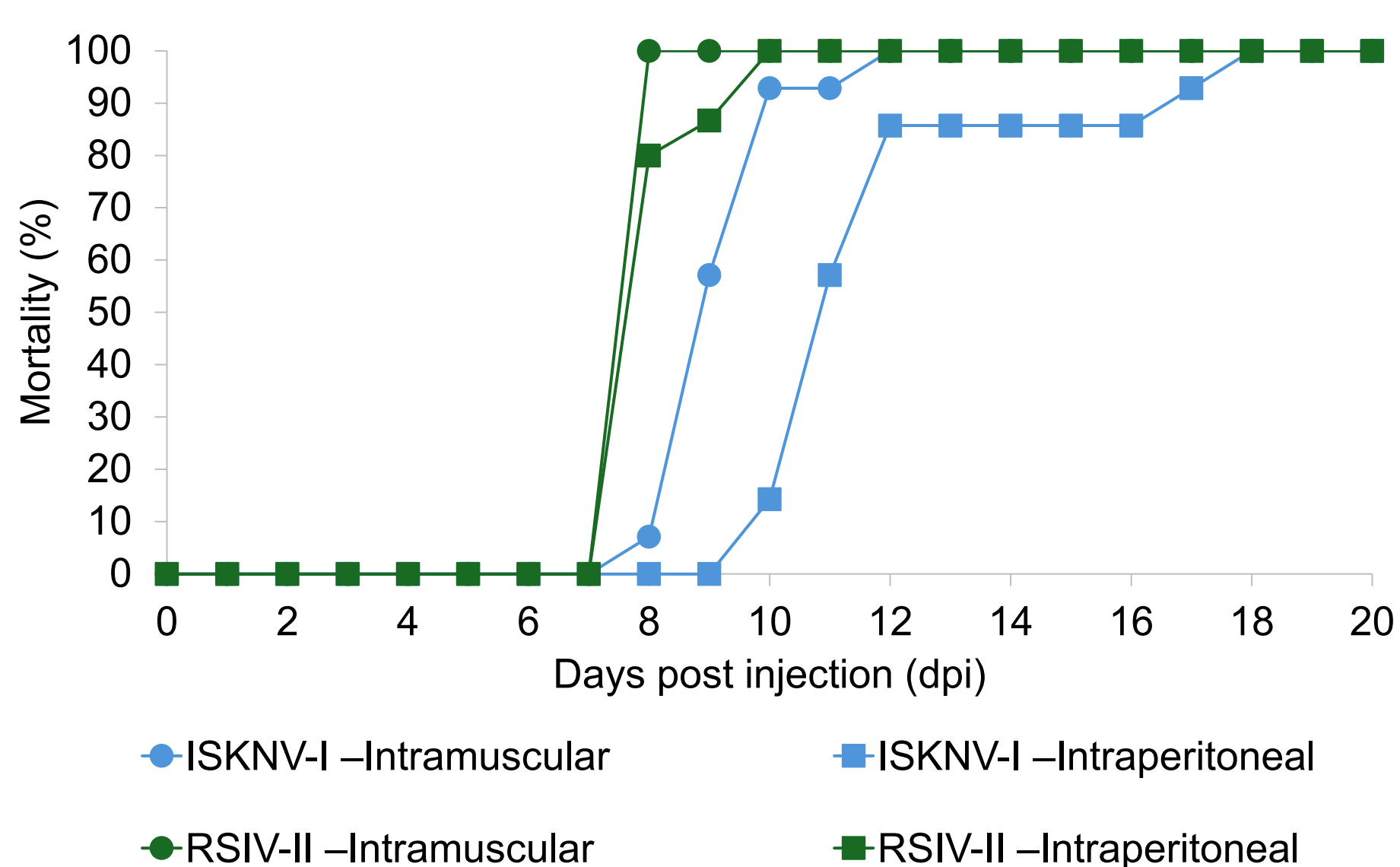


Fig. 1 Mortality of 16.5 g giant grouper intraperitoneally- or intramuscularly-infected with RSIV-II strain RIE12-1 or ISKNV-I strain BPBAP1803 at a dose of $10^{2.5}$ TCID₅₀/fish.

