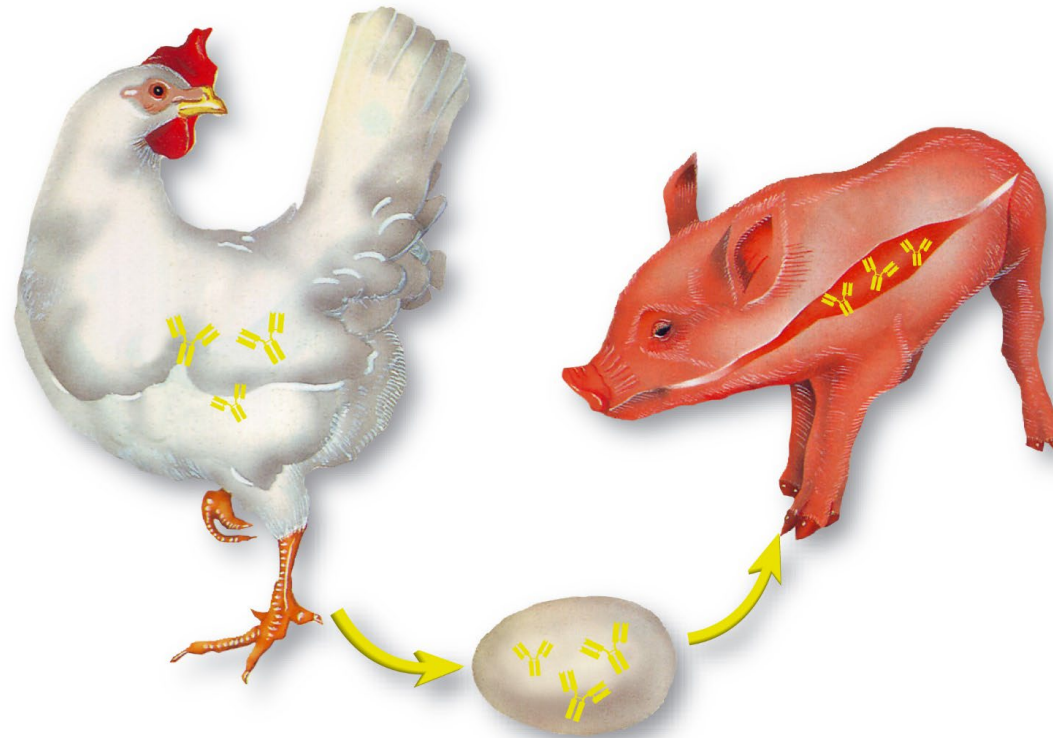


Specific IgY for piglets



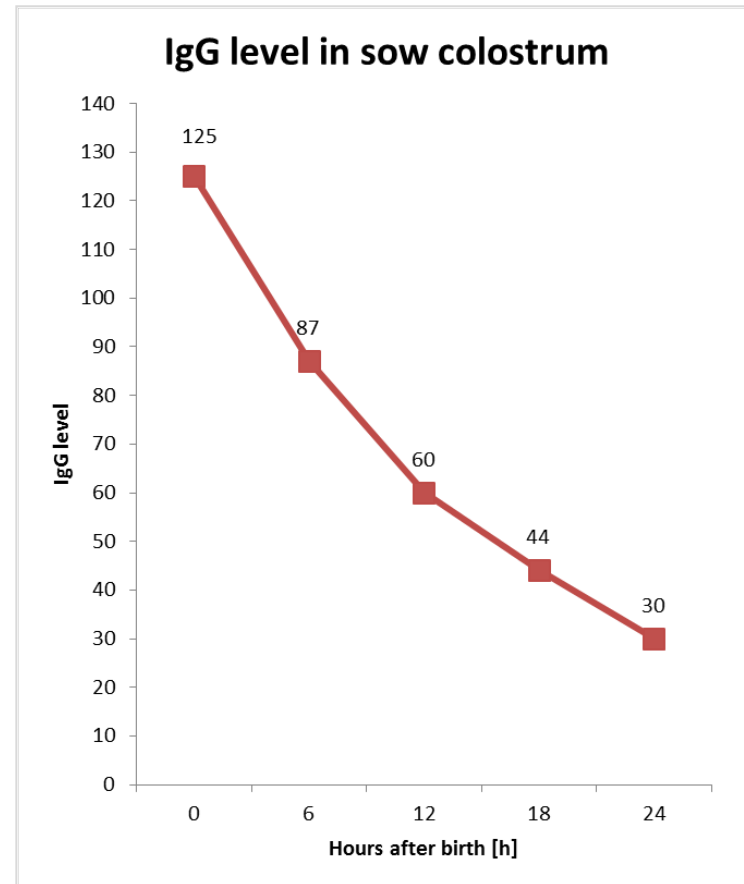
Sow colostrum

- Colostrum is rich in IgG
- IgG are absorbed only in the first hours after birth
- Piglets deprived of colostrum often die
- Immunoglobulins in colostrum are hard to replace in contrast to other nutrients!

Components	Porcine	
	Colostrum	Milk
Protein, %	15	5.5
Caseins, %	1.5	2.75
Whey, %	13.5	2
IgG, mg/ml	96	1
IgA, mg/ml	21	5
IgM, mg/ml	9	1.5

Immunological challenge: Low immune status

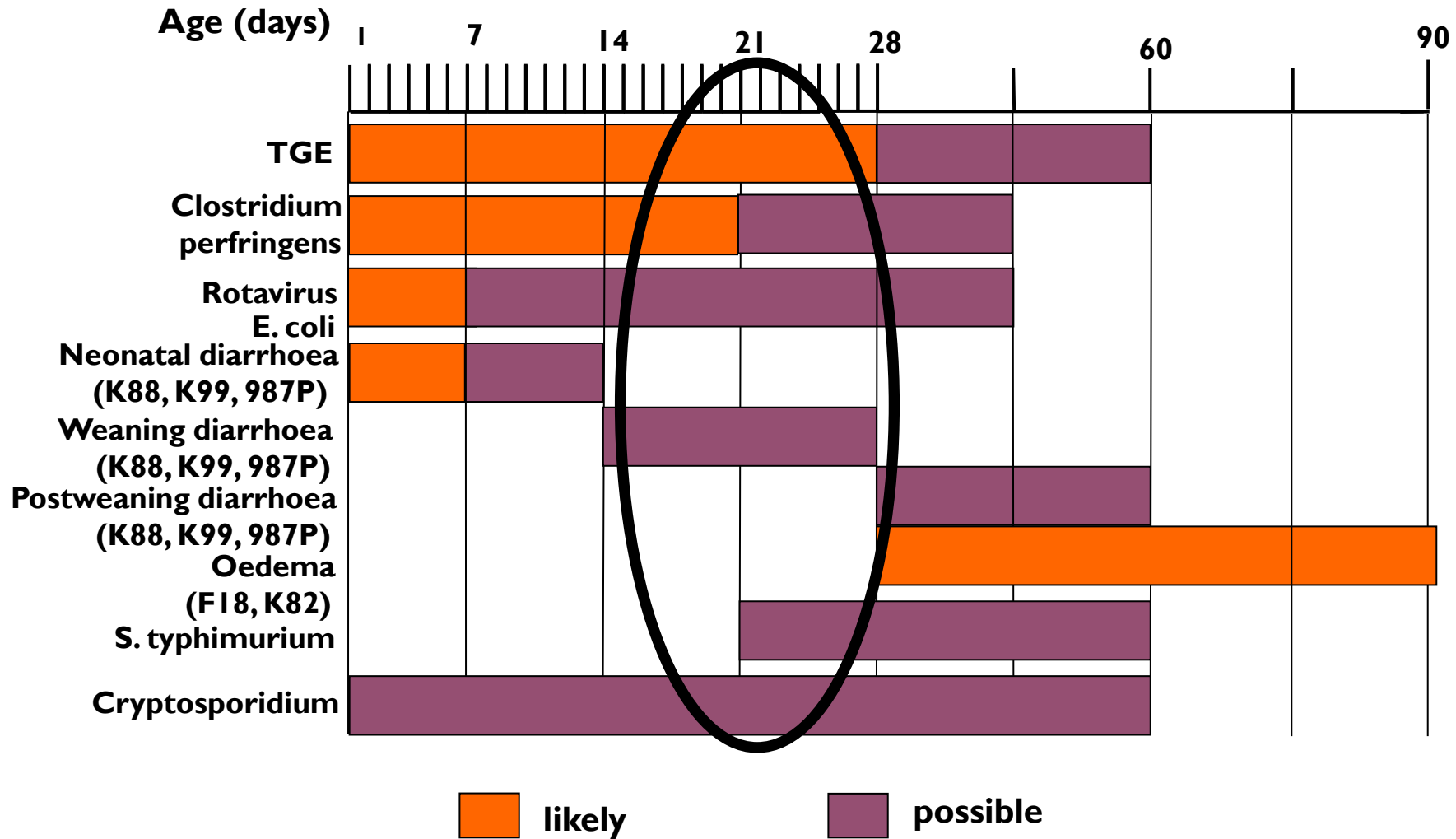
- Piglets are born without immune protection
- Essential supply of immunoglobulins by colostrum
- The immunoglobulin level in sow colostrum rapidly decreases during the first 24 hours after birth



Immunity gap in young animals



Pathogenic germs of piglets



Specific IgY powder Trials

**Passive immunization of Specific IgY against K88-, K99-,
and 987P-fimbriae by experimental enterotoxigenic
Escherichia coli infection in neonatal piglets**

Infection and Immunity (1992, 60: 998-1007)

Materials and methods

Animals: Neonatal piglets

IgY Antibody: against K88, K99, and 987P fimbria of
Enterotoxigenic *Escherichia coli* (ETEC)

Groups: Control

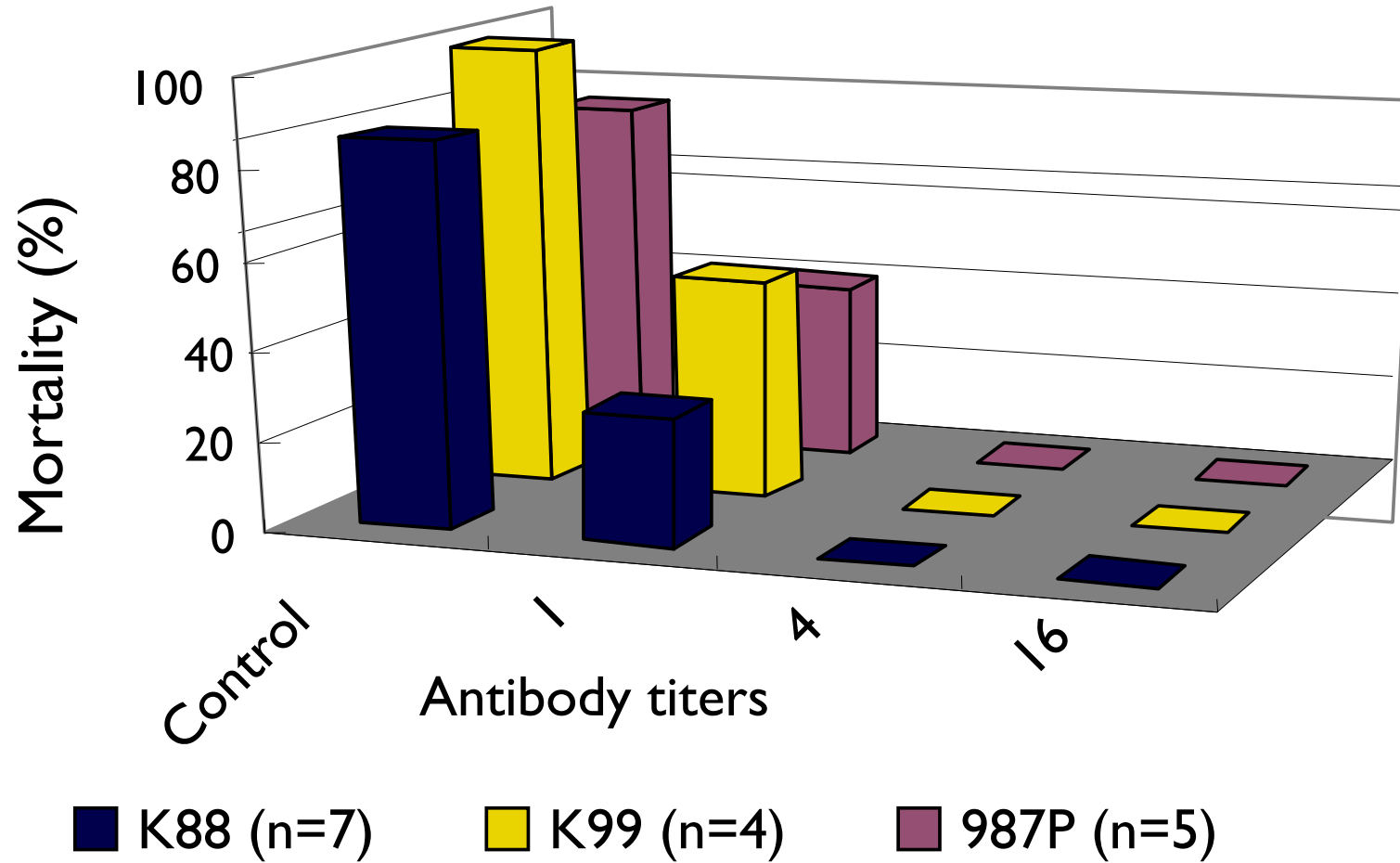
Specific IgY Antibody (1 titer, 4 titers, 16 titers)

Challenge: K88⁺ and K99⁺ ETEC; 1×10^{12} CFU / piglet
987P⁺ ETEC; 1×10^{10} CFU / piglet

