

Table S1. Characteristics and results of the eligible studies (trials) included in the systematic review and meta-analysis examining the effectiveness of commercial vaccines against *L. intracellularis* in pigs.

Author (year)	Country	Setting	Vaccine type (dose, route)	Age of vaccination	Comparator	Challenge type	Production phase	Extracted outcome		
								ADWG (g/day); mean \pm SD, sample size	Fecal shedding	Mortality (percentage)
Visscher et al. 2018 [43]	Germany	Controlled trial	Live (2ml, drench)	3w	Unvaccinated	Natural exposure	Nursery	V: 894 \pm 73 (n = 9) C: 821 \pm 114.3 (n = 18)	Excluded (the number of each group was not indicated)	NR
Kroll et al. 2004 [a] [44]	Australia	Controlled trial	Live (2ml, drench)	3w	unvaccinated	Artificial challenge (virulent LI isolate 10 ^{7.7} TCID ₅₀)	Nursery	V: 730 \pm 160.9 (n = 15) C: 660 \pm 159.5 (n = 10)	2wpc; V: 5/15, C: 8/10 3wpc; V: 0/15, C: 4/10	NR
Kroll et al. 2004 [b] [44]			Live (2ml, drench) ^c					V: 550 \pm 160.9 (n = 40) C: 490 \pm 159.5 (n = 20)	2wpc; V: 6/20, C: 14/20 3wpc; V: 4/20, C: 15/20	
Peiponen et al. 2018 [a] [40]	Finland	Field trial	Live (2ml, drench)	3w	Placebo with sham vaccination (Circo virus)	Natural exposure	Nursery	V: 325.1 \pm 123.1 (n = 842) C: 306 \pm 123.3 (n = 905)	NR	V: 6.5% (64/985) ^a C: 5.6% (55/981)
Peiponen et al. 2018 [b] [40]							Growing-finishing	V: 938.6 \pm 154 (n = 800) C: 907.7 \pm 141 (n = 800)		
Jacobs et al. 2020 [a] [46]	Netherland	Controlled trial	Inactivated (0.2ml. ID)	3w	unvaccinated	Artificial challenge (Intestinal	Nursery	V: 956 \pm 119 (n = 25)	Excluded (only continuo	NR

						mucosa homogenate from infected pig)		C: 674 ± 381 (n = 25)	us data provided)	
Jacobs et al. 2020 [b] [46]			Live (2ml, drench)				Nursery	V: 812 ± 287 (n = 25) C: 674 ± 381 (n = 25)		
Nathues et al. 2008 [47]	Germany	Field trial	Live (2ml. drinking or drench)	11w or 8- 9w	unvaccinated	Natural exposure	Growing- finishing	V: 669.1 ± 35 ^b (n = 60) C: 644.5 ± 24.8 ^b (n = 30)	Excluded : timeline following the challenge was not indicated	NR
McOrist et al. 2007 [a] [48]	Australia	Field trial	Live (2ml. drinking)	3-6w	Placebo with zinc oxide	Natural exposure	Growing- finishing	V: 830 ± 160.9 (n = 160) C: 770 ± 108.7 (n = 160)	NR	Excluded: no death was caused by PPE
McOrist et al. 2007 [b] [48]								V: 790 ± 160.9 (n = 378) C: 760 ± 108.7 (n = 399)		V: 0% (0/378) ^h C: 1.2% (5/399)
McOrist et al. 2007 [c] [48]								V: 850 ± 160.9 (n = 1076) C: 700 ± 159.5 (n = 2139)		V: 0% (0/1076) C: 1.5% ^c (32/2139)
Weibel et al. 2012 [7]	Switzerland	Field trial	Live (2ml, drench)	3w	Placebo with adjuvant	Natural exposure	Growing- finishing	V: 774 ± 106 (n = 292) C: 751 ± 108.7 (n = 160)	NR	V: 5.3% (17/318) C: 8.3% (27/327)
Caspari et al. 2009 [6]	Switzerland	Field trial	Live (2ml, drench)	3w	Placebo with 0.9%NaCl	Natural exposure	Growing- finishing	V: 795 ± 106 (n = 256) C: 777 ± 108.7 (n = 279)	NR	NR
Hardge et al. 2004 [a] [50]	Germany	Field trial	Live (2ml, drench)	7w	Unvaccinated	Natural exposure	Growing- finishing	V: 702 ± 106 (n = 278) C: 674 ± 108.7 (n = 278)	NR	V: 4.98% (14/278) C: 4.68% (13/278)

