

Comparison of mortality in a PRRS-endemic site 2 and site 3 after switching from a PRRSV2 MLV to a PRRSV1 MLV in Korea

Dong Noh H¹, An K^{1*}, Byun J¹, Seo S¹, Romero Aguilar S², Miranda J²

¹ HIPRA Korea, Seoul, South Korea

² HIPRA, Girona, Spain

*Corresponding author: kyohyun.an@hipra.com

Introduction

PRRS is a swine disease with a very important economic impact on the swine industry (1). The huge economic and productive losses due to its endemic distribution and the high levels of mortality caused by both types (PRRSV1 and PRRSV2) makes the immunization of pigs a necessity to minimize the impact on affected farms (2). Immunization with modified live vaccines (MLV) has proved to be effective in controlling PRRS infection (3). In experimental studies, high doses of neutralizing antibodies (NA) prevented transplacental PRRS infection of fetuses and provided sterilizing immunity to the sow and piglets in utero (4,5). The objectives of this trial were to evaluate if a PRRSV1 vaccine could better control coinfection (PRRSV1 and PRRV2) and the time required to detect NA after vaccination in a site 2 farm in Korea.

Materials and methods

The trial was conducted in a site 2 and site 3 farm in South Korea where 70-days-old animals from a negative site 1 were introduced monthly and vaccinated with a PRRSV2 MLV (VR2332, 2 ml, IM). This farm was endemic to a PRRSV2 and in April 2021 suffered a severe outbreak of PRRSV1 causing high mortality in the pigs (Table 1) so the vaccine was changed to UNISTRRAIN[®] PRRS ID (PRRSV1 vaccine, VP-046 BIS strain, 0.2 ml, ID, HIPRA) with an intradermal needle-free device (Hipradermic[®], HIPRA). Blood samples were collected to perform ELISA (kit by IDEXX X3) and Neutralizing Antibodies (NA) in a local laboratory, which had the cell line adapted to UNISTRRAIN[®] PRRS (VP-046) before vaccination (9 weeks of age) and at 6, 13, 18, 25, 35, 60, 80 days post vaccination (dpv). Mortality data were collected daily from all batches according to the date of entry of the pigs in the site 2.

Results

Regarding blood samples, it can be observed that from 13 dpv and 18 dpv high titers were found in ELISA (Figure 1) and NA (Figure 2), respectively.

On the other hand, mortality in the groups of animals vaccinated with UNISTRRAIN[®] PRRS ID was significantly reduced as it can be observed in Table 1.

