



Session 18, Abstract N°3291



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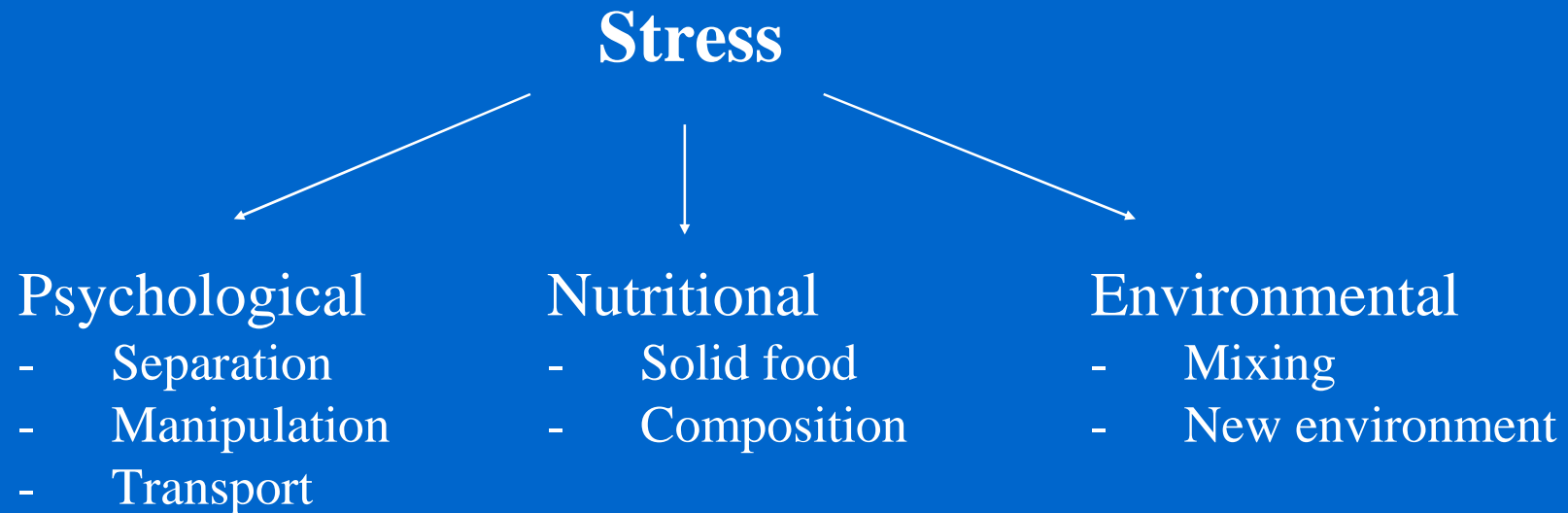
Introduction



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Introduction

- Weaning = Critical period



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Introduction

- Effects of weaning
 - Underfeeding
 - Intestinal modifications
 - Morphological
 - Immunological
 - Digestion and absorption
 - Intestinal flora
 - Metabolic modifications
 - Endocrinal modifications
 - Use of feed additives
 - Ban on antibiotics
 - Colostrum as alternative
- Economical Impact

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Introduction

- Bovine Colostrum
 - 1st milking
 - Composition :
 - Essential nutrients
 - Bioactive compounds :
 - Growth factors (IGF-I and –II, GH, EGF, TGF)
 - Immunologic defence factors (Ig, cytokines)
 - Non-immunologic defence factors (lactoferrin, lactoperoxidase, lysozymes)