Test period: 1 to 7 days of age

Observation: 1. Clinical symptoms
2. Bacteria detection

Mortality



Clinical signs due to ETEC infection

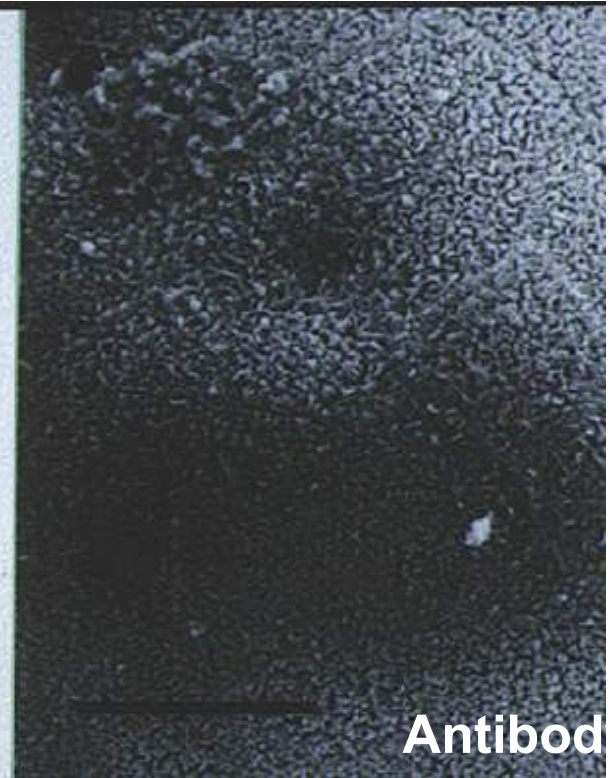
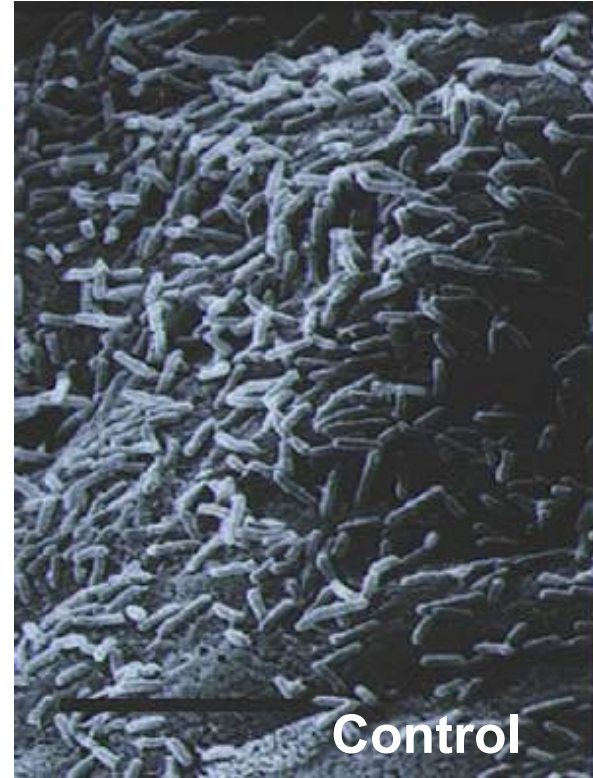
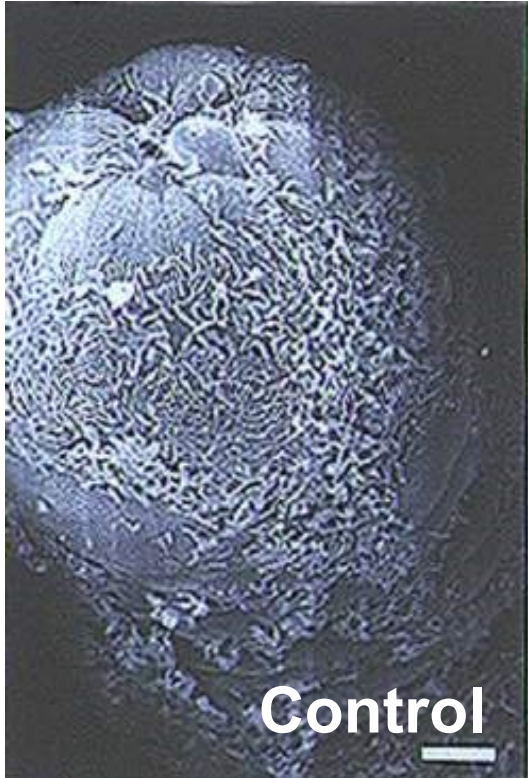


Control



Specific IgY

Scanning electron microscopic observations



**Passive immunization of Specific IgY against
F18-fimbriae by experimental enterotoxigenic
Escherichia coli infection in weaned pigs**

The Journal of Veterinary Medical Science (1997, 59: 917-921)

Material and methods

Animals: Weaned piglets

IgYAntibody: against F18-fimbrial of *Escherichia coli*

Groups: Control

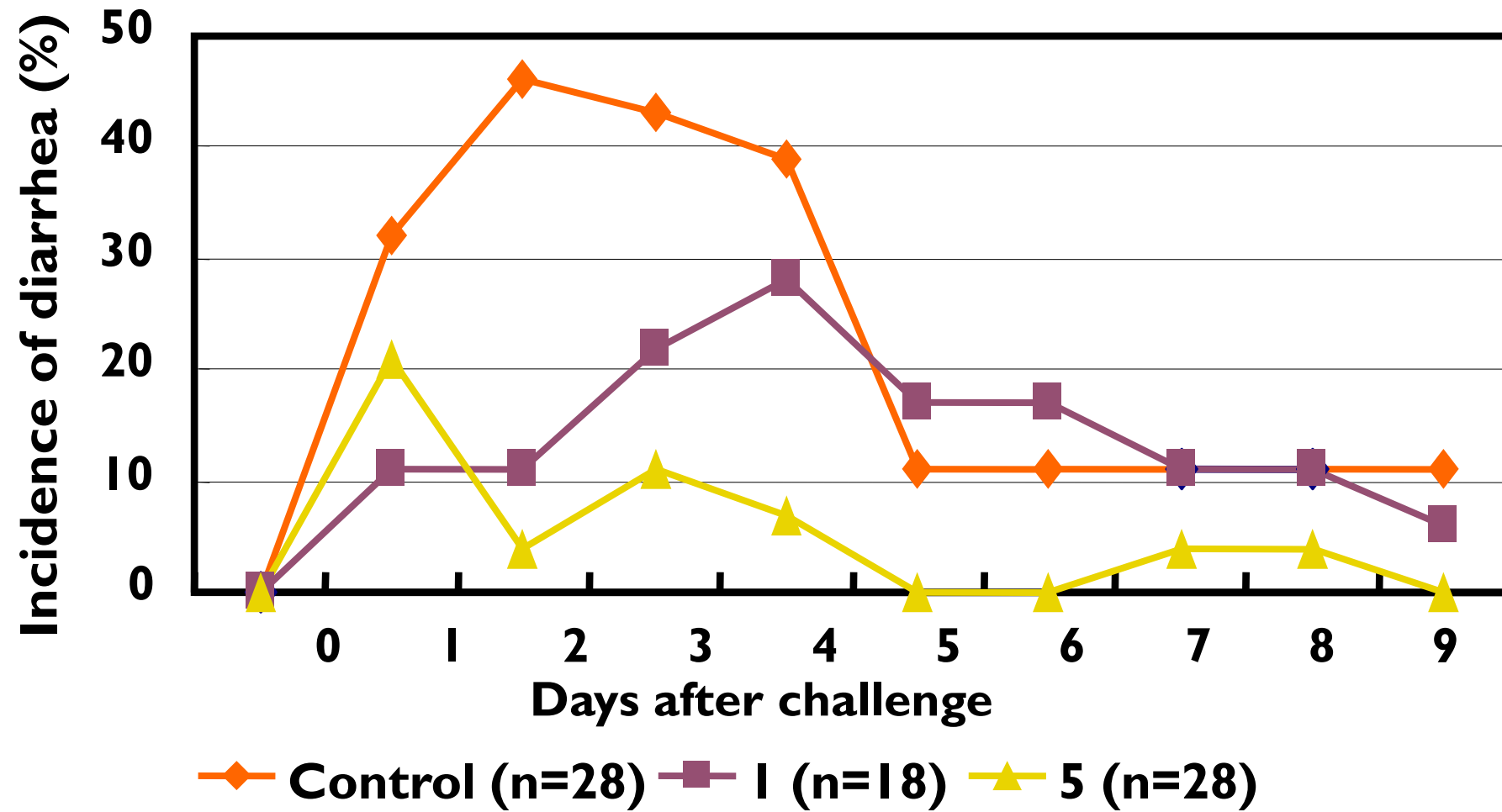
Specific IgY Antibody (1 titer, 5 titers)

