

Supplementary data

Table S1. The Anti-recombinant protective antigen (rPA) and anti-formalin inactivated spores (FIS) IgG titres (\log_{10}) in cattle vaccinated at week 0 and 3 and measured at week0, 3 and 5 (with means and standard deviations). Cattle were vaccinated twice (week 0 and3) with purified rPA(PrPA)+FIS+Pen-G (penicillin-G), crude rPA (CrPA)+FIS+Pen-G, SLSV+FIS+Pen-G, SLSV and NegCtl+Pen G (vaccinated with Emulsigen-D®/Alhydrogel® plus Pen-G).

Serology	Vaccine type	Week 0	Week 3	Week 5
Anti-rPA IgG ELISA titre (\log_{10})	NegCtl+Pen-G	1,25 ± 0,32	1,36 ± 0,34	1,54 ± 0,30
	PrPA+FIS+Pen-G	1,17 ± 0,29	3,30 ± 0,34*	4,45 ± 0,33***
	CrPA+FIS+Pen-G	1,25 ± 0,40	2,93 ± 0,40*	4,30 ± 0,75***
	SLSV+Pen-G	1,17 ± 0,22	1,64 ± 0,41	2,18 ± 0,41
	SLSV	1,22 ± 0,21	2,88 ± 0,38	4,29 ± 0,40***
Anti-FIS IgG ELISA titre (\log_{10})	NegCtl+Pen-G	1,14 ± 0,05	1,32 ± 0,34	1,53 ± 0,40
	PrPA+FIS+Pen-G	1,21 ± 0,25	3,36 ± 0,09*	4,58 ± 0,36***
	CrPA+FIS+Pen-G	1,21 ± 0,29	3,68 ± 0,38*	4,48 ± 0,45***
	SLSV+Pen-G	1,14 ± 0,18	3,11 ± 0,38*	4,46 ± 0,40***
	SLSV	1,27 ± 0,20	3,37 ± 0,35*	4,53 ± 0,29***
TNA ^c titre (NT ₅₀) (\log_{10})	NegCtl+Pen-G	ND	1,38 ± 0,31	1,40 ± 0,36
	PrPA+FIS+Pen-G	ND	2,43 ± 0,40	3,46 ± 0,38***
	CrPA+FIS+Pen-G	ND	2,15 ± 0,19	3,30 ± 0,49***
	SLSV+Pen-G	ND	1,48 ± 0,22	1,56 ± 0,36
	SLSV	ND	2,26 ± 0,27	3,40 ± 0,43***

^aMean \log_{10} titres ± 95% confidence interval, ^bTitres were compared to the respective pre-vaccination titres (**** $p < 0.0001$, *** $p < 0.001$, ** $p < 0.01$, * $p \leq 0.05$), ^cTNA; Lethal toxin neutralization titres, rPA; Recombinant protective antigen, FIS; Formaldehyde inactivated spore, ND; Not detected, ns; Not significant, PrPA; Purified recombinant protective antigen, CrPA; Crude recombinant protective antigen, Pen-G; Penicillin-G, SLSV; Sterne live spore vaccine, NegCtl; Negative control

Table S2. The anti-recombinant protective antigen (rPA) and anti-formalin inactivate *Bacillus anthracis* 34F2 spores (FIS) titres (log₁₀) of different isotypes in vaccinated cattle (with means and standard deviations) of Immunoglobulin isotypes titre of vaccinated cattle measured at weeks 0, 3 (two weeks after first vaccination) and 5 (two weeks after second vaccination).

Serology	Vaccine types	IgM			IgG1			IgG2		
		Week 0	Week 3	Week 5	Week 0	Week 3	Week 5	Week 0	Week 3	Week 5
Anti-rPA Igs ELISA titre (log ₁₀)	NegCtl+Pen-G	1,17±0,23	1,51±0,14	1,34±0,36	1,50±0,35	1,52±0,35	1,50±0,33	1,65±0,49	1,51±0,35	1,50±0,32
	PrPA+FIS+Pen-G	1,62±0,24	3,05±0,36**	3,19±0,35**	1,55±0,33	2,98±0,45*	3,26±0,31***	1,50±0,29	2,79±0,12**	3,39±0,48***
	CrPA+FIS+Pen-G	1,57±0,32	2,94±0,38**	3,06±0,45**	1,52±0,32	2,89±0,51**	3,07±0,22**	1,58±0,23	2,65±0,18*	3,40±0,38***
	SLSV+Pen-G	1,56±0,32	1,70±0,28	1,76±0,21	1,51±0,28	1,61±0,22	1,83±0,30	1,58±0,22	1,69±0,77	1,93±0,41
	SLSV	1,64±0,23	2,84±0,39**	3,02±0,45**	1,51±0,28	2,81±0,27**	2,93±0,23**	1,54±0,24	2,66±0,21*	3,56±0,32***
Anti-FIS Igs ELISA titre (log ₁₀)	NegCtl+Pen-G	1,62±0,37	1,65±0,31	1,62±0,43	1,73±0,09	1,60±0,30	1,72±0,17	1,68±0,136	1,57±0,36	1,53±0,37
	PrPA+FIS+Pen-G	1,64±0,15	2,95±0,23**	3,09±0,27**	1,62±0,26	2,98±0,38**	3,11±0,37***	1,61±0,23	2,71±0,31*	3,24±0,32***
	CrPA+FIS+Pen-G	1,52±0,30	2,89±0,23**	3,06±0,37**	1,57±0,21	2,86±0,24*	2,98±0,19**	1,60±0,23	2,75±0,30*	3,13±0,44***
	SLSV+Pen-G	1,58±0,22	2,74±0,23*	2,90±0,24**	1,62±0,21	1,85±0,37**	2,29±0,46**	1,57±0,21	1,97±0,30*	2,00±0,41**
	SLSV	1,51±0,27	2,91±0,20**	3,08±0,27***	1,63±0,23	2,74±0,29*	2,94±0,11**	1,66±0,15	2,60±0,24*	2,96±0,35**

^aMean log₁₀ titres ± 95% confidence interval, ^bTitres were compared to the respective pre-vaccination titres (****p* < 0.001, ***p* < 0.01, **p* ≤ 0.05). rPA83; Recombinant protective antigen 83, PrPA; Purified rPA83, CrPA; Crude rPA83, Pen-G; Penicillin-G, SLSV; Sterne live spore vaccine, NegCtl; Negative control (Emulsigen-D®/Alhydrogel® and Pen-G).