Composition (/l)	Colostrum	Milk
Dry Matter	239 g	129 g
Crude Proteins	140 g	40 g
Crude Fat	67 g	40 g
Lactose	27 g	49 g
Ash	11,1 g	7,4 g
IgA	3,2-6,2 g	0,2 g
IgG1	48-87 g	0,4 g
IgG2	1,6-2,9 g	0,05 g
IgM	3,7-6,1 g	0,05 g
IGF-I	0,1-2 mg	25 µg
IGF-II	0,1-2 mg	2 µg
TGF-β	20-40 µg	1-2 µg
EGF	4-8 µg	2 µg
Lactoferrin	1,5-2 g	0,1 g
Lysozyme	0,1-0,7 mg	0,1-0,3 mg
Lactoperoxidase	30 mg	20 mg
GH	3-10 ng	nd
Insulin	20-50 µg	nd

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Introduction

- Bovine Colostrum
 - 1st milking
 - Composition :
 - Essential nutrients
 - Bioactive compounds
 - Availability :
 - Colostrum Bank
 - 80 000 litres collected/year WR

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Introduction

- Bovine colostrum in weaning diet
 - ↗ ADG and ADFI Week 1 PW
 - ↘ FCR Week 1 PW

References	BC supplementation		Piglets		Effects of BC vs. control treatment
	Description	g.kg ⁻¹ feed	n	Weaning age	
Pluske <i>et al.</i> , 1999	BC powder rich in IgG	0, 50 and 100 during 10 d	131	28 d	↗ADG Week 1 and 2 PW ≈ ADFI and FCR ↘ Days to slaughter
King <i>et al.</i> , 2001	Spray-dried BC	0 and 60 during 7 d	110	28 d	≈ ADG and FCR ↗ADFI Week 1 PW
Dunshea <i>et al.</i> , 2002	Freeze-dried BC	0 and 60 during 7d	24	14 d	≈ ADG, ADFI and FCR
Le Hueroü-Luron <i>et al.</i> , 2004	Freeze-dried BC	0 and 40 during 11 d in uncleaned pens	150	28 d	↗ADG Week 1 and 2 PW ↗ADFI Week 1 PW ↘FCR Week 1 PW
		0, 20 and 40 during 14 d in clean pens	12	21 d	↗ADG d5-d7 PW ≈ ADFI and FCR
Le Hueroü-Luron <i>et al.</i> , 2008	Freeze-dried BC	0 and 30 during 12 d	60	28 d	↗ADG and ADFI Week 1 PW ↘FCR Week 1 PW

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Introduction

- Bovine colostrum in weaning diet
 - Boudry *et al.*, 2008. (Animal, 2 : 730-737).
 - 20 g/kg of freeze-dried BC Whey for 10 d, then 10 g/kg for 18 d
 - commercial weaning-diet without feed additives
 - weaned piglets (28 d)
 - n = 48 (4 * 12)
 - Measures : Weekly ADG, ADFI, FCR
 - Results :
 - ↗ ADG (+ 100 %) and ADFI (+ 35 %) Week 1 PW
 - ↘ FCR (- 50 %) Week 1 PW
 - Cost : **1.9 €/piglet**

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Experiments



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Objectives

- Reduce the costs of the use of bovine colostrum :
 - Level of incorporation (Experiment 1)
 - Duration of administration (Experiment 2)
 - BC fraction (Experiment 3)

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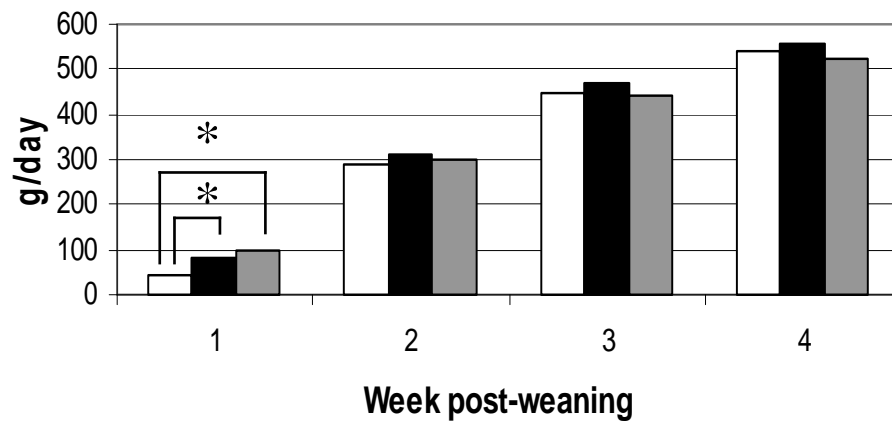
Experiment 1