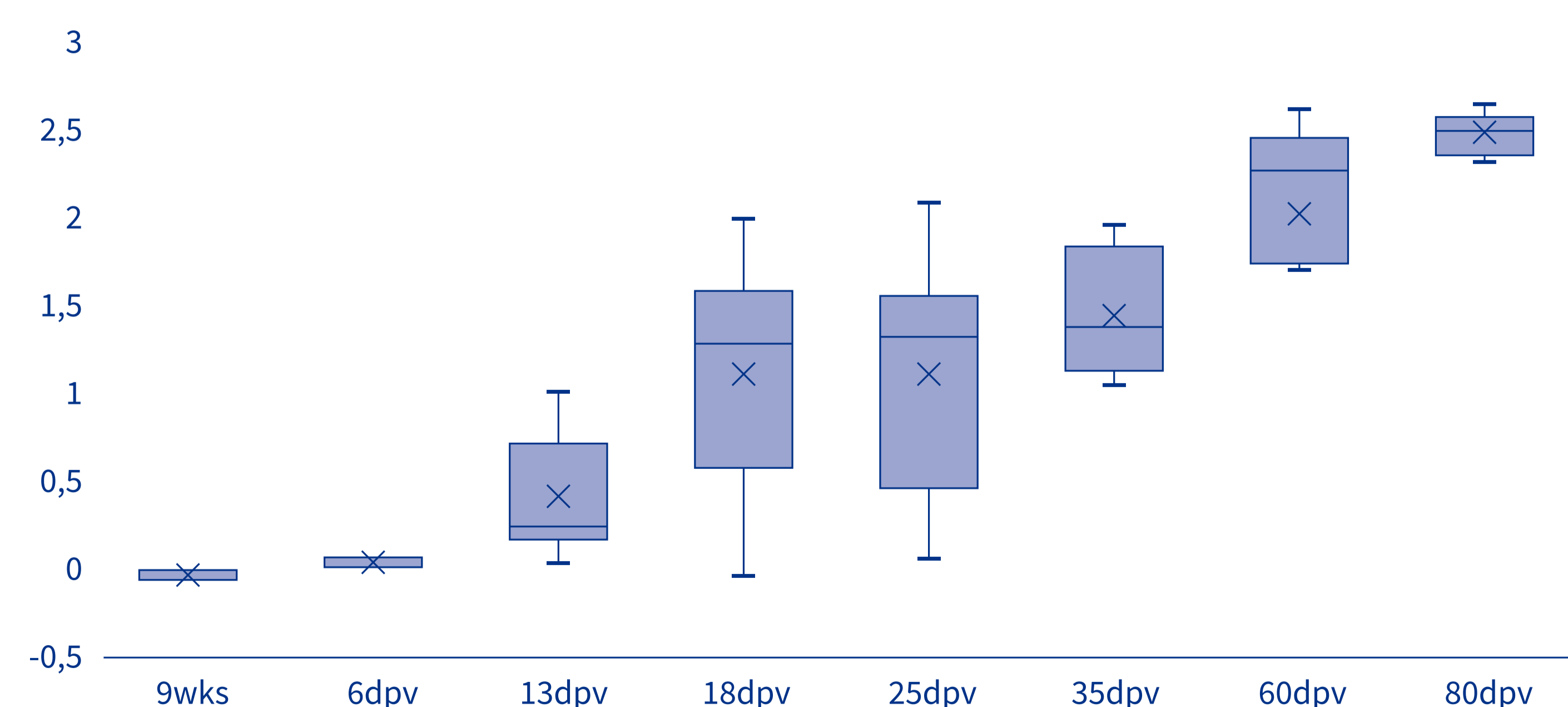


Figure 1. S/P ratio by ELISA test. Seroconversion after vaccination with UNISTRRAIN[®] PRRS

