Perspectivas sobre Química Verde e pwrPlanz

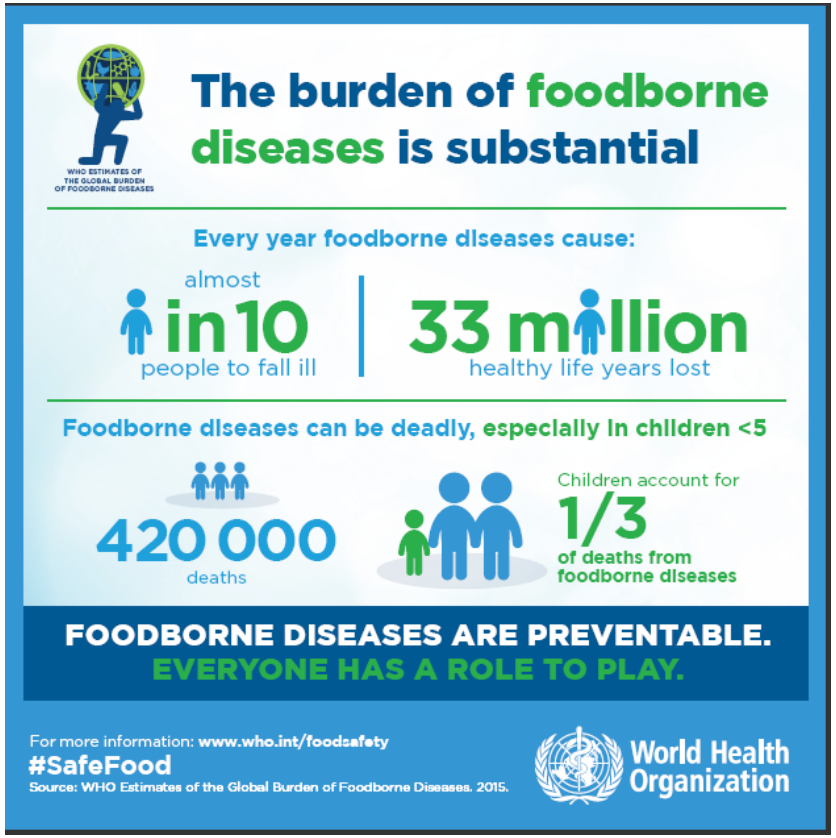
Christian Lückstädt
Addcon GmbH, Alemanha

Próximas tendências para a produção animal.

A visão ADDCON

Forças motrizes para a nossa indústria

Regulamentação
Segurança alimentar
Preocupações ambientais
Sustentabilidade



Problema 1:

A chegada da proibição do ZnO e possíveis alternativas

ZnO-latest data

EAAP 2021, Abstract 36130

Zinc excretion from weaned pigs related to zinc intake: A meta-analysis

S. V. Hansen*, J. V. Nørgaard, T. A. Woyengo, T. S. Nielsen
Department of Animal Science, Aarhus University, Foulum, Denmark

Introduction

Studies have generally shown that a high dietary zinc (Zn) content in pig diets leads to a high fecal Zn excretion, which is considered an environmental issue. However, there is limited knowledge about the quantitative relation between daily Zn intake and fecal Zn excretion in weaned pigs.

Objectives

Determine the relation between Zn excretion and Zn intake through a meta-analysis, and apply the outcome on data from a dose-response experiment (Abstract ID 35778).