- *Experimental design*
 - 0, 10 or 20 g/kg of freeze-dried BC Whey for 28 d
 - commercial weaning-diet without feed additives
 - weaned piglets (28 d)
 - $n = 39$ (3 * 13)
 - Measures :
 - Weekly ADG, ADFI, FCR
 - Daily ADFI the 1st week PW
 - Visual control of diarrhoea

Experiment 1

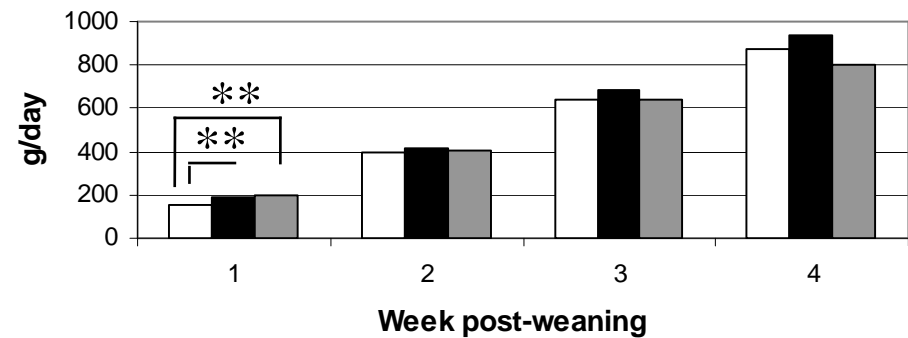
- *Results*

ADG

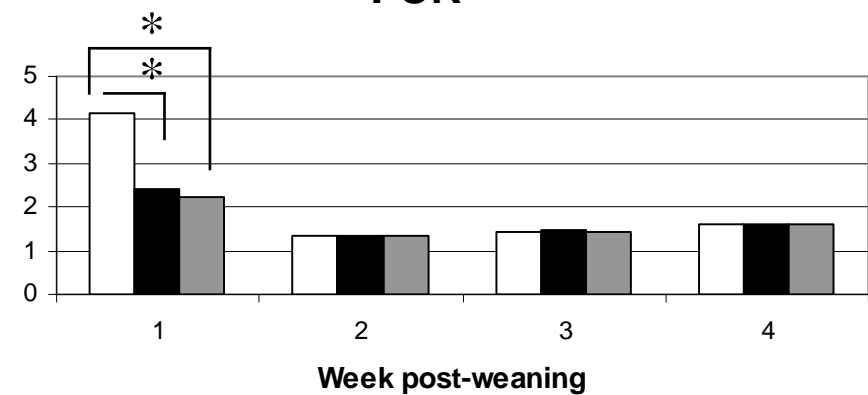


□ Whey 0 ■ Whey 1 ■ Whey 2

ADFI

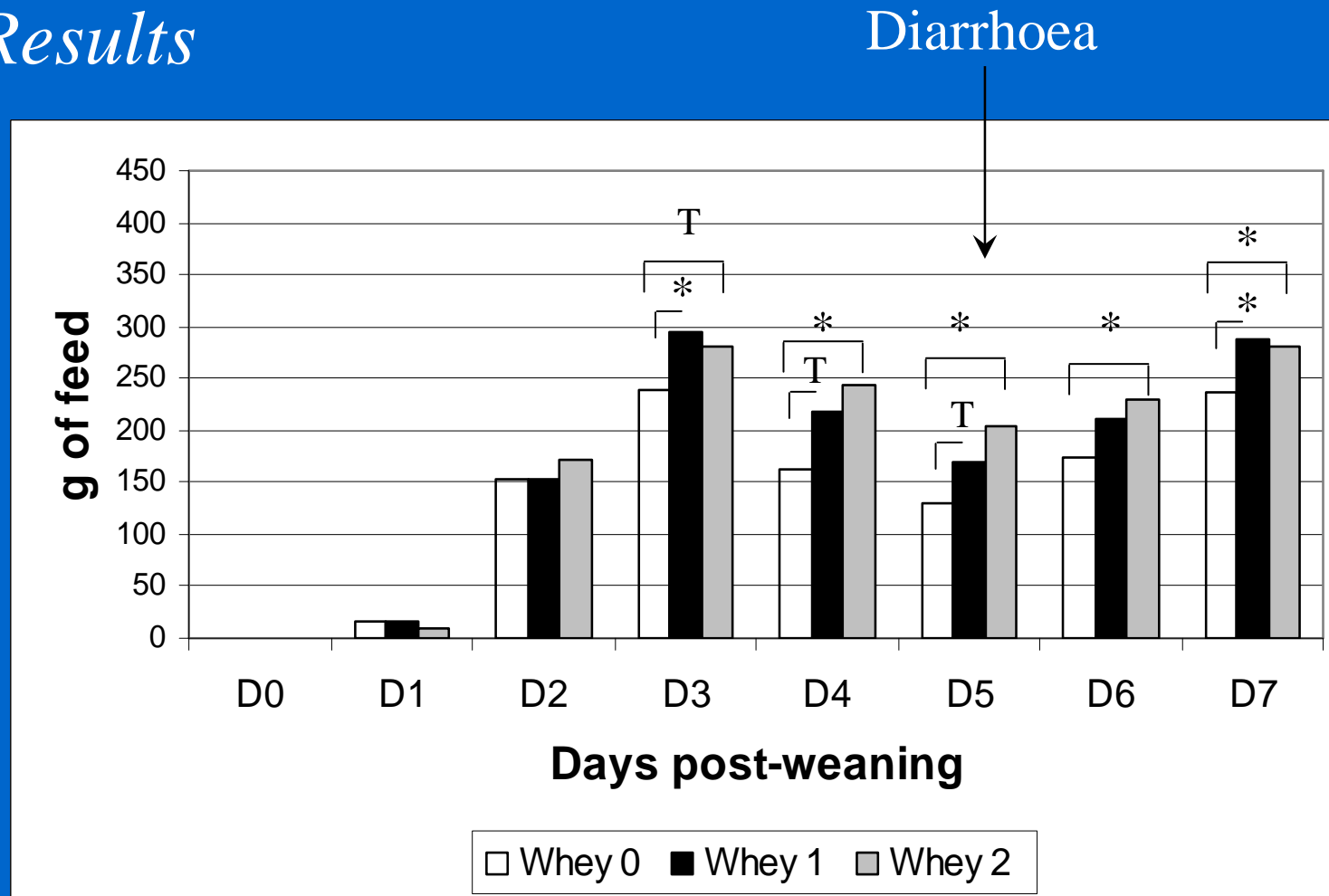


FCR



Experiment 1

- *Results*



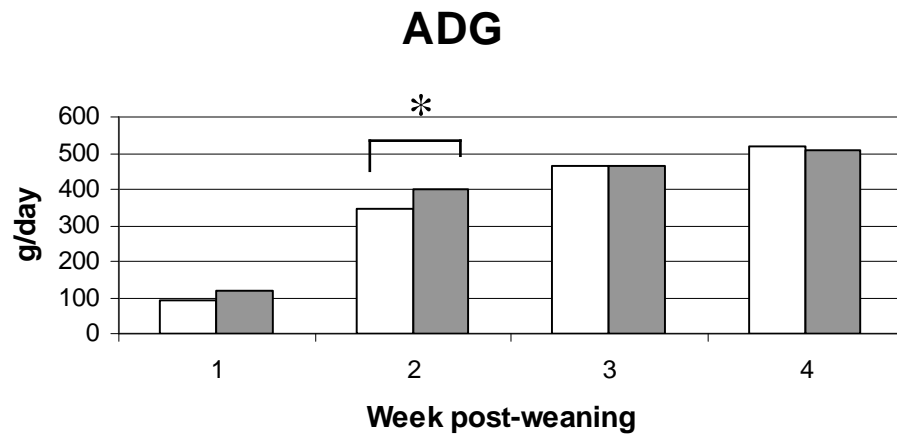
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Experiment 2