Challenge: F18⁺ ETEC; 1×10^{11} CFU / piglet

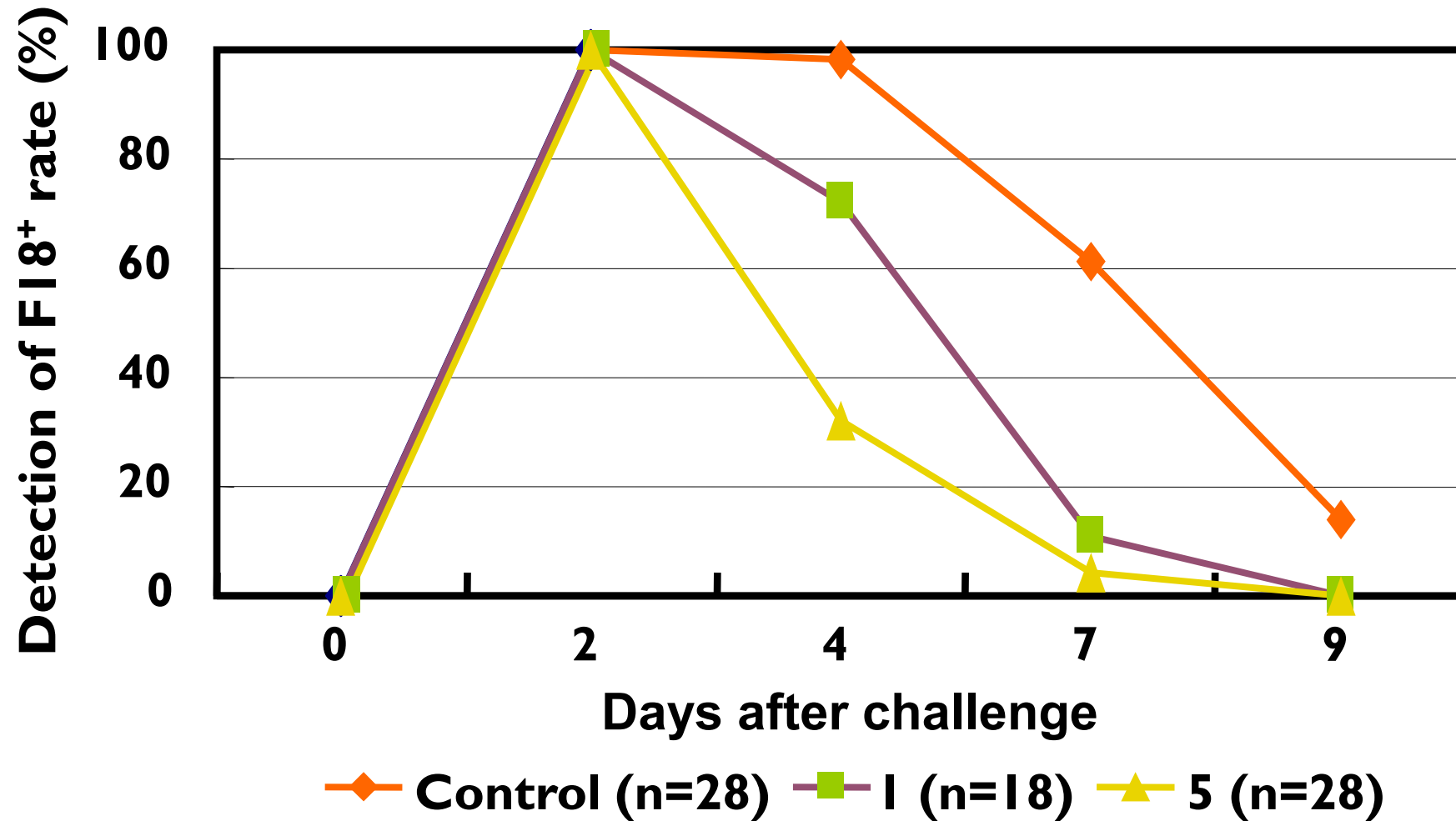
Test period: 28 to 36 days of age

Observation: 1. Clinical symptoms
2. Bacteria detection
3. Body weight

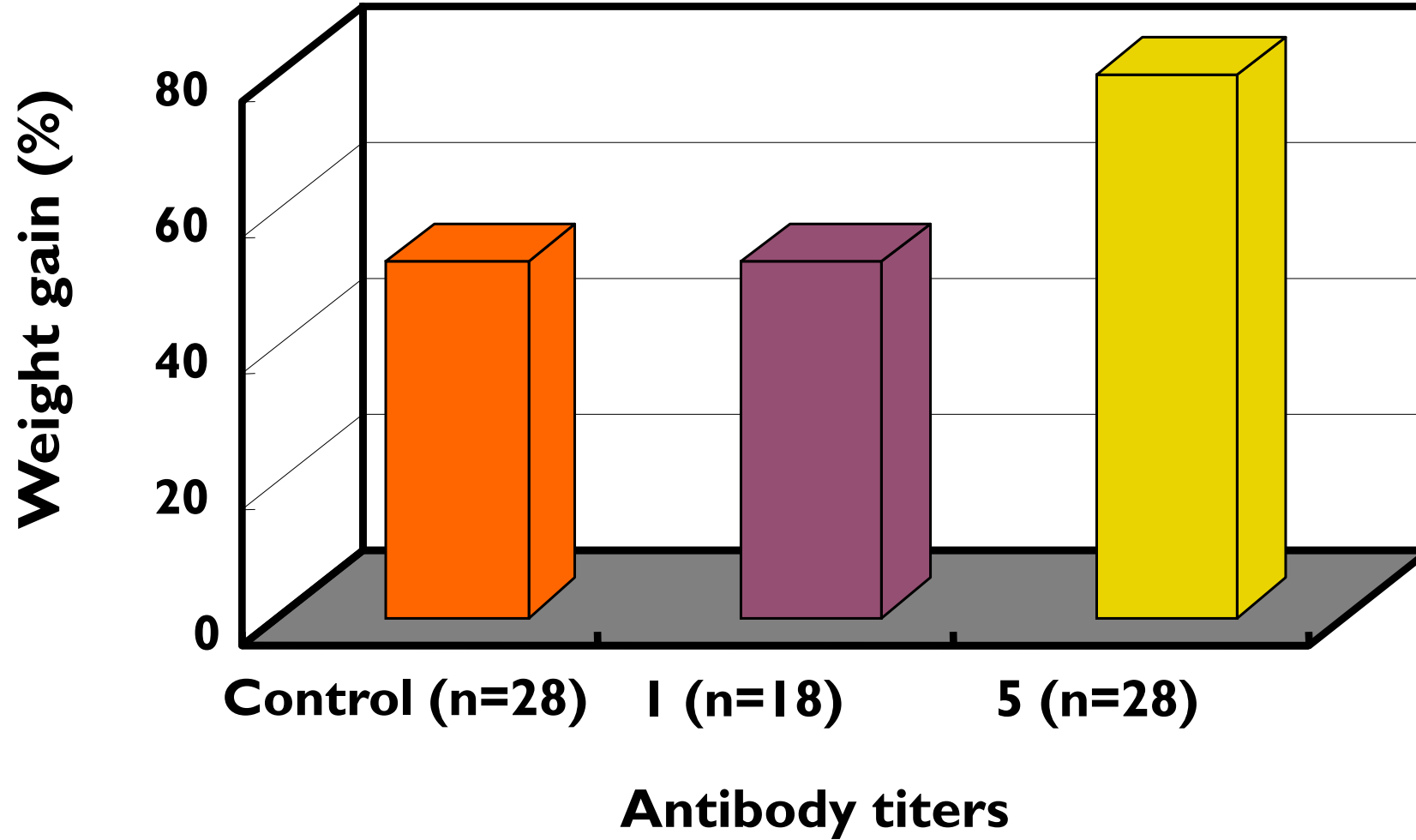
The Specific IgY concept: scientific information



The IgY concept: scientific information



The IgY concept: scientific information



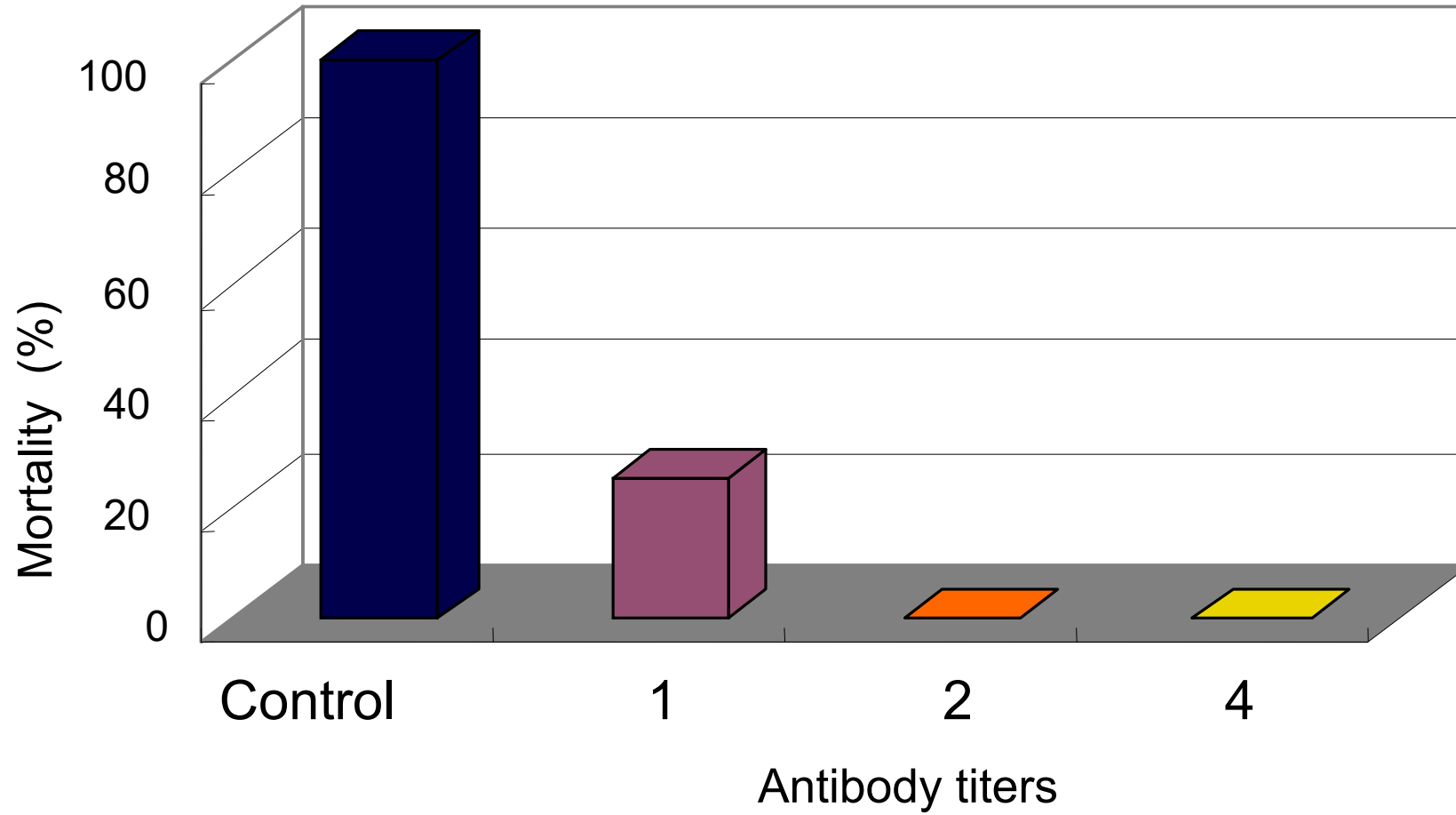
**Protective effect of IgY against Porcine
Epidemic Diarrhea Virus (PEDV) in
experimental infection of neonatal piglets**

Proc. Jpn. Pig Vet. Soc. (2019, 73; 25-31)

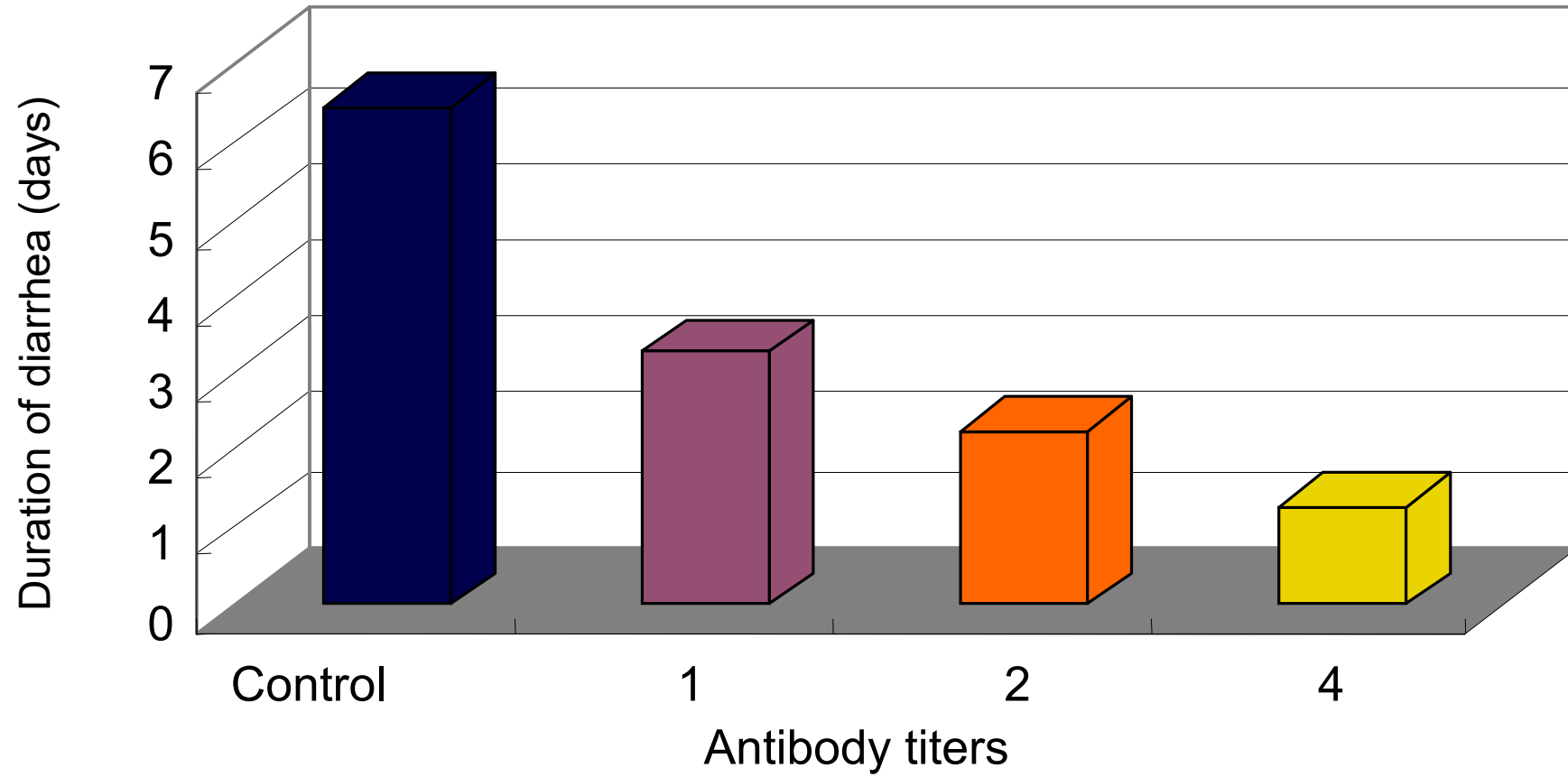
Materials and methods

- Animals: Neonatal piglets
- Antibody: against PED virus Group (n=4):
Control
Specific IgY Antibody; 1 titer, 2 titers, 4 titers
- Challenge: PED virus, 1×10^6 TCID₅₀ / piglets
- Test Period: 1 day old to 7 days
- Observation:
 1. Clinical symptom
 2. Fecal scores

