

EAAP 2010

Session 7 - Helene.Pastorelli@rennes.inra.fr

Quantification by meta-analysis of feed intake and growth responses in weaned piglets to digestive disorders

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Introduction

- Digestive disorders are often observed in weaned piglets
- During pathogen exposure, reductions in feed intake and growth occur
- Several studies have been carried out to understand the underlying mechanisms

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Introduction

Reduction in feed intake

Direct consequence of pathogen exposure

Bown et al., 1990; Kyriazakis et al., 1994

Host defence strategy through immune system stimulation

Sandberg et al., 2006

Growth retardation

Direct consequence of ↓ in feed intake

Kyriazakis et al., 1998

Related from ↓ in feed efficiency

↓ nutrients absorption or ↑ maintenance requirements

Sandberg et al., 2007

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Introduction

Recognition of the economical and societal impact of health disorders in pig production



Models for simulating the effect of diseases on feed intake and growth

Sandberg et al., 2006, 2007; Kyriazakis and Doeschl-Wilson, 2009

No quantitative framework for predicting the dynamic pattern of feed intake and consequences on growth

No (or little) incorporation in growth models of pigs

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Objectives

- To collect and integrate experimental results from the literature in a systemic way
- To quantify the reductions in feed intake and growth, and to describe their relationship in relation to digestive disorders
- To compare the effect of different measurement periods on these responses

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Materials & Methods

Database from 64 published studies

Control treatment / feed intake and growth results

Experimental infection with *E. coli* / Poor sanitary conditions

7300 pigs weaned at 4 wk old

Experimental periods started 4 d post weaning and lasted 3 wk

2 measurement periods

Immediate period (±1 wk) following the digestive disorder

Overall experimental period

Responses calculated within experiment

Two dependent variables = ADFI & ADG

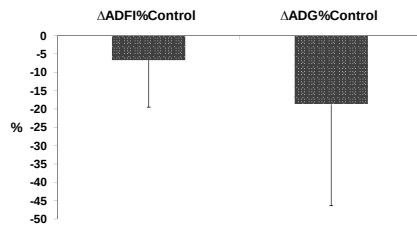
Results expressed as a % of corresponding control

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Results

ADFI & ADG mean responses: general effect

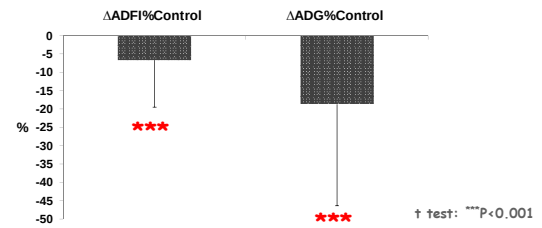


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Results

ADFI & ADG mean responses: general effect



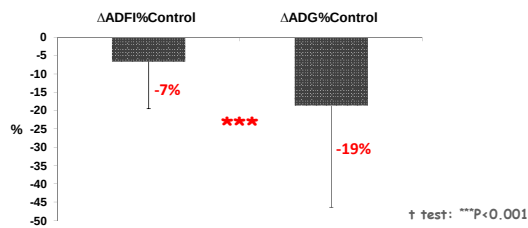
Digestive disorders affected ADFI & ADG in weaned piglets

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Results

ADFI & ADG mean responses: general effect



ADG is more affected than ADFI

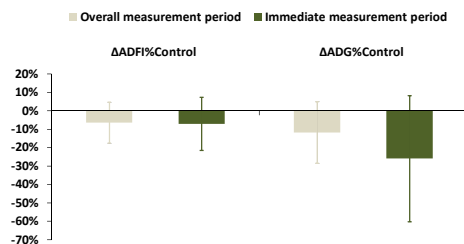
➢ Only a part of the reduction in growth can be explained by the reduction in feed intake

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Results

ADFI & ADG mean responses: immediate & overall effects

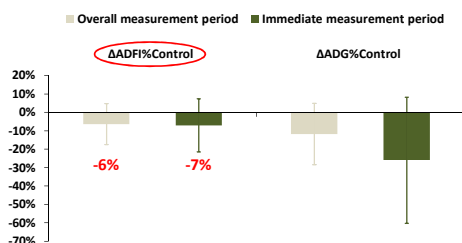


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Results

ADFI & ADG mean responses: immediate & overall effects



Period did not affect the response of ADFI

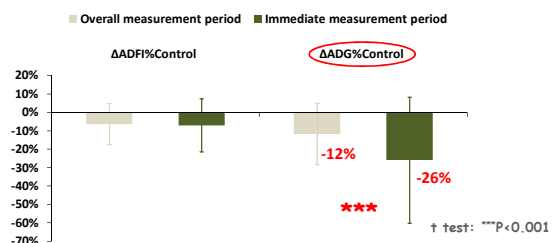
➢ Anorexia development due to bacteria is a rapid time events
Kyriazakis and Doeschl-Wilson, 2009

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Results

ADFI & ADG mean responses: immediate & overall effects



ADG response was greater on immediate than overall period

➢ Acquisition and expression of immunity
Coop and Kyriazakis, 1999

➢ Overall period cover several week including acute and recovery phases

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