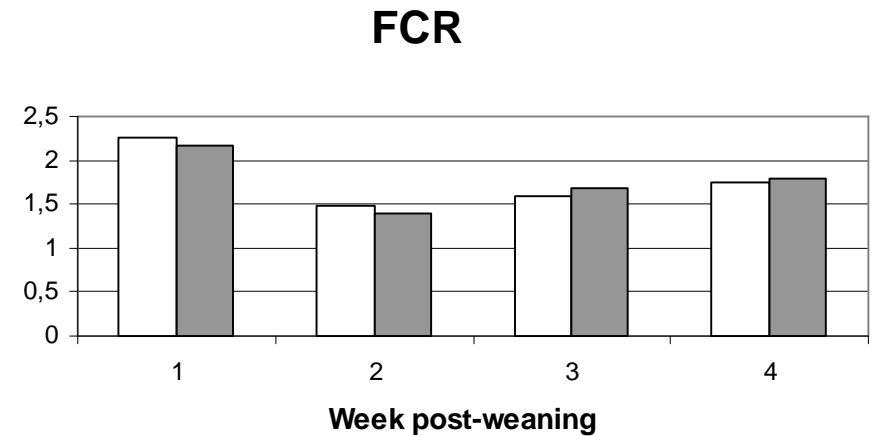
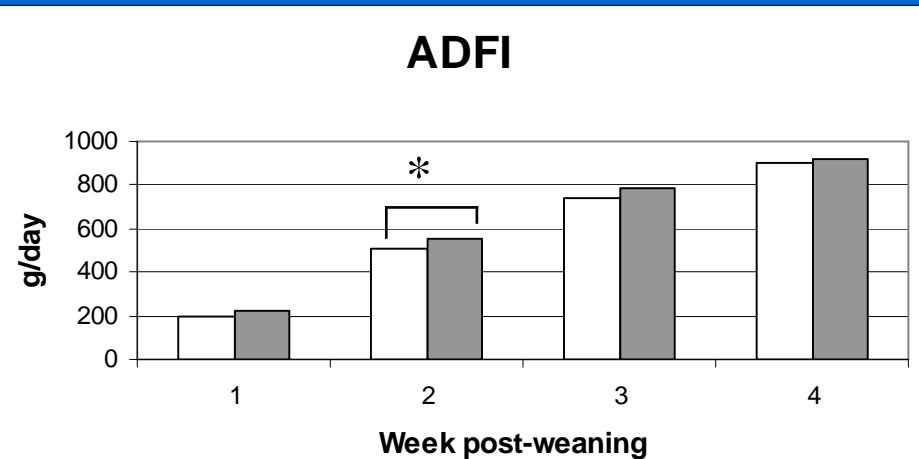
- *Experimental design*
 - 0, 20 g/kg of freeze-dried BC Whey for 10 d
 - commercial weaning-diet without feed additives
 - weaned piglets (28 d)
 - $n = 48$ (4 * 12)
 - Measures :
 - Weekly ADG, ADFI, FCR for 28 d
 - Daily ADFI the 1st week PW
 - Visual control of diarrhoea