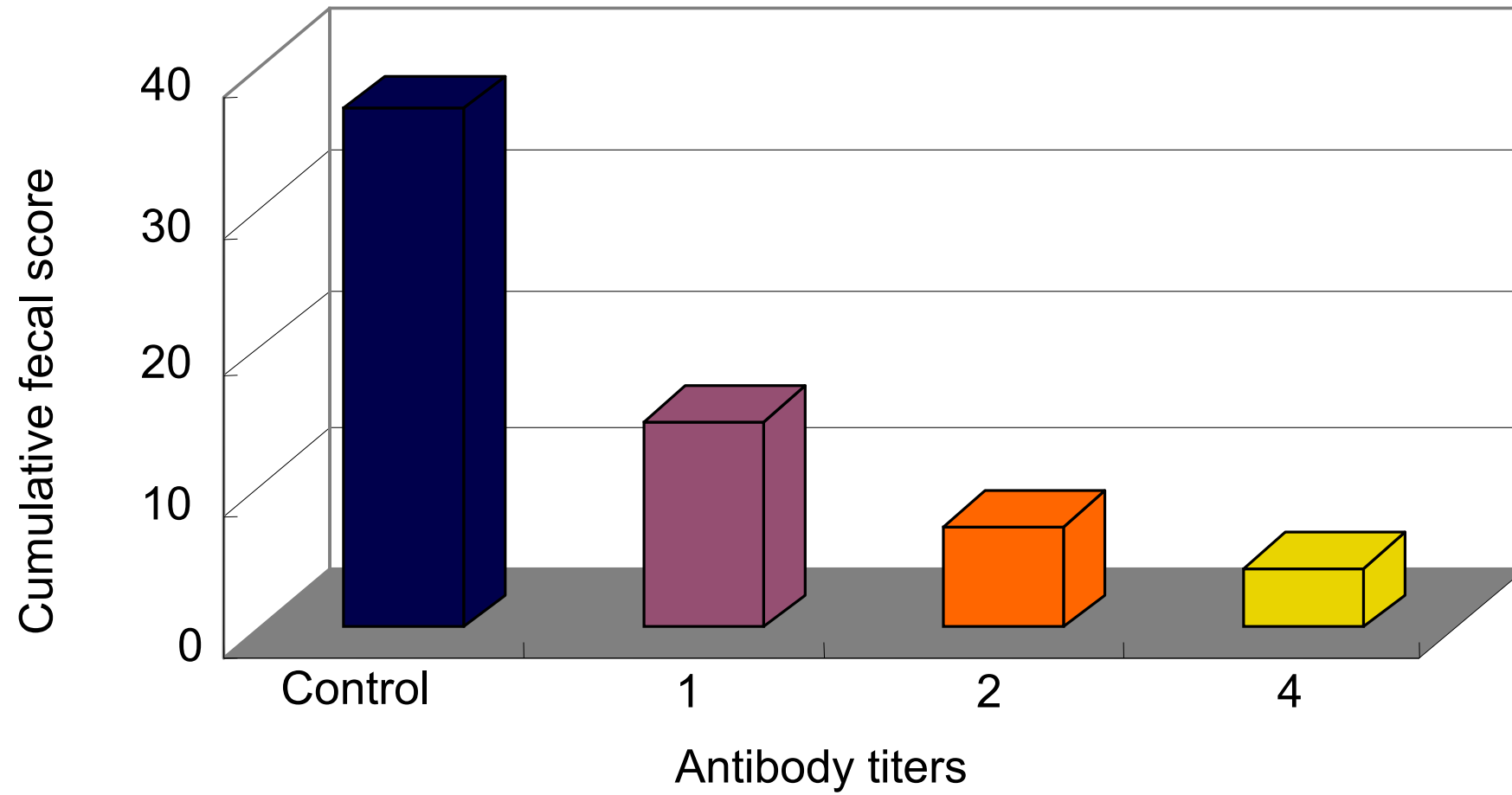
Results



Results

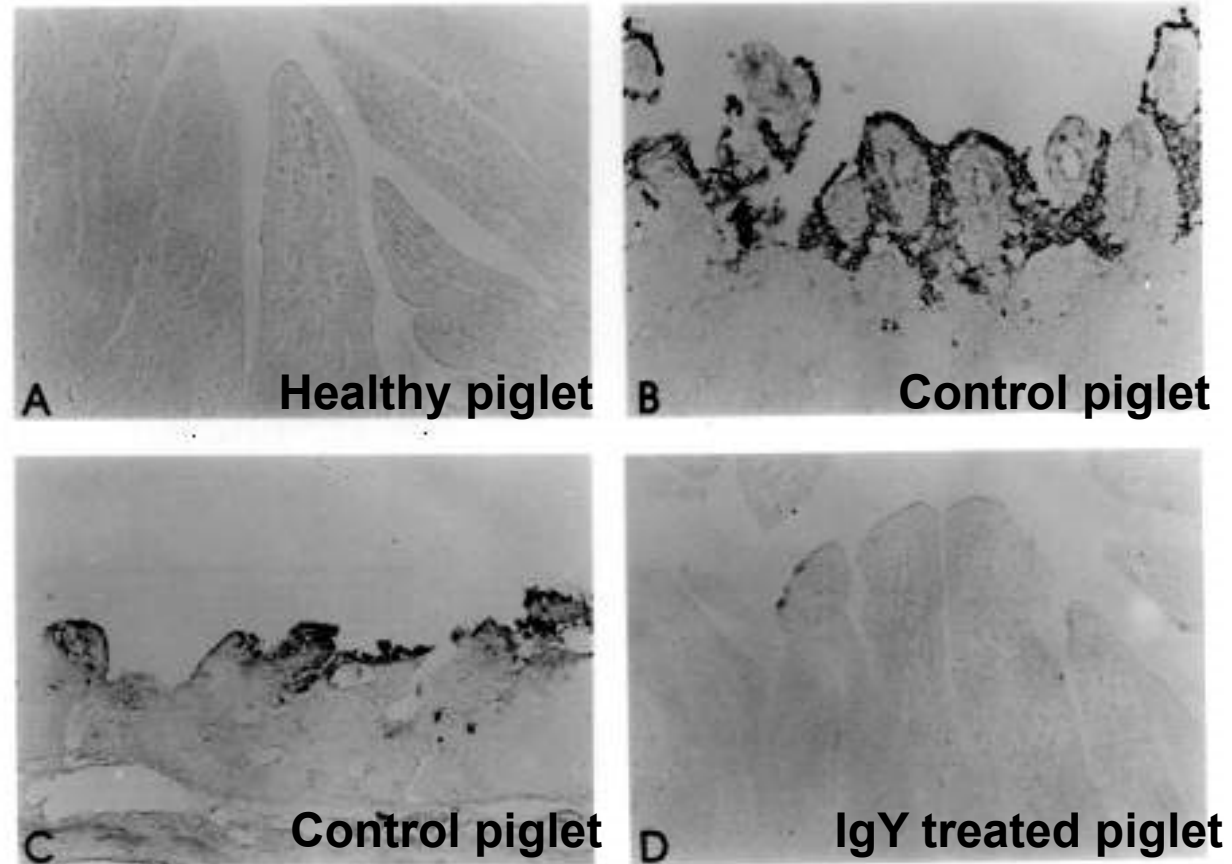


Results



Results

Intestinal tissues after negative staining



**Passive immunization of IgY against
experimental Transmissible Gastroenteritis
Virus (TGEV) in neonatal piglets**

Materials and methods

Animals: Neonatal piglets

Specific IgY Antibody: Against Transmissible Gastroenteritis Virus

Groups: Control vs IgY

Challenge: TGEV; 100 PDD50 / piglet

Test period: 1 to 14 days of age

Observations:

1. Clinical symptoms
2. Body weight gain

Results

	Mortality (%)	Duration of diarrhea (days)	Cumulative fecal score	Weight gain (%)
Control (n=5)	80	12.4	70.0	-19.9
Specific IgY (n=6)	0*	5.2**	21.5**	7.7**

*** p<0.05, ** P<0.01, compared with control group**

Commercial Sources

- Specific IgY reduce diarrhea
- Specific IgY antibodies enhance growth and feed intake in piglets
- Proven by scientific studies
- Pasteurized to secure quality and product safety

**Specific IgY powder
Field Trials**

Specific IgY Effects on Average Daily Gain (ADG)

	Country	Year	Days after weaning	ADG/ Control	ADG/ Specific IgY	ADG/ Improvement	
A	Belgium	2003	26	419,0	445,0	6,21%	Control with Colistin
B	Japan	2004	14	173,0	188,0	8,67%	
C	Japan	2004	14	172,0	206,0	19,77%	
D	Germany	2004	41	444,0	462,0	4,05%	
E	Germany	2004	21	279,0	319,0	14,34%	
F	Vietnam	2004	14	212,0	264,0	24,53%	
G	Vietnam	2004	14	230,0	290,0	26,09%	
H	Vietnam	2004	14	178,0	187,0	5,06%	
I	Germany	2005	21	387,0	402,0	3,88%	Only first 8 days with Specific IgY
J	Spain	2006	21	333,3	385,7	15,72%	
K	UK	2006	22	318,0	350,0	10,06%	
L	Taiwan	2007	28	430,0	480,0	11,63%	Control with Amoxicillin 500ppm + CTC 500ppm
M	Thailand	2008	42	362,6	467,2	28,82%	Control with Amoxicillin 150ppm, tiamulin 150ppm and colistin 150ppm
N	Thailand	2008	42	362,6	513,6	41,63%	Control with Amoxicillin 150ppm, tiamulin 150ppm and colistin 150ppm Test + Specific IgY
O	Holland	2008	27	277,0	316,0	14,08%	
P	Germany	2008	15	164,3	182,1	10,89%	

Specific IgY : field trials

- Effects of Specific IgY in piglet feed (Germany, 2004)
- Effects of Specific IgY in weaning feed (Germany, 2005)
- Effects of Specific IgY in piglet feed (Germany, 2004)
- Effects of Specific IgY in piglet feed (Benelux, 2003)
- Effects of Specific IgY in weaning feed (Spain, 2006)
- Effect of Specific IgY in weaning feed (Netherlands, 2008)
- Effects of Specific IgY on weight gain and feed conversion when applied on-top of a blood plasma diet (Japan, 2008)

Specific IgY: field trials

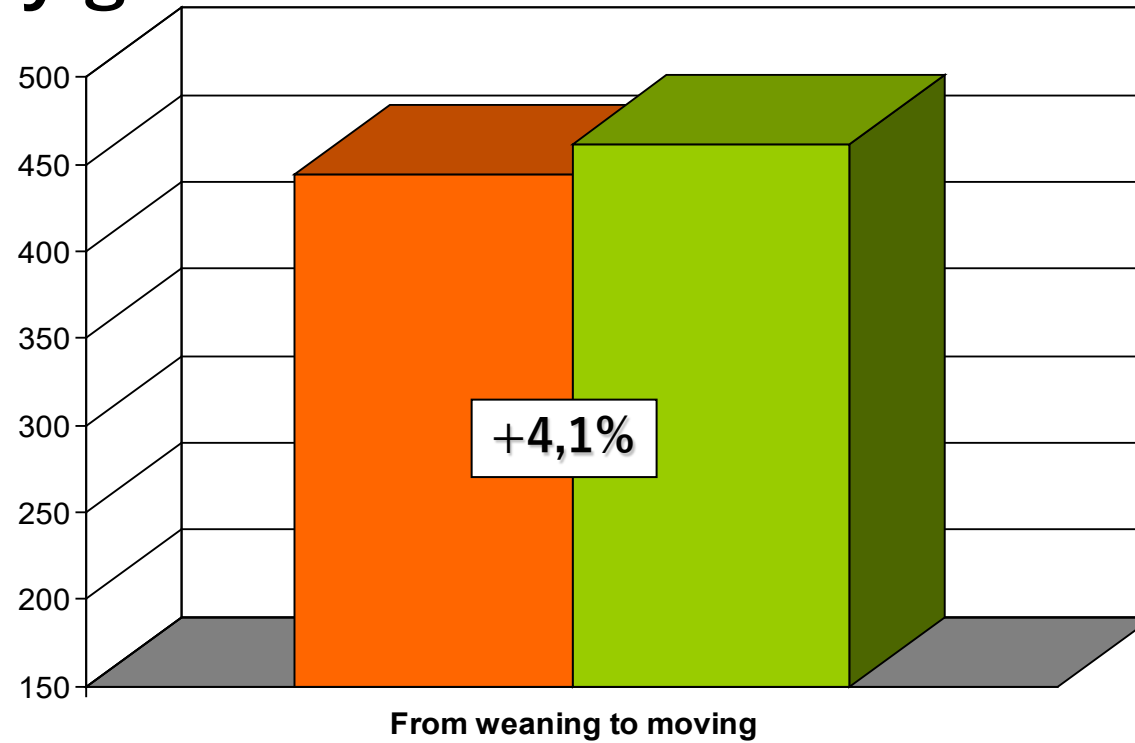
Effects of Specific IgY in piglet feed

Germany, 2004 (1)

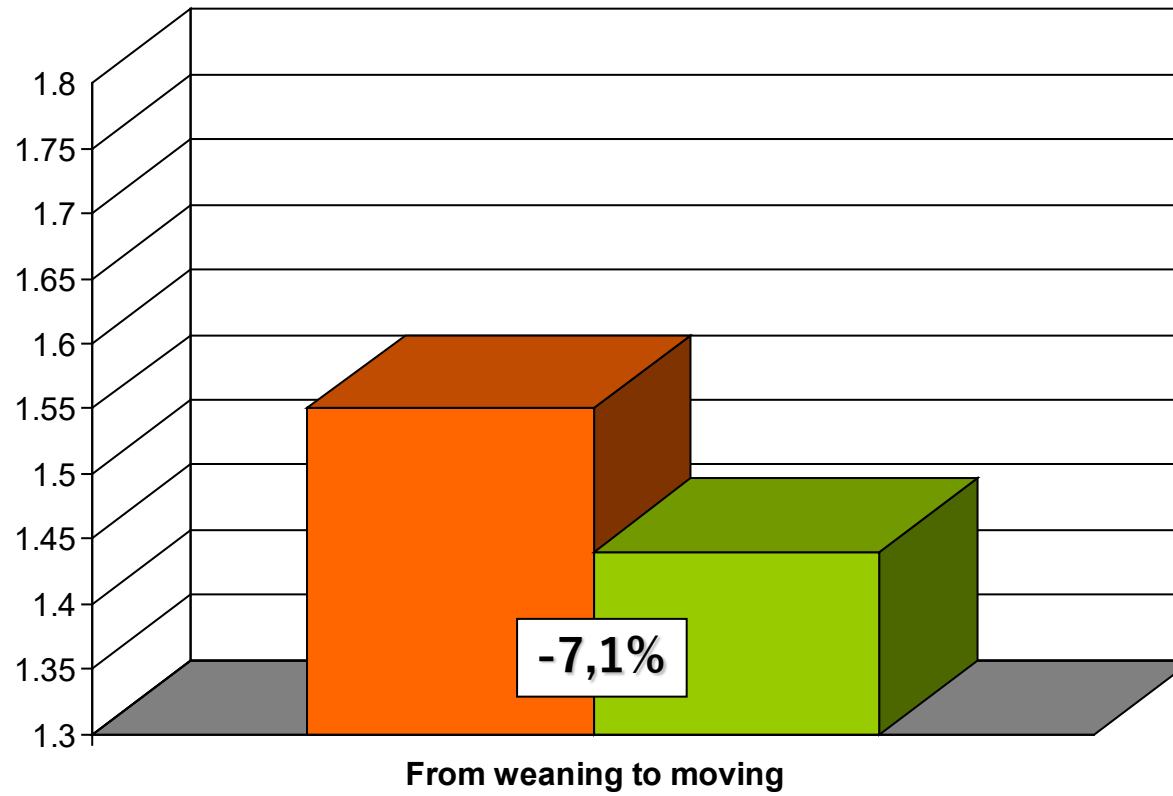
Materials and methods

- Number of animals: Control: 60
Specific IgY: 60
- Dosage: 1 kg Specific IgY powder / ton feed
- Application time: During whole rearing period
- Observations:
 1. Daily weight gain
 2. Feed conversion rate