Methods

Pathogenicity

Viral strain: RSIV-II strain RIE12-1 and ISKNV-I strain BPBAP1803

Average fish body weight: 16.5 g or 200 g

Rearing water temperature after infection: 28 °C

Efficacy

Vaccine: PISCIVAC™ Irido Si

Control: Phosphate buffered saline

Injection dose: 0.05 mL

Viral challenge strain: ISKNV-I strain BPBAP1803

Average fish body weight: 8 g (Trial I) or 37 g (Trial II)

Immunization period: (Trial I) 14 days post vaccination (dpv)
(Trial II) 28 dpv

Rearing water temperature after vaccination: 25 °C

Rearing water temperature after challenge: 28 °C

High mortalities (60–80%) were also observed in large giant grouper

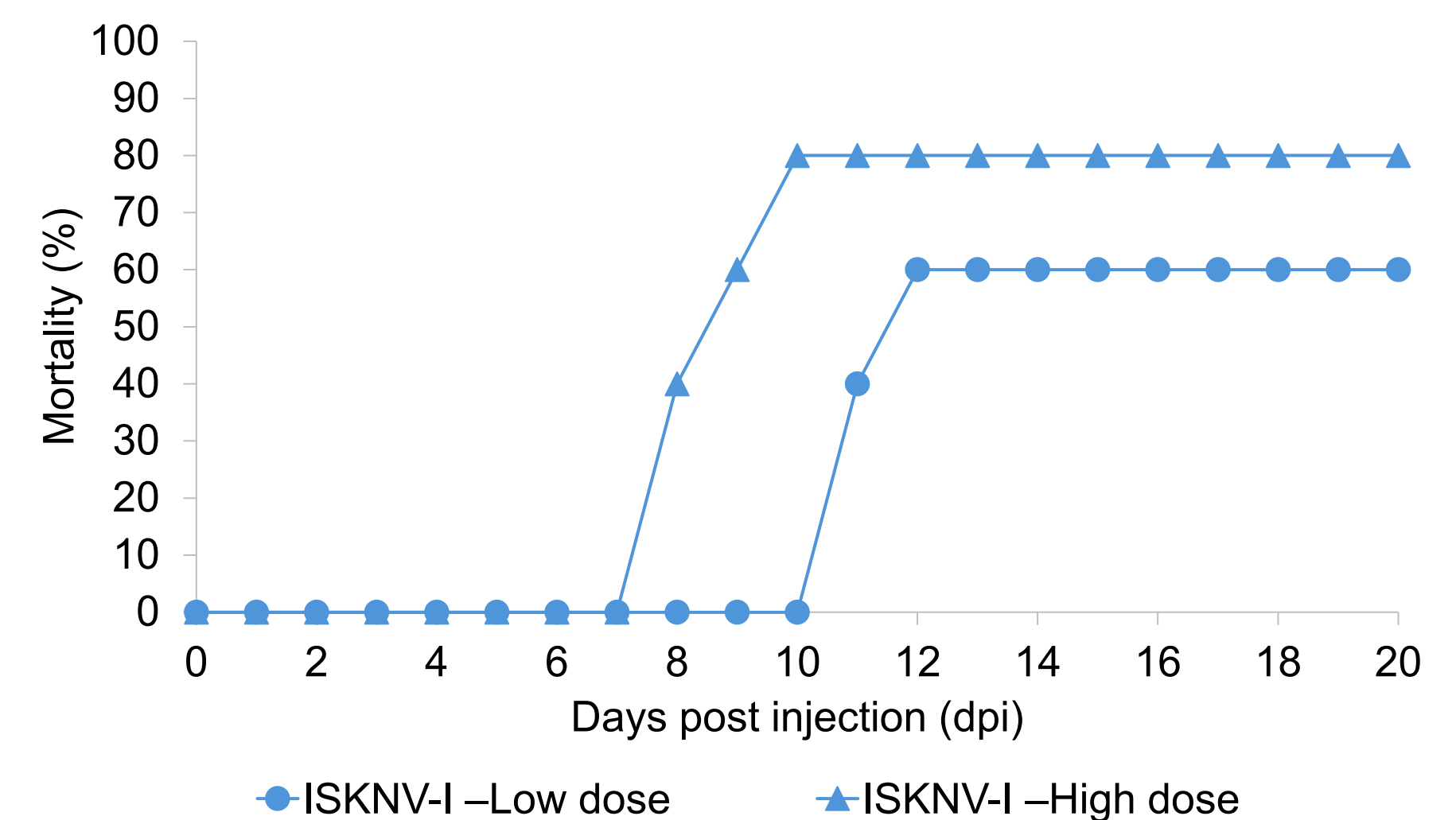


Fig. 2 Mortality of 200 g giant grouper intramuscularly-infected with ISKNV-I strain BPBAP1803 at doses of $10^{2.5}$ TCID₅₀/fish (Low dose) or $10^{4.5}$ TCID₅₀/fish (High dose).