Experiment 2

- *Results*



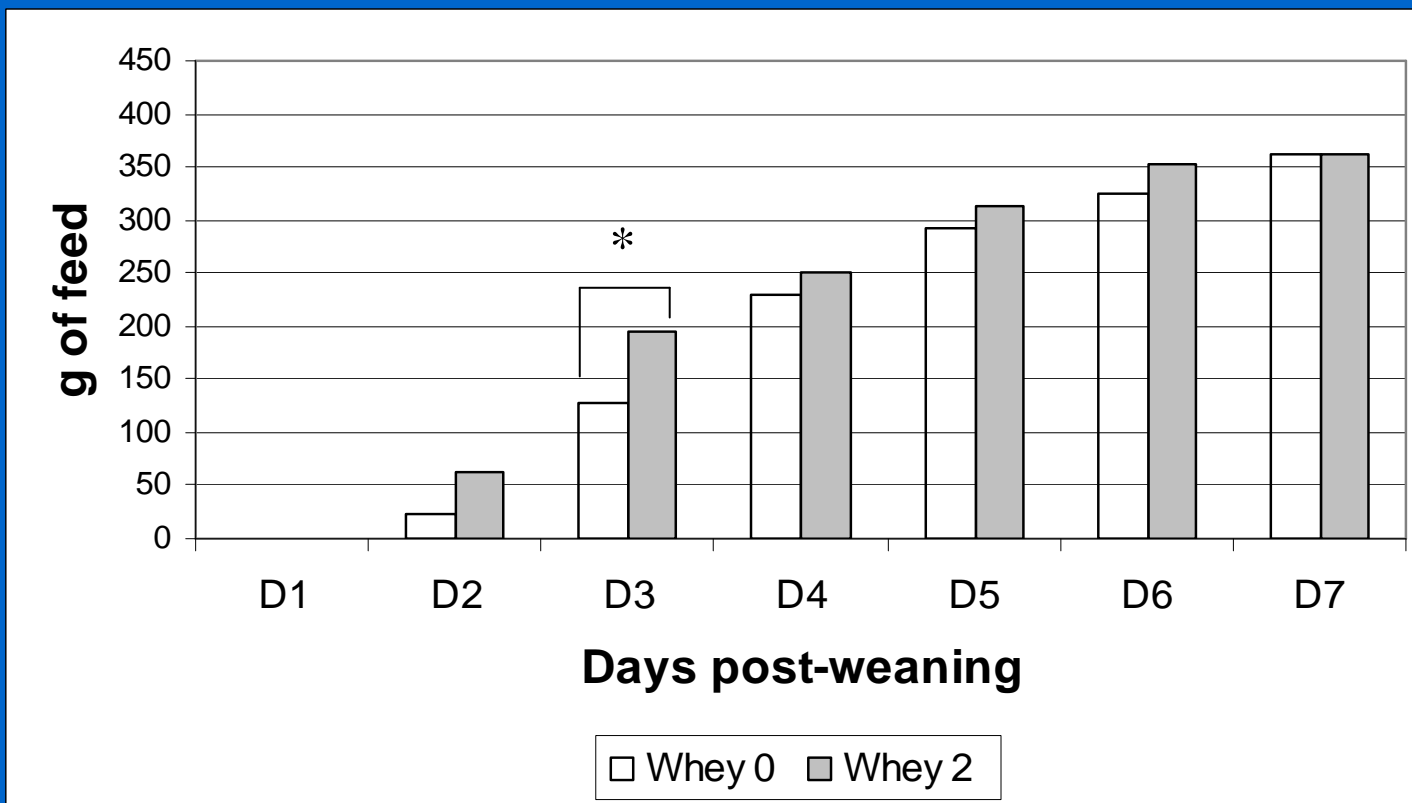
□ Whey 0 ■ Whey 2



Experiment 2

- *Results*

No Diarrhoea



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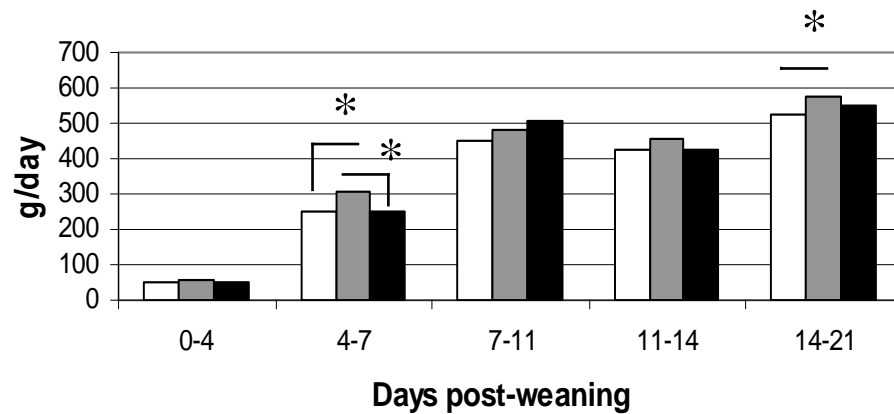
Experiment 3

- *Experimental design*
 - 10 g/kg of freeze-dried BC Whey, defatted BC or 10 g of milk for 10 d
 - commercial weaning-diet without feed additives
 - weaned piglets (28 d)
 - $n = 32$ (8 * 4)
 - Measures :
 - Weekly ADG, ADFI, FCR for 28 d
 - Daily ADFI the 1st week PW
 - Visual control of diarrhoea
 - E. coli counts in faeces