Results – daily gain



Results – feed conversion rate



Specific IgY: field trials

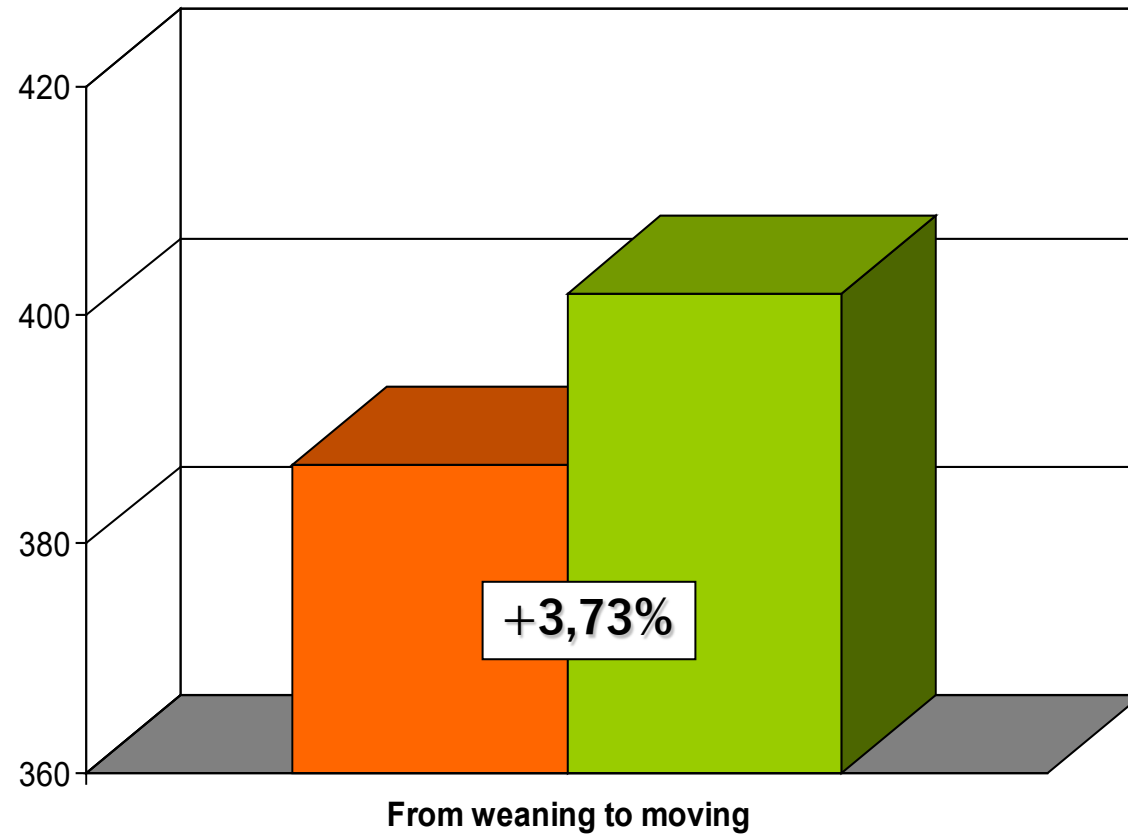
Effects of Specific IgY in weaning feed

Germany, 2005 (2)

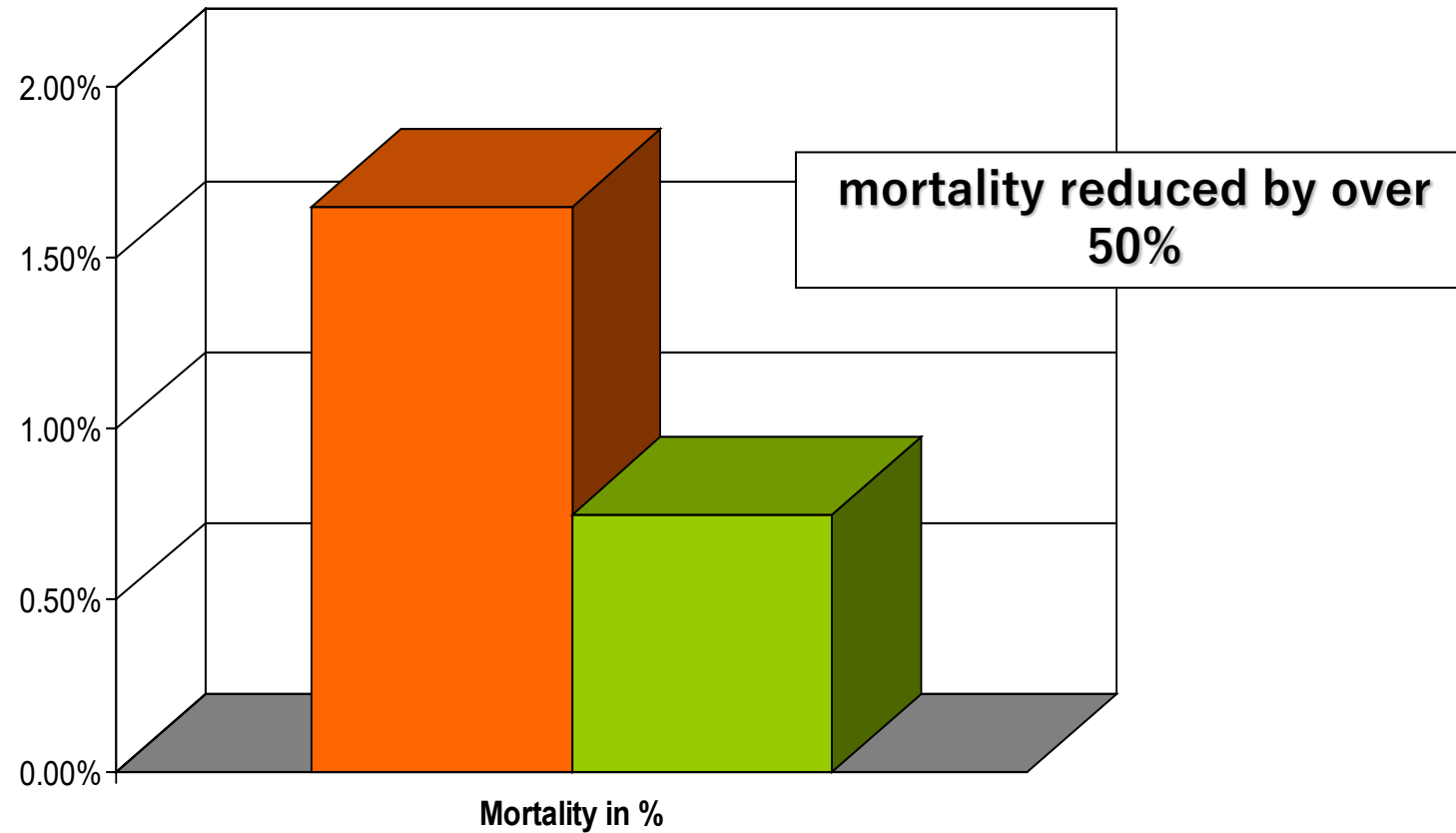
Materials and methods

- Number of animals: Control: 503
Specific IgY : 504
- Dosage: 1 kg Specific IgY / ton feed
- Application time: During 8 days after weaning
- Trial period: Weaning up to moving
- Observations:
 1. Daily weight gain
 2. Mortality

Results – daily gain



Results – mortality rate



Specific IgY : field trials

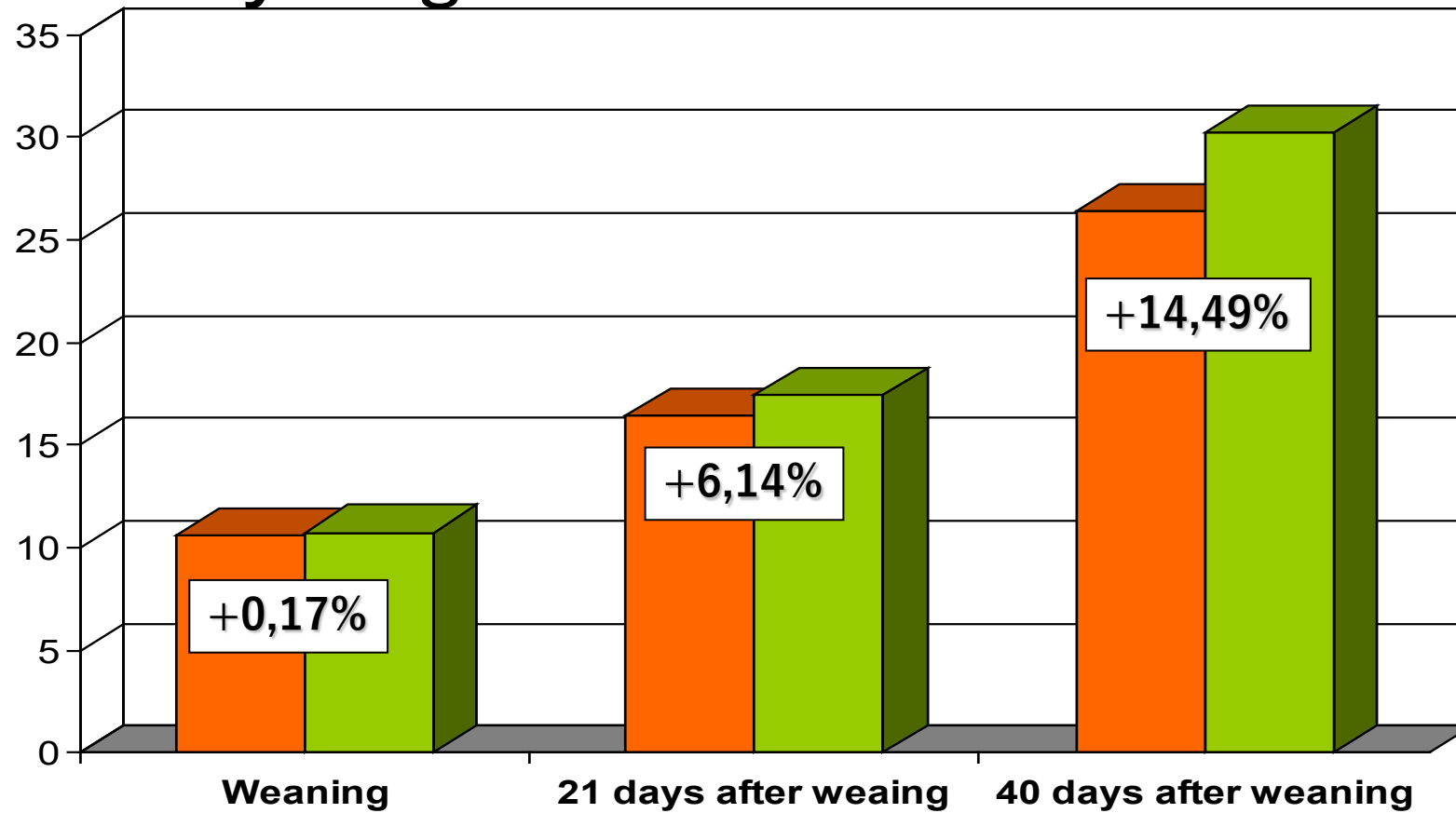
Effects of Specific IgY in piglet feed

Germany, 2004 (3)

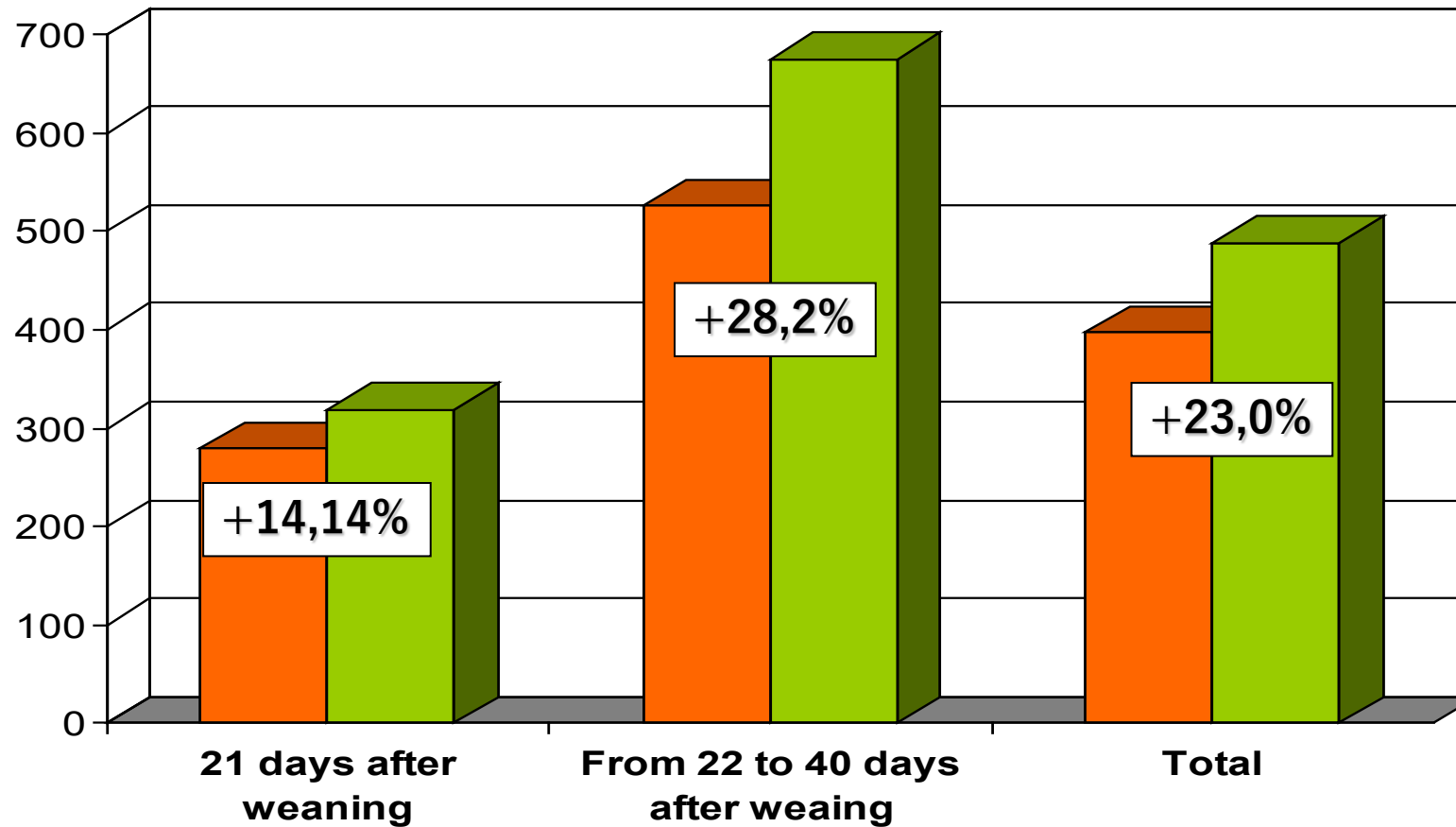
Materials and methods

- Number of animals: Control: 105
Specific IgY : 106
- Dosage: 2 kg / ton baby starter
1 kg / ton piglet feed
- Application time: During whole rearing period
- Observations:
 1. Body weight at weaning & moving
 2. Daily weight gain
 3. Feed conversion rate