Intramuscular vaccination of giant grouper with PISCIVAC™ Irido Si provided effective protection against ISKNV-I infection

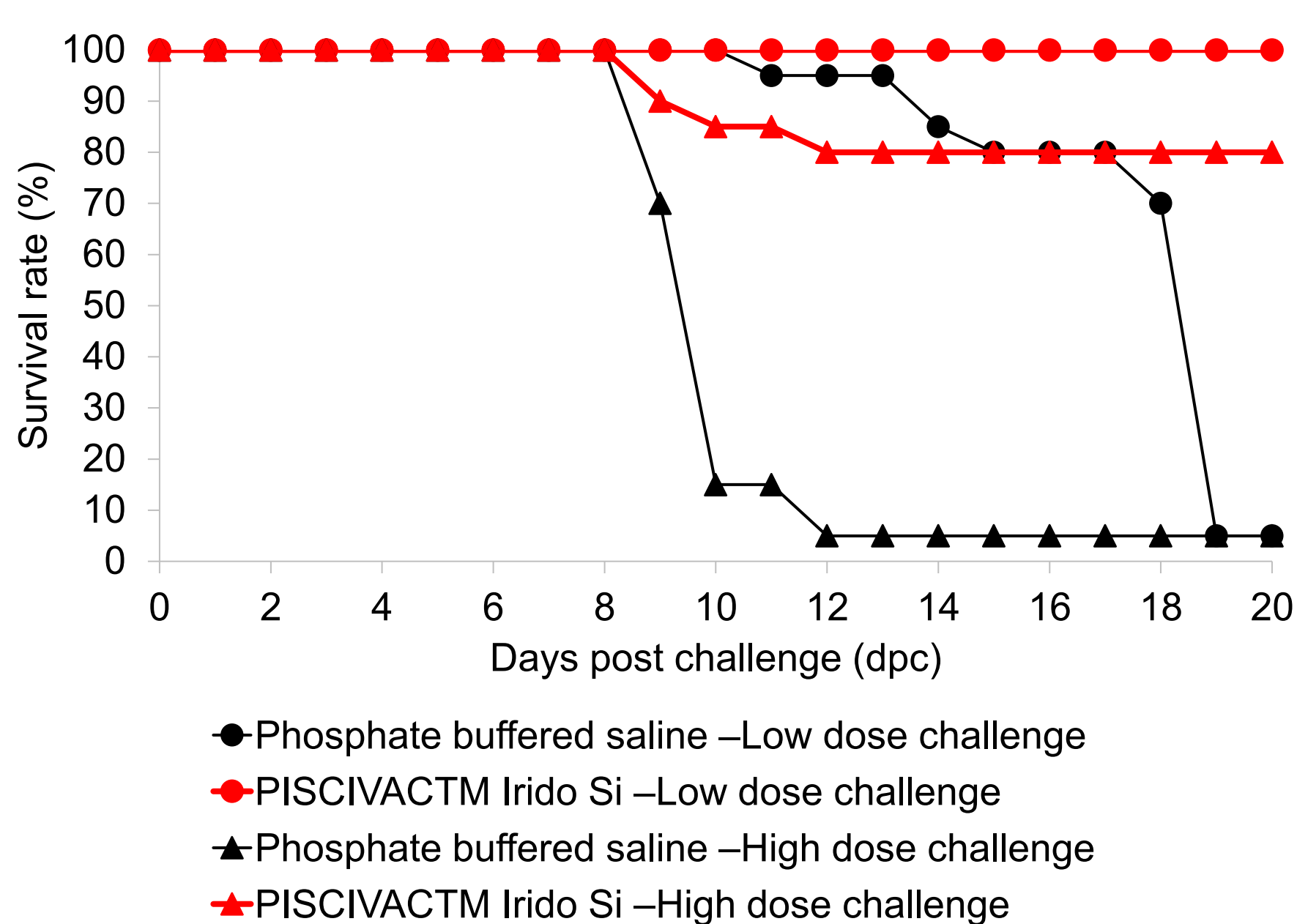


Fig. 3 Efficacy (Trial I) of PISCIVAC™ Irido Si against ISKNV-I in giant grouper. Fish were challenged with ISKNV-I strain BPBAP1803 at doses of $10^{-0.5}$ (Low dose) or $10^{1.5}$ (High dose) TCID₅₀/fish at 14 dpv.