Hardge et al. 2004 [b] [50]				3w				V: 692 ± 106 (n = 273) C: 682 ± 108.7 (n = 271)		Excluded (mortality partially caused by respiratory syndrome)
Park et al. 2013 [a] [38]	Korea	Field trial	Live (2ml, PO)	32 days	Placebo with sham vaccinations (PRRS, swine erysipelas, Japanese encephalitis, hog cholera vaccine)	Natural exposure	Nursery	V: 509 ± 86 (n = 323) C: 500 ± 90 (n = 315)	NR	Excluded (total death number was not provided)
Park et al. 2013 [b] [38]							Growing-finishing	V: 736.8 ± 155.3 (n = 595) C: 716.8 ± 173.5 (n = 575)		
Deitmer et al. 2008[39]	Germany	Field trial	Live (2ml, PO)	32 days	Placebo with Tylosin	Natural exposure	Nursery	V: 421 ± 160.9 (n = 470) C: 404 ± 159.5 (n = 421)	NR	NR
Bornhorn et al. 2007 [41]	Germany	Field trial	Live (2ml, PO)	3w	Placebo with Tylosin	Natural exposure	Growing-finishing	V: 833 ± 41.7 ^d (n = 2208) C: 808 ± 42.7 ^d (n = 560)	NR	NR
Thaker et al. 2006 [42]	Hungary	Field trial	Live (2ml, drench)	10w	Unvaccinated	Natural exposure	Growing-finishing	V: 799 ± 49 (n = 3810) C: 650 ± 92 (n = 3809)	NR	V: 2% (80/3810) C: 6.9% (266/3809)
Almond et al. 2006 [3]	Hungary	Field trial	Live (2ml, drinking)	9-11w	Unvaccinated	Natural exposure	Growing - Finishing	V: 780 ± 45 (n = 4112) C: 660 ± 71 (n = 4188)	NR	V: 0.2% (8/4112) C: 14.9% (624/4188)
Jacobs et al. 2019 [a] [49]	Netherland	Controlled trial	Inactivated (2ml. IM)	4w	Unvaccinated	Artificial challenge (Intestinal mucosa homogenate from infected pig)	Nursery	V: 935 ± 306 (n = 25) C: 550 ± 460 (n = 25)	Excluded (continuous data only provided)	NR
Jacobs et al. 2019 [b] [49]							Growing - Finishing	V: 956 ± 119 (n = 25)		

								C: 674 ± 381 (n = 25)		
Jacobs et al. 2019 [c] [49]			Live (2ml, drench)				Nursery	V: -229 ± 1301 (n = 25) C: -655 ± 723 (n = 25)		
Jacobs et al. 2019 [d] [49]							Growing - Finishing	V: 655 ± 385 (n = 25) C: 550 ± 460 (n = 25)		
Jacobs et al. 2019 [e] [49]		Field trial	Inactivated	12w	Placebo with sham-vaccination (PRRS vaccine)	Natural exposure	Growing - Finishing	Excluded (control group came from historical data)	NR	V: 0% (0/1435) C: 0.7% (11/1441)
Riber et al. 2015[51]	Denmark	Controlled trial	Live (2ml, drench)	5-6w	Placebo with antibiotics (tiamulin)	Artificial challenge (10 ¹⁰ virulent LI strain)	NR	Excluded (only qualitative analysis provided)	6dpc; V: 6/8, C:6/7 14dpc; V:8/8, C:7/7 18dpc; ^e V: 5/5, C:7/7	NR

Abbreviations: NR, not reported; wpc, week post-challenge; PO, per oral; CI, confidence interval

^a The number of death estimated based on the percentage and case number

^b Data extracted from the graph to include both mean and SD value

^c Mortality rate caused by PPE in the control group was estimated and ranged between 1.5%-11.3%. For data analysis, a 1.5% mortality rate was selected.

^d The pooled data were obtained from eight farms.

^e The number of samples is not consistent in the vaccinated group, since some data were missing in the original study.

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