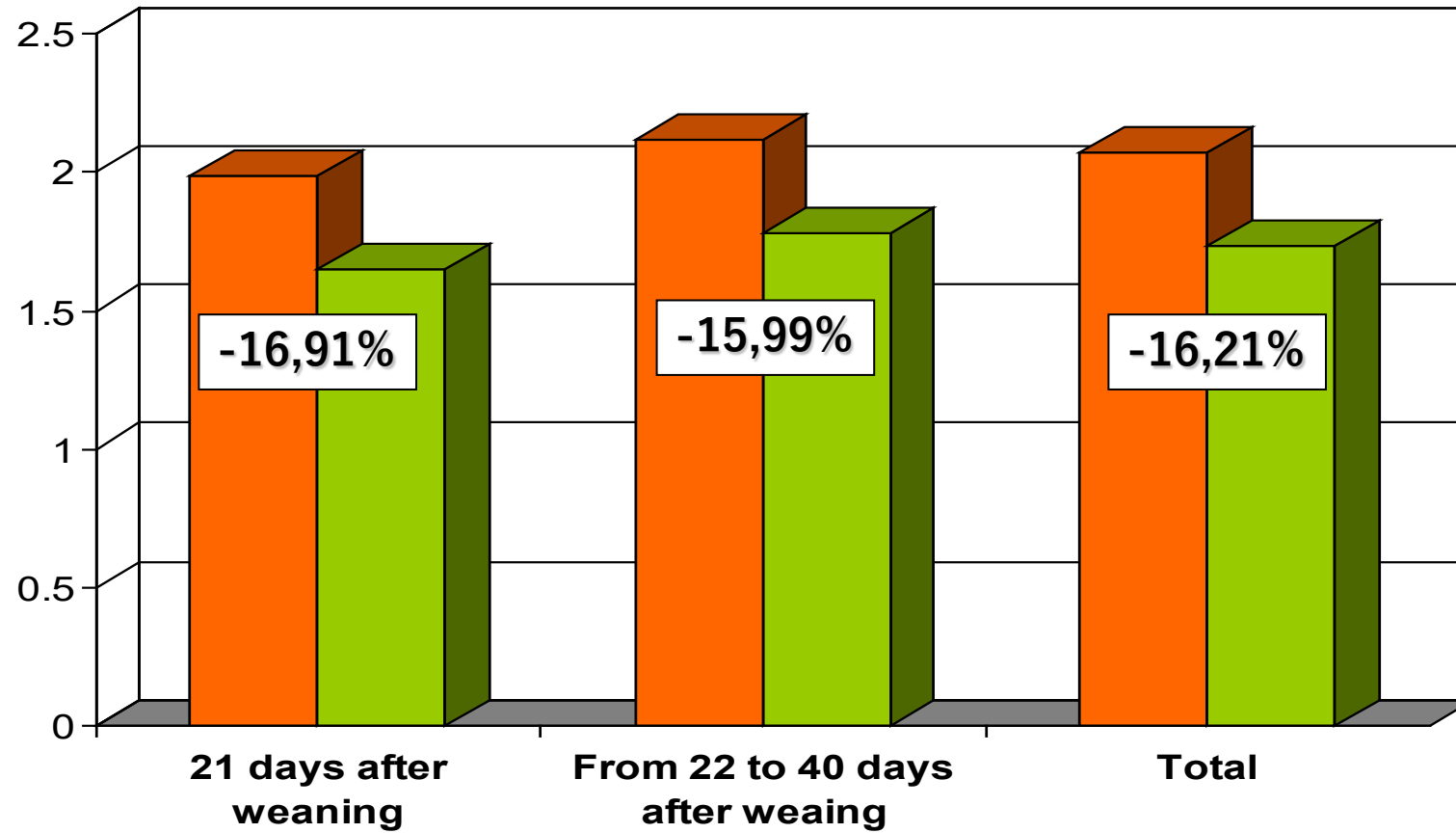
Results – body weight



Results – daily gain



Results – feed conversion rate



Specific IgY : field trials

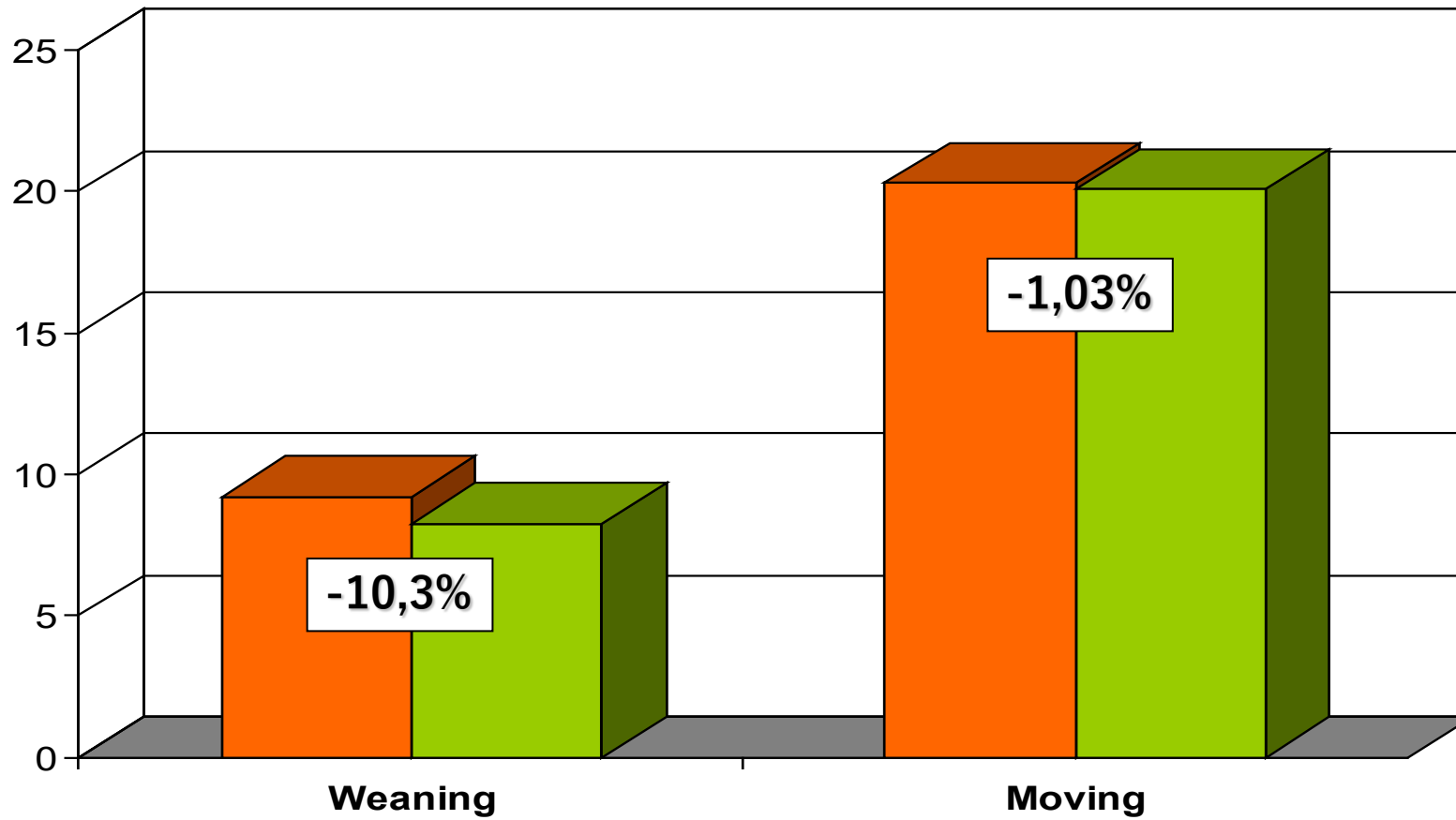
Effects of Specific IgY in piglet feed

Benelux, 2003

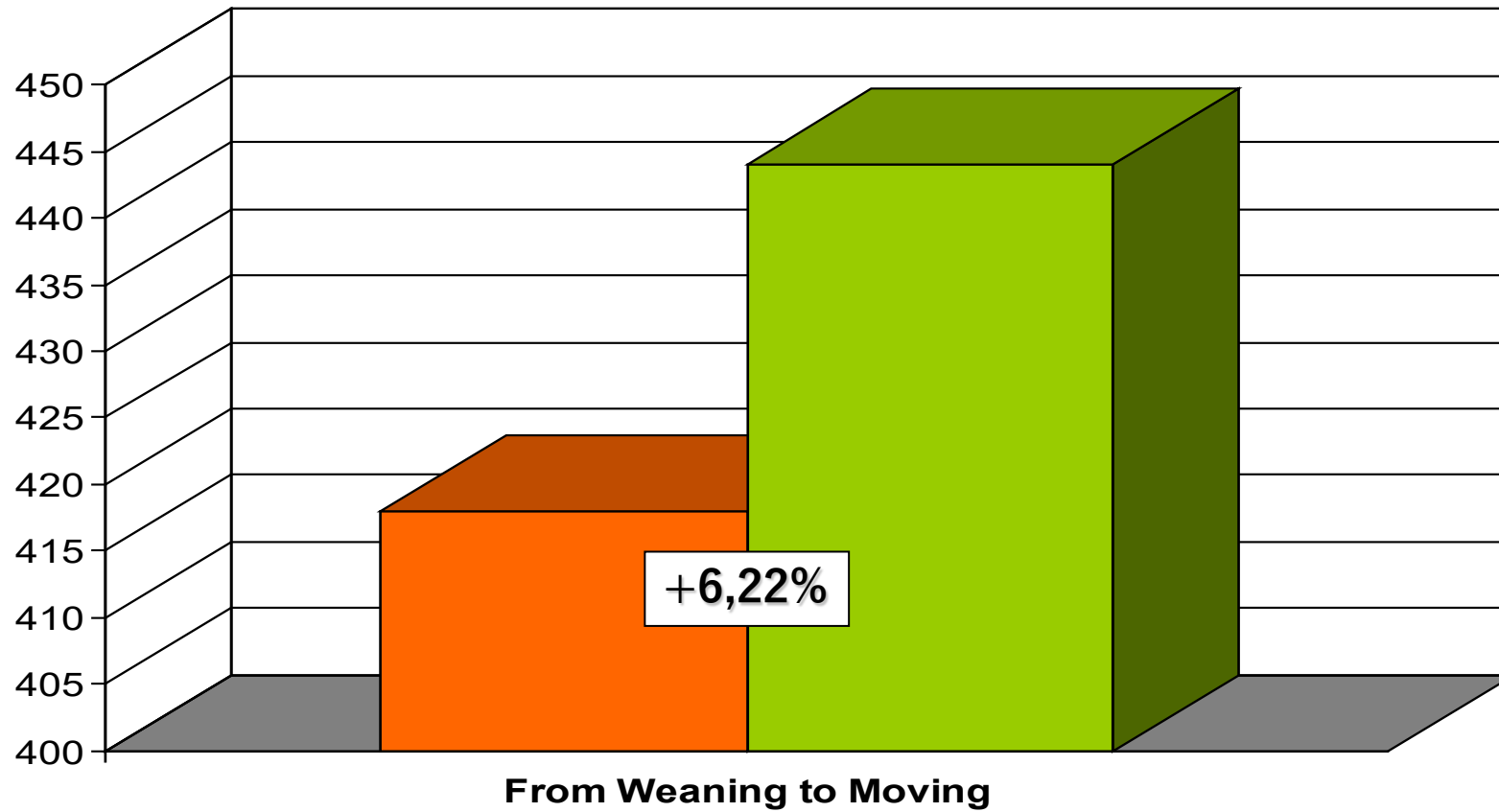
Materials and methods

- Number of animals: Colistin-Control: 85
Specific IgY : 80
- Dosage: 1 kg Specific IgY / ton feed
- Application time: During whole rearing period
- Observations:
 1. Body weight at weaning & moving
 2. Daily weight gain
 3. Feed conversion rate