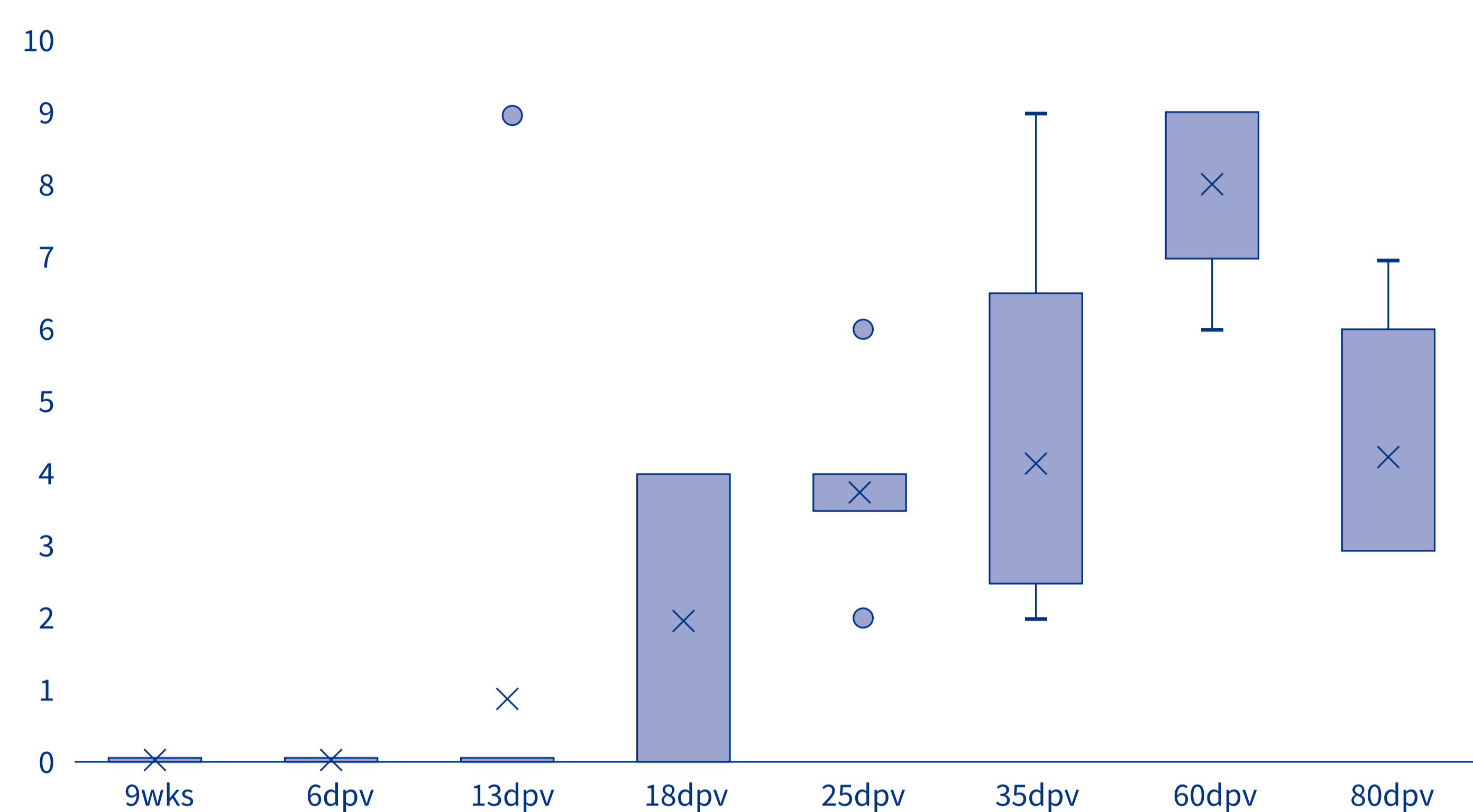


Figure 2. Geometric mean of the titer (GMT) of NAs (expressed as log₂) against UNISTRRAIN[®] PRRS

Table 1. Mortality data from each batch

	Number of animals entered	Mortality rate	Vaccine
Jan-21	2,052	21.9%	PRRSV2 vaccine
Feb-21	1,900	19.6%	
Mar-21	2,246	22.2%	
Apr-21	1,682	20.3%	
May-21	3,271	17.7%	
Jun-21	2,568	23.1%	
Jul-21	1,454	20.4%	
Aug-21	850	26.4%	
Sep-21	3,253	10.8%	
Oct-21	1,851	14.9%	UNISTRRAIN [®] PRRS*
Nov-21	1,292	7.3%	
Dec-21	2,290	5.1%	
Jan-22	2,147	7.0%	
Feb-22	2,268	4.6%	
Mar-22	2,697	4.9%	

$p < 0,001^{***}$, a logistic regression was performed

Discussion and conclusion

Based on the results of this trial in a farm coinfecting with PRRSV1 and PRRSV2 field strains, after vaccination with UNISTRRAIN[®] PRRS ID the mortality was reduced significantly compared to the previous situation with a PRRSV2 MLV.

Additionally, Neutralizing Antibodies, which has been demonstrated to be really important to eliminate the virus, shorten viremia, and further mitigate PRRSV-related syndromes (4,5), appeared 18 days after vaccination with UNISTRRAIN[®] PRRS.

References

- Holtkamp et al., 2013. J. Swine Heal. Prod. 21, 72–84.
- Nan Y et al., 2017. Front. Microbiol. 1635, 1-17.
- Kitchodok R et al., 2019. APVS Congress, 259.
- Osorio, 2002.
- López, 2007.