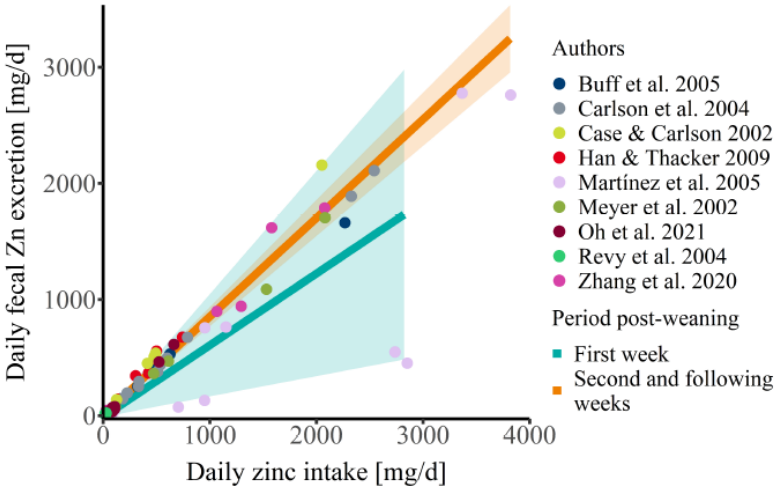
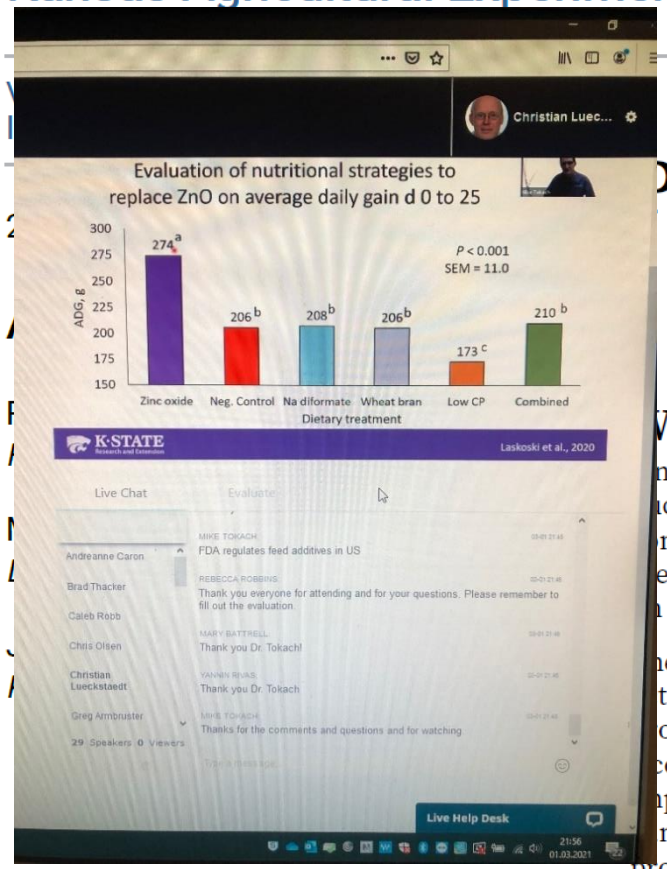
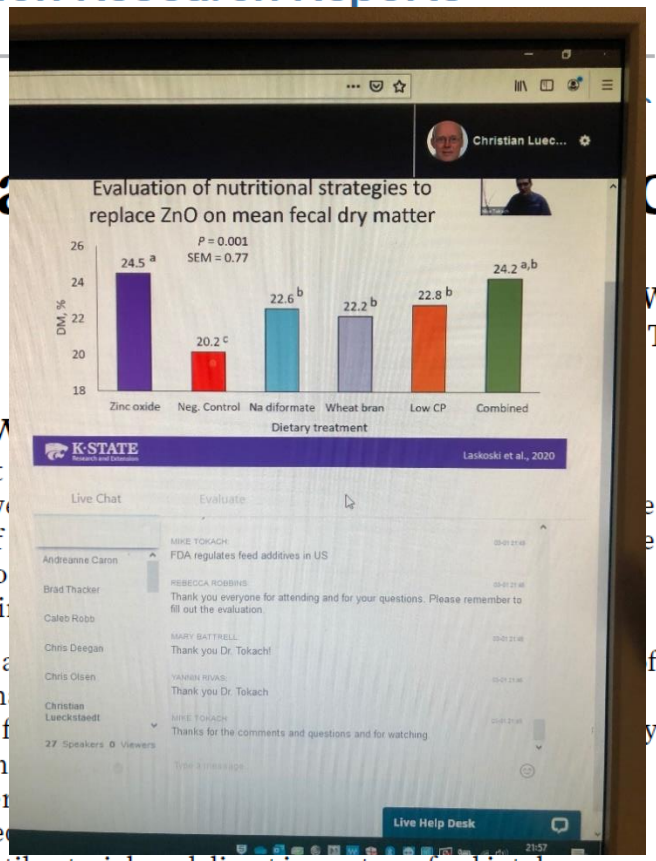