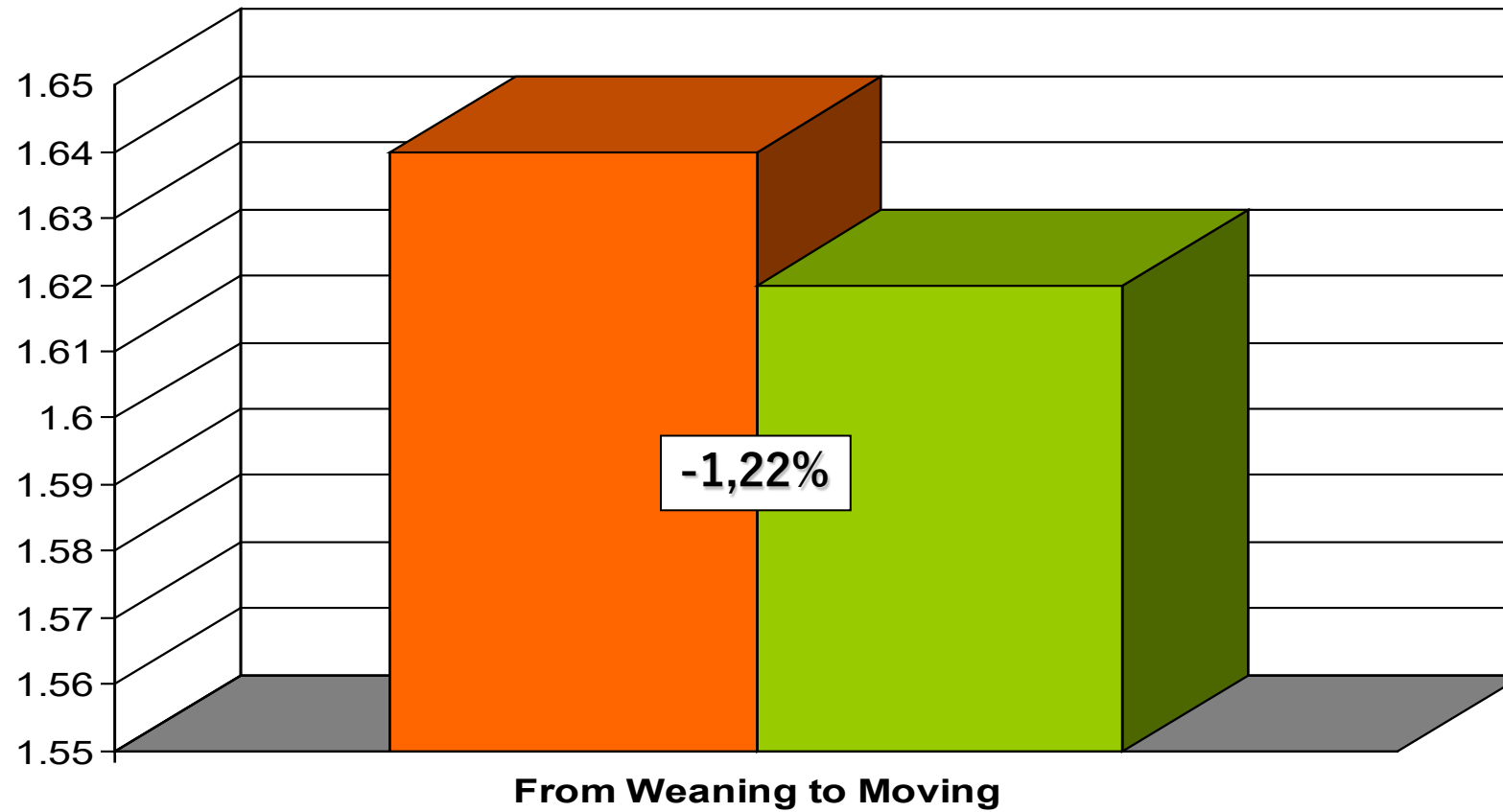
Results – body weight



Results – daily gain



Results – feed conversion rate



Specific IgY : field trials

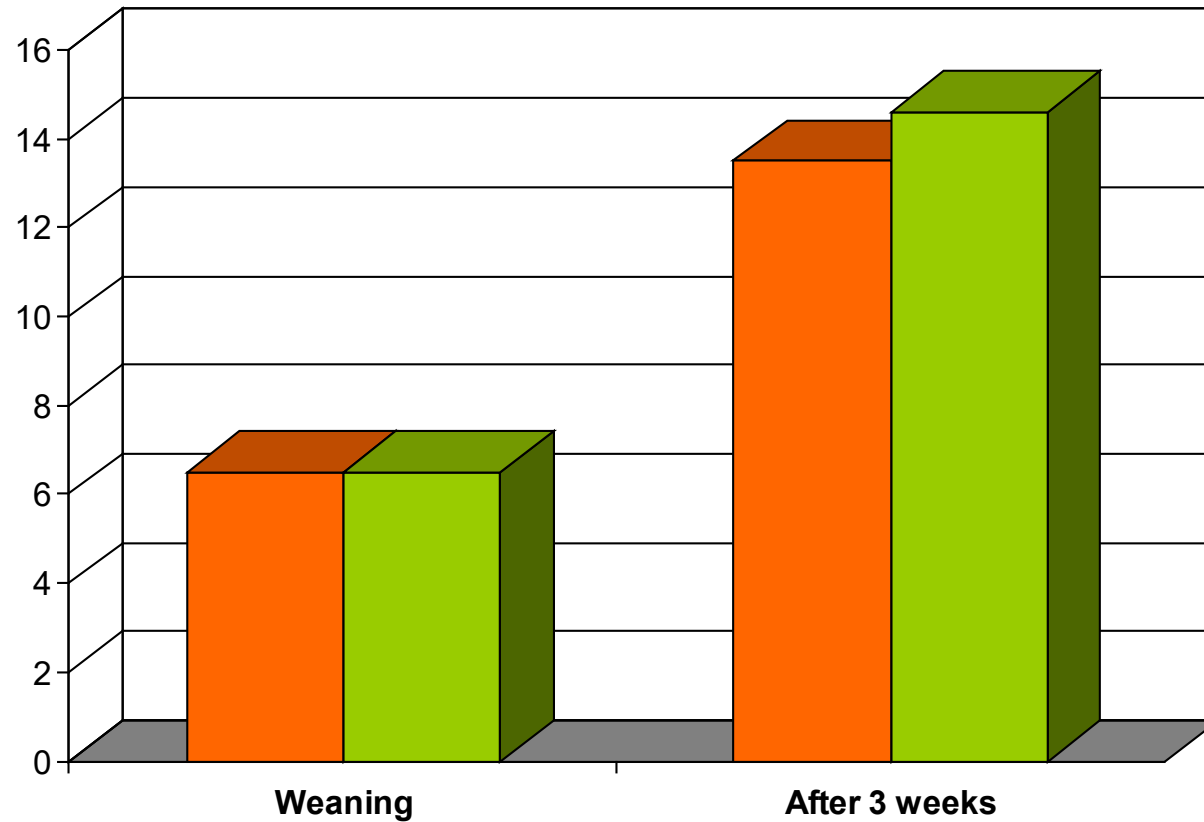
Effects of Specific IgY in weaning feed

Spain, 2006

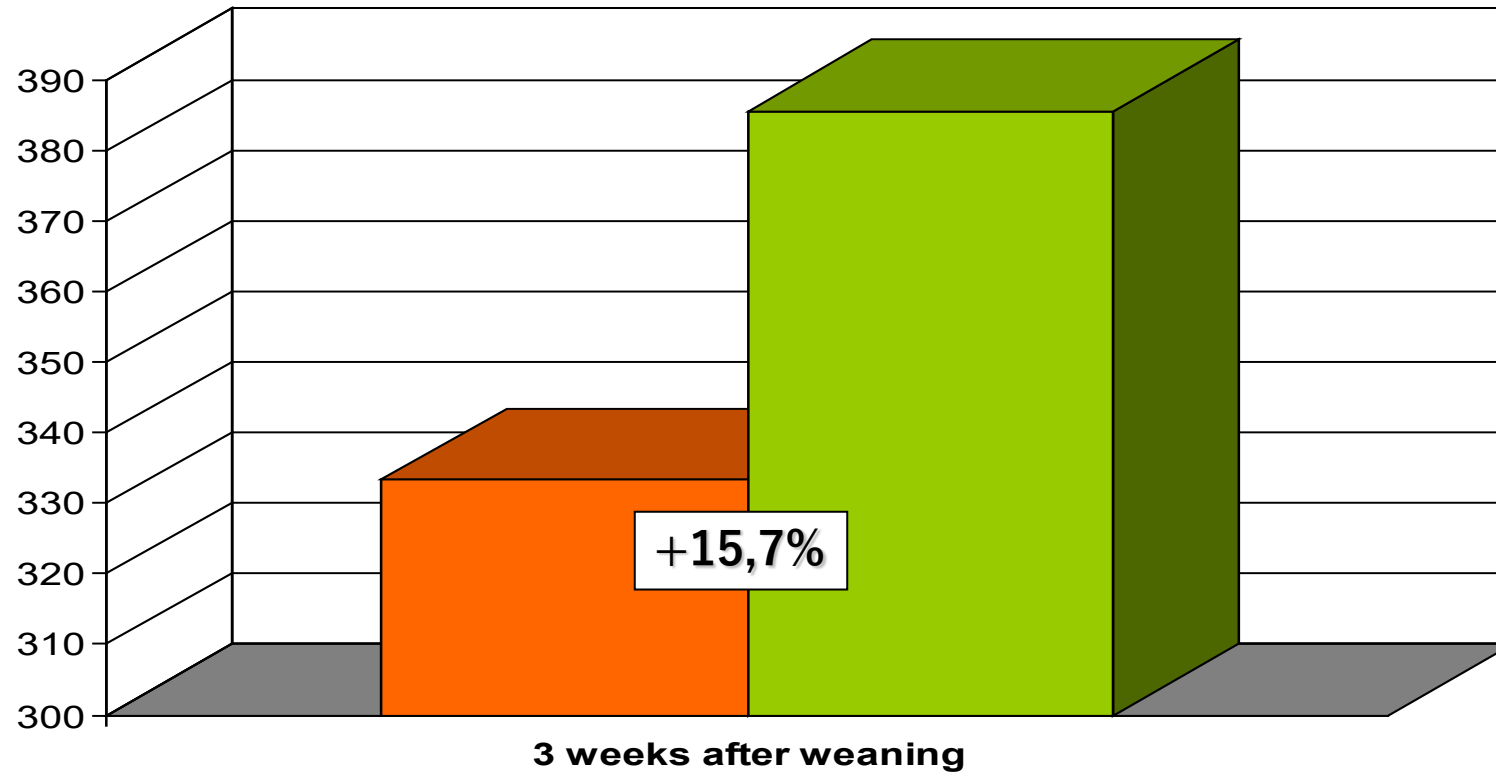
Materials and methods

- Number of animals: Control: 500
Specific IgY : 500
- Dosage: 2 kg Specific IgY / ton feed
- Application time: for 3 weeks after weaning
- Observations:
 1. Body weight at weaning & 3 weeks after weaning
 2. Daily weight gain