Experiment 3

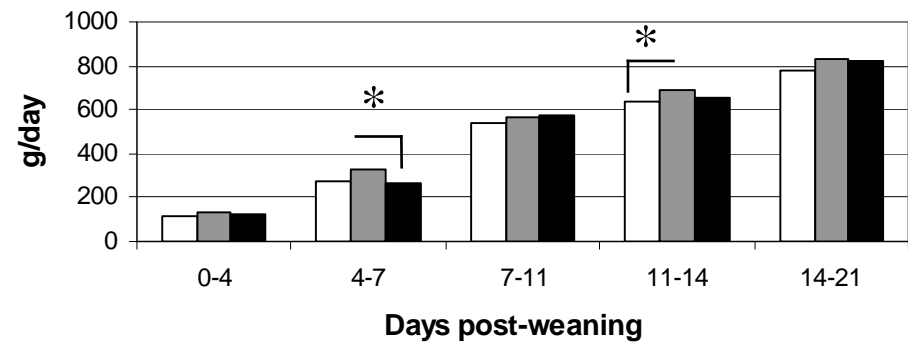
- *Results*

ADG

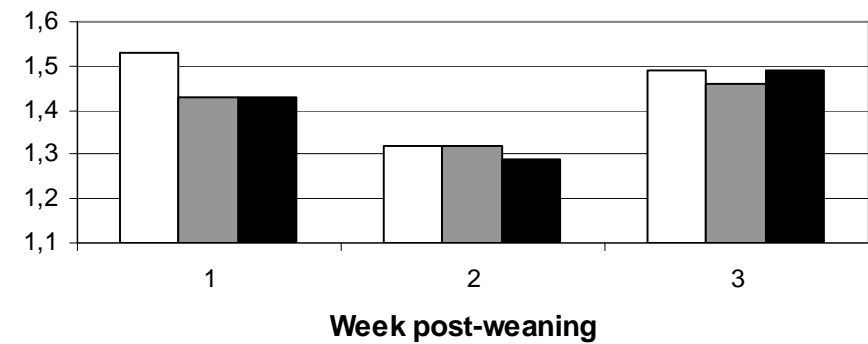


□ Milk 1 ■ Col 1 ■ Whey 1

ADFI



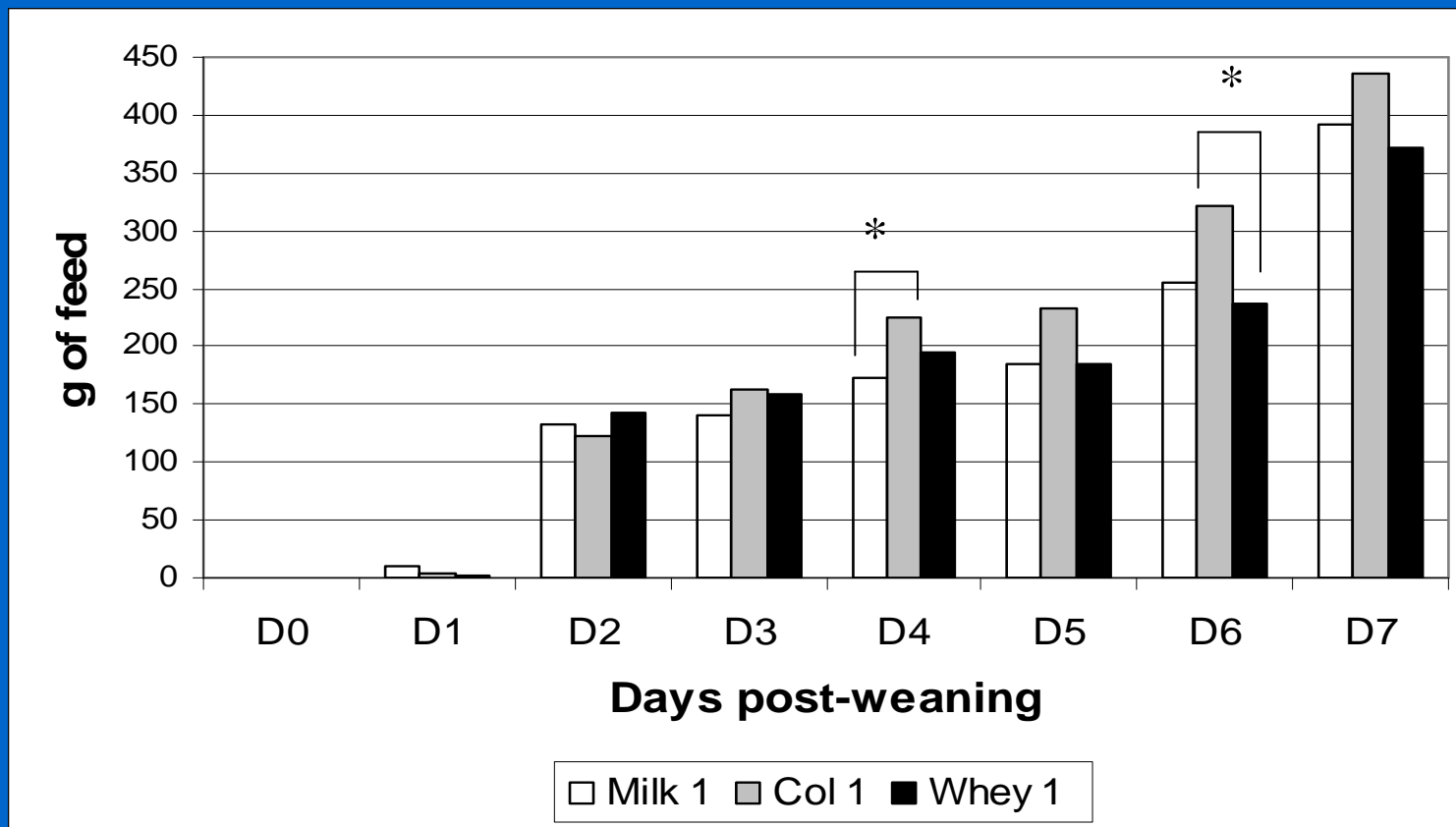
FCR



Experiment 3

- *Results*

No Diarrhoea



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Conclusion and perspectives



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Conclusion

- *Growth promoting action confirmed*
- *Effect of the environment*
- *Costs reduced*
 - *1.9 €/piglet → 0.14 €/piglet*