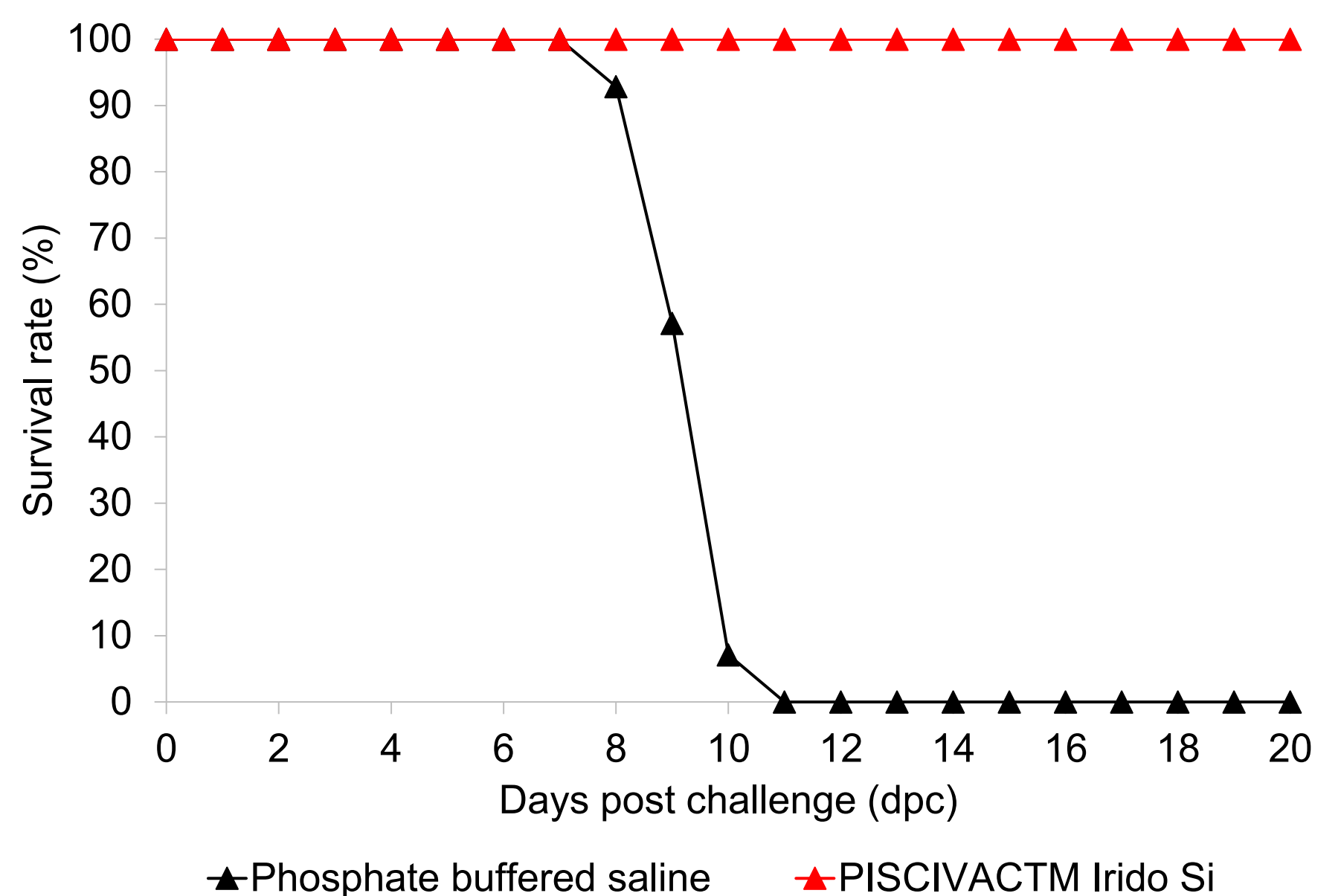


Fig. 4 Efficacy (Trial II) of PISCIVAC™ Irido Si against ISKNV-I in giant grouper. Fish were challenged with ISKNV-I strain BPBAP1803 at a dose of $10^{3.5}$ TCID₅₀/fish at 28 dpv.

Conclusions

- Giant grouper is highly susceptible to RSIV-II and ISKNV-I infections, regardless of fish body weight.
- Vaccination of giant grouper with PISCIVAC™ Irido Si reduced mortality associated with iridovirus infection.