Results – body weight



Results – daily gain



Specific IgY : field trials

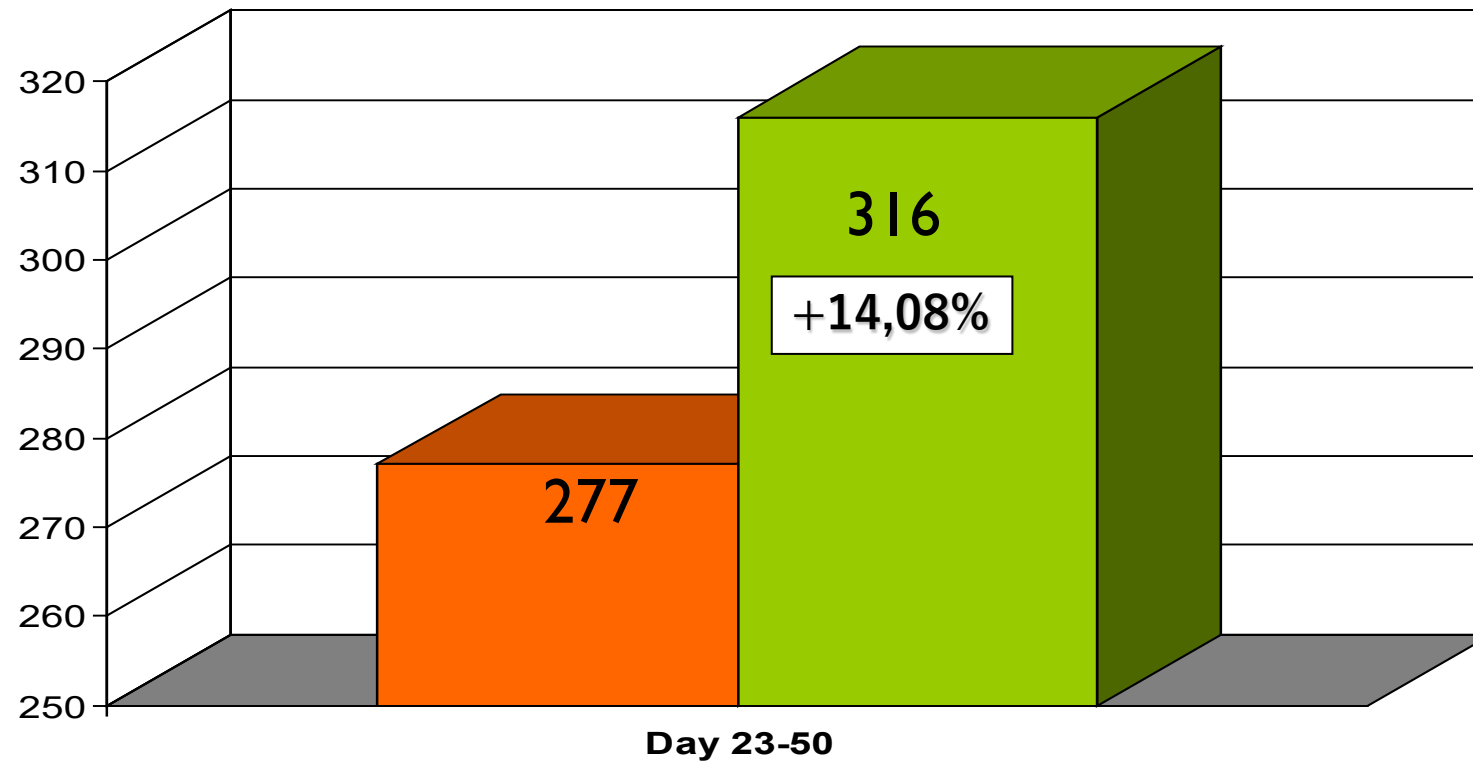
Effect of Specific IgY in weaning feed

Netherlands, 2008

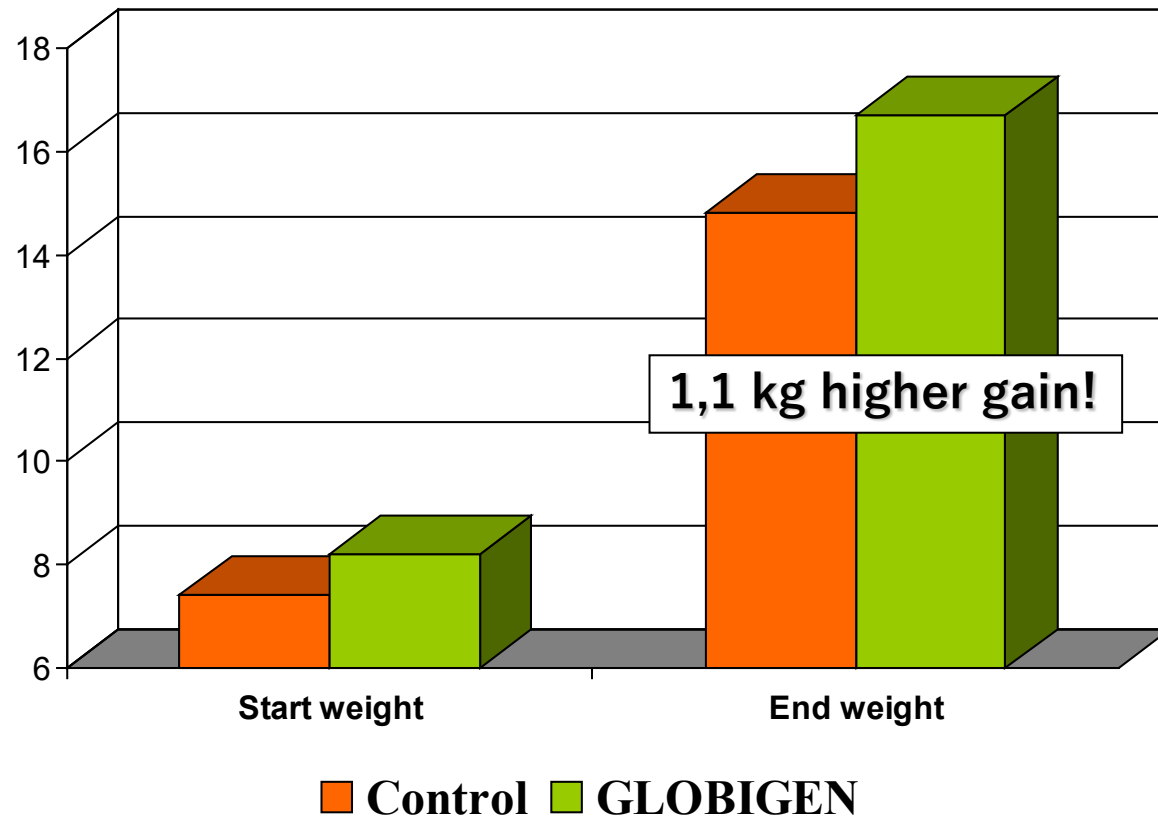
Materials and methods

- Groups: Control: 182 piglets with Oxytetracylin
Specific IgY : 260 piglets without Oxytetracyclin
(Small piglets were sorted out in both groups before trial start)
- Dosage: 3 kg Specific IgY / ton of feed
- Period of use: Day 1-3 after weaning
- Weaning age: 23 days
- Duration of trial : 27 days after weaning
- Observation:
 1. Start weight on day 23 & end weight after 27 days
 2. Daily gain
 3. Mortality

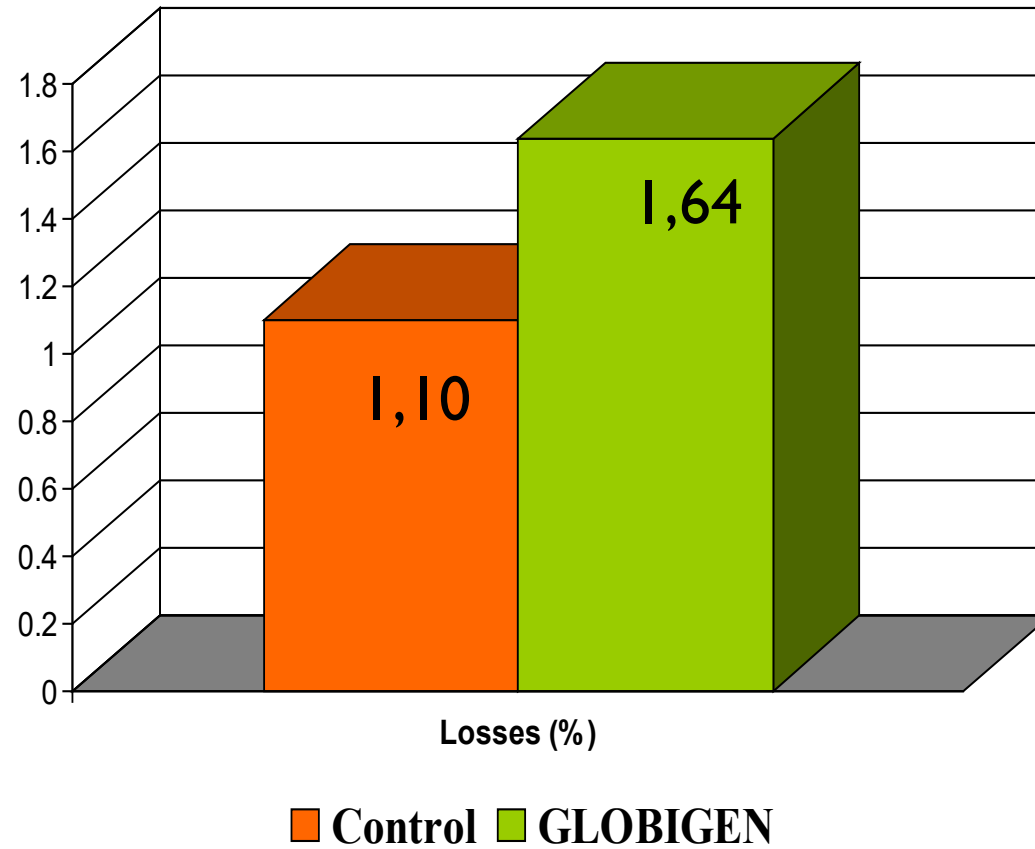
Results – daily gain (g)



Results – Start- & end weight



Results – Mortality (%)



Summary:

- **40g higher daily gain with only 3 days of application!**
(i.e. 1,1 kg higher weight gain!)
- Better performance although 'Oxytetracyclin' was used in the control group
- Slightly higher mortality within the Globigen[®] group because of dehydration and runts.
Note: Same mortality reasons within the control group.

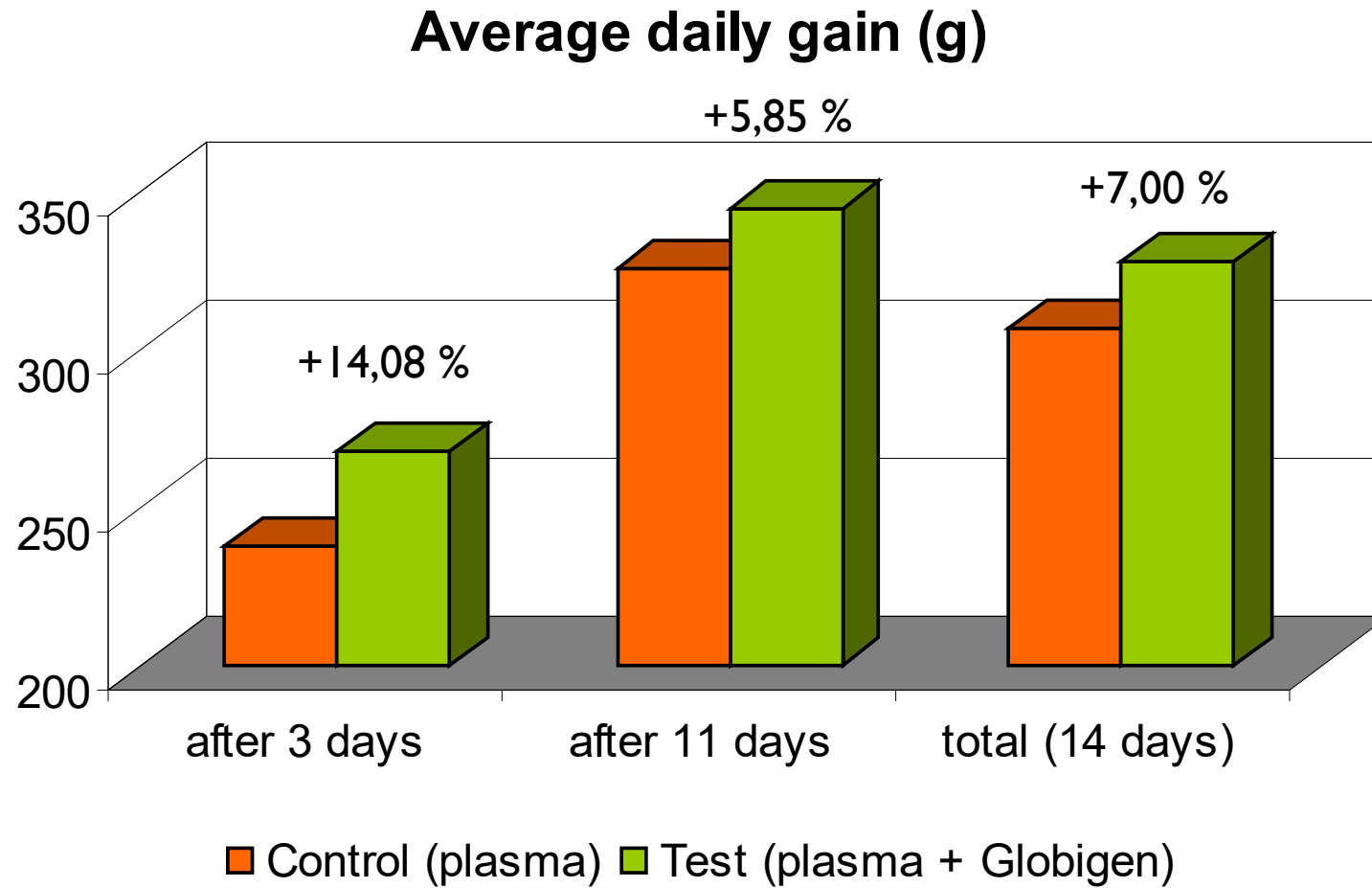
Specific IgY : field trial

**Effects of Specific IgY on weight gain and feed conversion when applied on-top of a blood plasma diet
Japan, 2008**

Materials & Methods

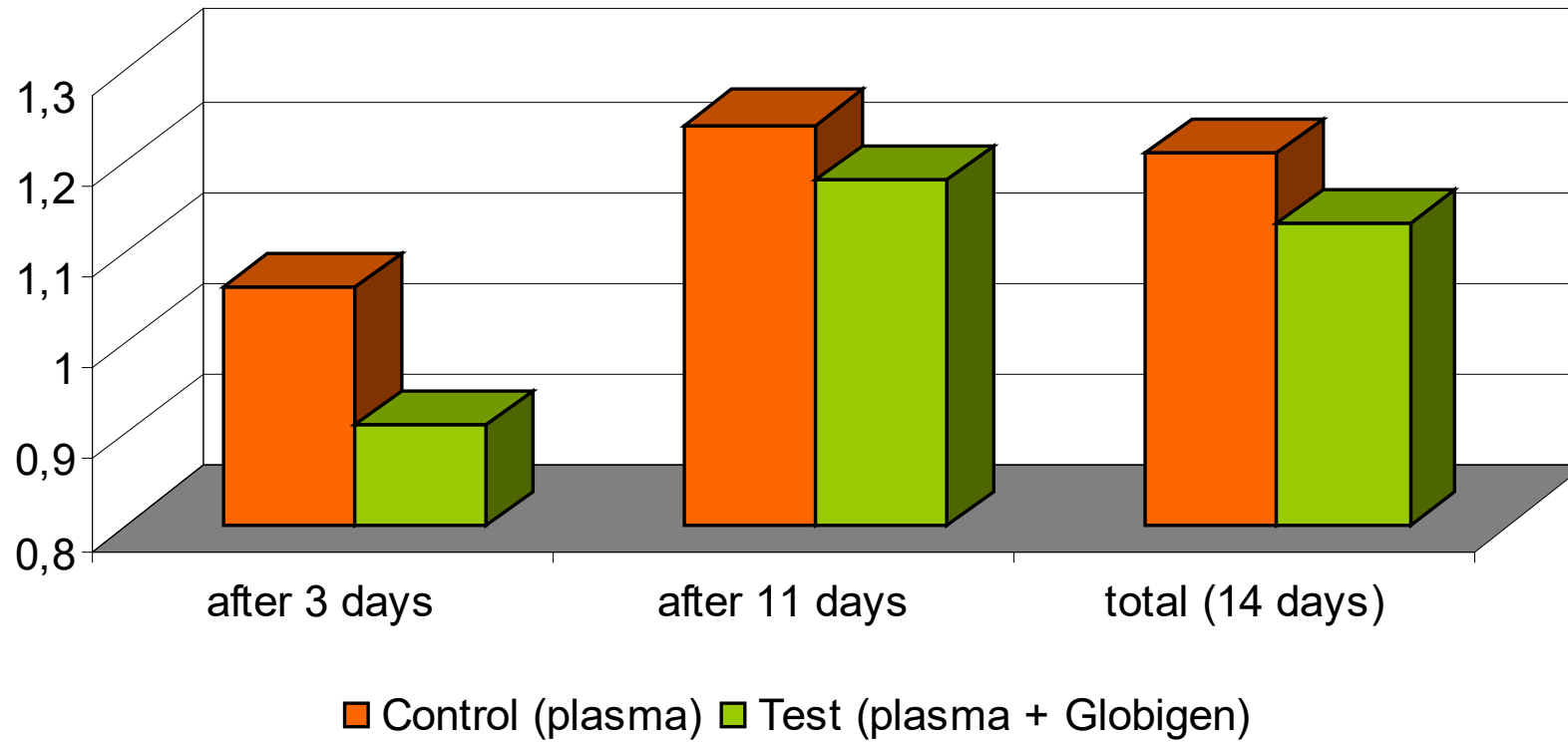
Groups:	Control: 16 piglets (blood plasma) Test: 16 piglets (blood plasma + Specific IgY)
Trial start:	22 days of age
Trial duration:	14 days
Plasma inclusion rate:	5-6%
Dosage of Specific IgY :	2 kg per ton of feed
Observations:	1. Average daily gain 2. Feed conversion (both measured at 3 times during trial)

Results



Results

Feed conversion rate



Specific IgY : summary

Several trials show:

- Lower feed conversion rate
- Higher daily gain
- Improved general health status
 - Less diarrhea
 - Less mortality
 - Higher vitality
- Less medication costs

