

Impact of lactose substitution by dextrose on piglet performance in the post-weaning period

Caroline GARD¹, Pierre-Stéphane REVY², Christian DELPORTE¹, Laetitia GUERIN-DEREMAUX¹

¹ROQUETTE, 62080 Lestrem, France - ²CALCIALIMENT-VILOFOSS, Z.I. de la Gare, 22690 Pleudihen, France

Introduction

Whey powder is commonly included in piglet diets as a source of lactose. Dextrose, the crystalline form of glucose, is also used as a totally digestible energy source for young piglets. The objective of this trial is to test **partial** and **total substitution of lactose**, provided by whey powder, by **dextrose** in post-weaning piglet diets.

Materials and methods

Methodology

Animals:

- **1000 male and female piglets**, weaned at 23±1 days old
- Housed in 28 collective pens
- Initial weight at 28 days: 7.2kg
- Final weight at 44 days: 12.2kg

Treatment groups:

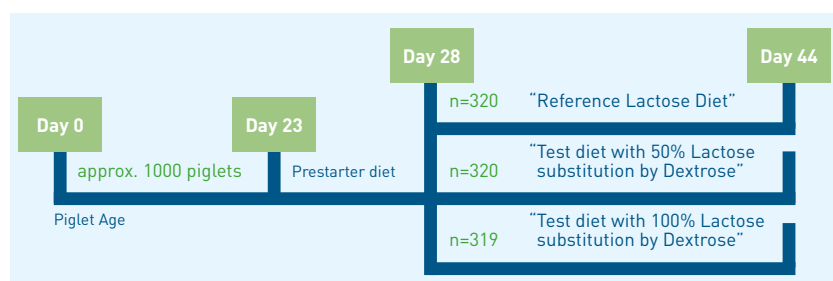
- "Reference Lactose diet"
- "Test diet with **50%** whey powder substitution by dextrose"
- "Test diet with **100%** whey powder substitution by dextrose"



Diet composition

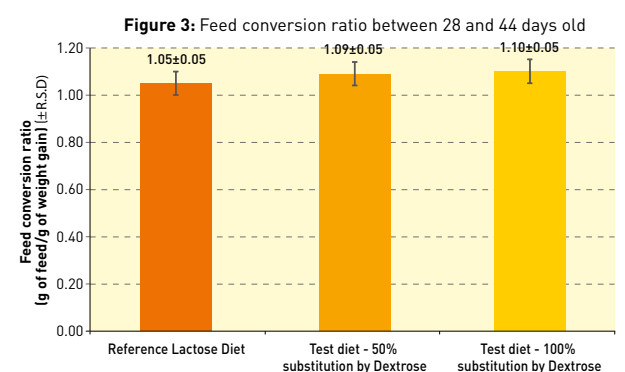
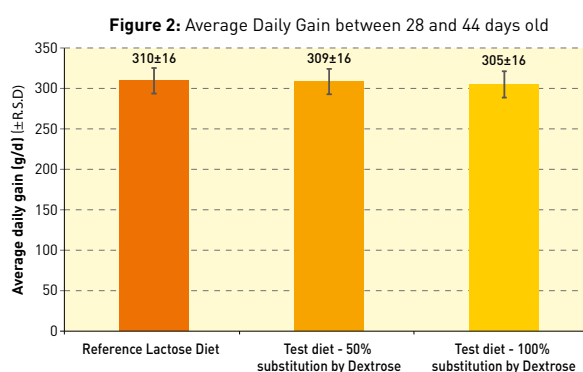
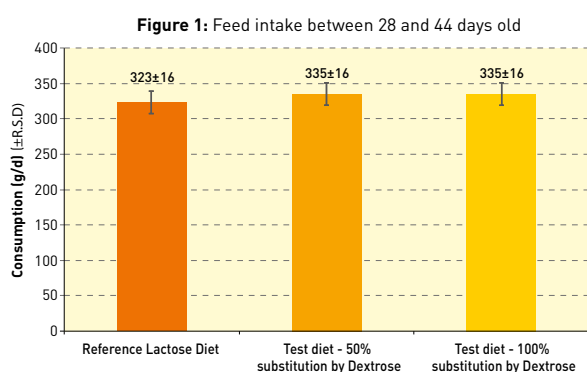
Composition (%)	Reference Lactose diet	Test diet - 50% substitution by Dextrose	Test diet - 100% substitution by Dextrose
Cereals and derivatives (<i>barley, wheat, wheat middlings, biscuit meal</i>)	69.4	69.9	67.8
Proteins and oils (<i>extruded soybean, pea protein, soybean meal, whey protein concentrate, rapeseed oil</i>)	15.7	17.1	19.2
Whey powder	10.3	4	-
Dextrose	-	4	8
Premix (<i>minerals, vitamins, amino acids</i>)	4.6	5	5

Study design



Nutritional characteristics	Reference Lactose diet	Test diet - 50% substitution by Dextrose	Test diet - 100% substitution by Dextrose
Crude protein (%)	17.5	17.5	17.5
Fat (%)	5.59	5.57	5.57
Starch (%)	34.3	34.7	33.4
Total sugar (%)	12.5	12.5	13.7
Lactose (%)	7.1	3.6	1.35
Total lysine (%)	1.46	1.46	1.46
Total phosphorus (%)	0.63	0.64	0.64
Total calcium (%)	0.67	0.67	0.67
Net energy (MJ/kg)	10.6	10.6	10.6

Results



• **Clinical observations:** Over the whole trial period, 1 piglet died and 2 others were removed because of weight loss without any relation with a particular diet. No phenomenon of diarrhoea was recorded.

Zootechnical performances:

- The **initial weight** of the piglets was 7.2kg at day 28 compared to a **final weight** of 12.2kg at day 44.
- During the study period, from day 28 to day 44, the **average feed intake** was 331g/day (Fig.1), the **average daily weight gain** was 308g/day (Fig.2) and the **feed conversion ratio** was 1.08 (Fig.3).

>> **No significant differences were observed among the 3 diets.**

Conclusion

Dextrose can fully substitute lactose provided by whey powder in post weaning diets without impairing piglet performances.