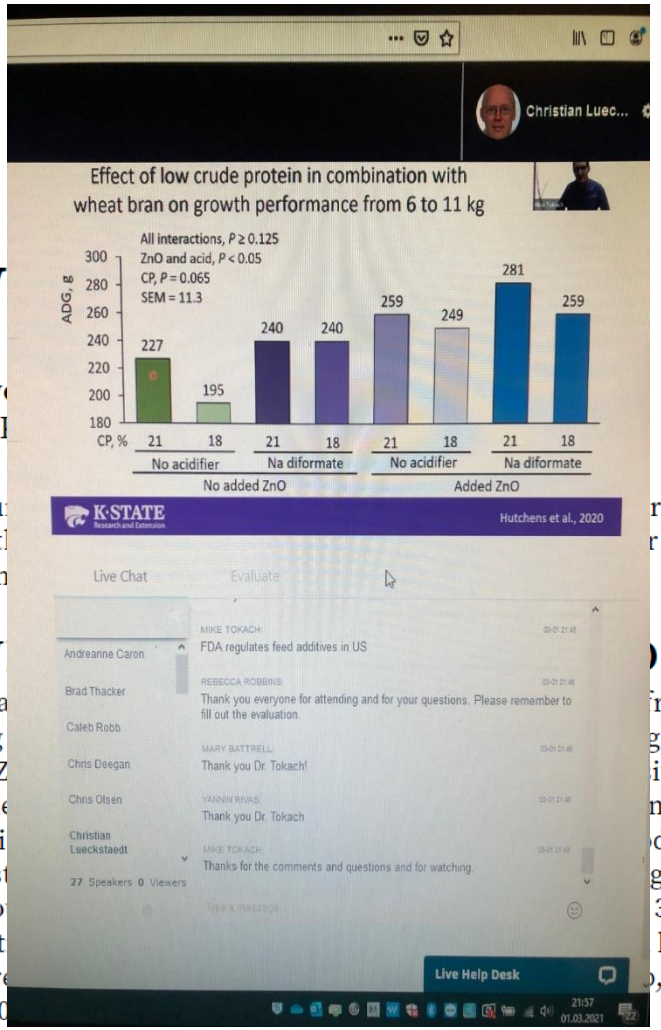
Figure 1. The relationship between Zn intake and Zn excretion in weaned pigs the first weeks post-weaning.

ZnO nos EUA

Kansas Agricultural Experiment Station Research Reports







protection; antibacterial; and direct impacts on feed intake.

Evidence suggests that the young, weaned pig may simply have

ZnO e ADDCON

MÉTODOS E MATERIAIS:

360 leitões desmamados (~ 21 dias de idade) (IW: 12,9 lb) - Período experimental: 42 dias

Óxido de Zinco: 110 ppm / 2.000 ppm / 3.000 ppm; Formi NDF a 1,2%

Proteína bruta: 21% / 18%

	Sem adição de ZnO				**Com adição ZnO**				**Probabilidade P <**			
	Sem adicificante Formi NDF				**Sem adicificante**		**Formi NDF**					
	21% CP	18% CP	21% CP	**18% CP**	21% CP	18% CP	21% CP	18% CP	SEM	ZnO	adicificante	Proteína Bruta
	0-21 days											
ADG,lb	0.50	0.43	0.53	**0.53**	0.57	**0.55**	0.62	0.57	0.025	<0.001	0.004	0.065
ADFI, lb	0.73	0.71	0.75	**0.79**	0.81	**0.84**	0.81	0.82	0.035	0.004	0.409	0.582
F/G	1.49	1.67	1.42	**1.50**	1.42	**1.54**	1.34	1.43	0.040	0.003	**<0.001**	<0.001

Kansas State University
USA, 2020

Problema 2:

As iniciativas de redução de antibióticos na UE

A Comissão Europeia continua

EU to decide on antibiotics to be banned for animal health use

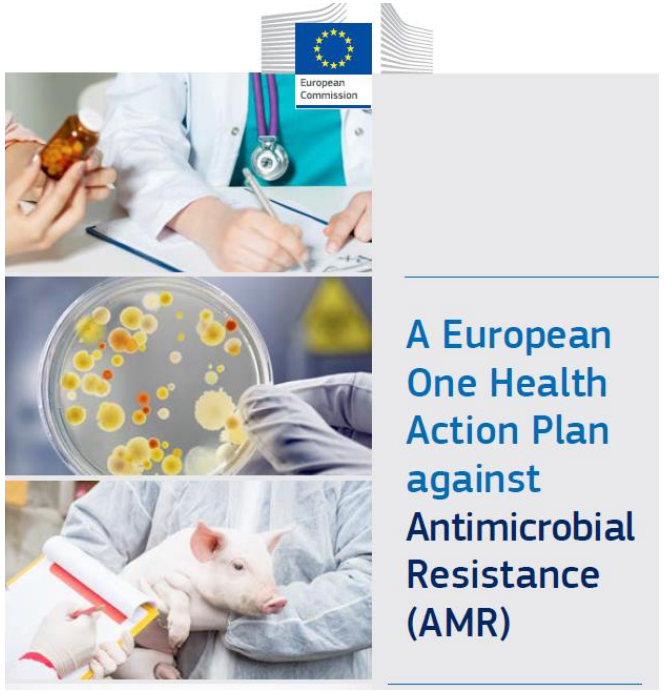
The European Parliament will be voting on a ban on the use of medically critical antibiotics in animals in mid-September.

efeedlink..com – 6 de Setembro de 2021

In January 2022, Regulation (EU) 2...
veterinary medicines will...
According to th... to the
pr... especially those
... the treatment of
... in humans, but are also necessary
for use in veterinary medicine, it may be necessary to restrict or prohibit their use in animals.

European One Health Action Plan

Contra a Resistência antimicrobiana (AMR).



European One Health Action Plan

A saúde intestinal é a solução

Pesquisa do Google - saúde intestinal

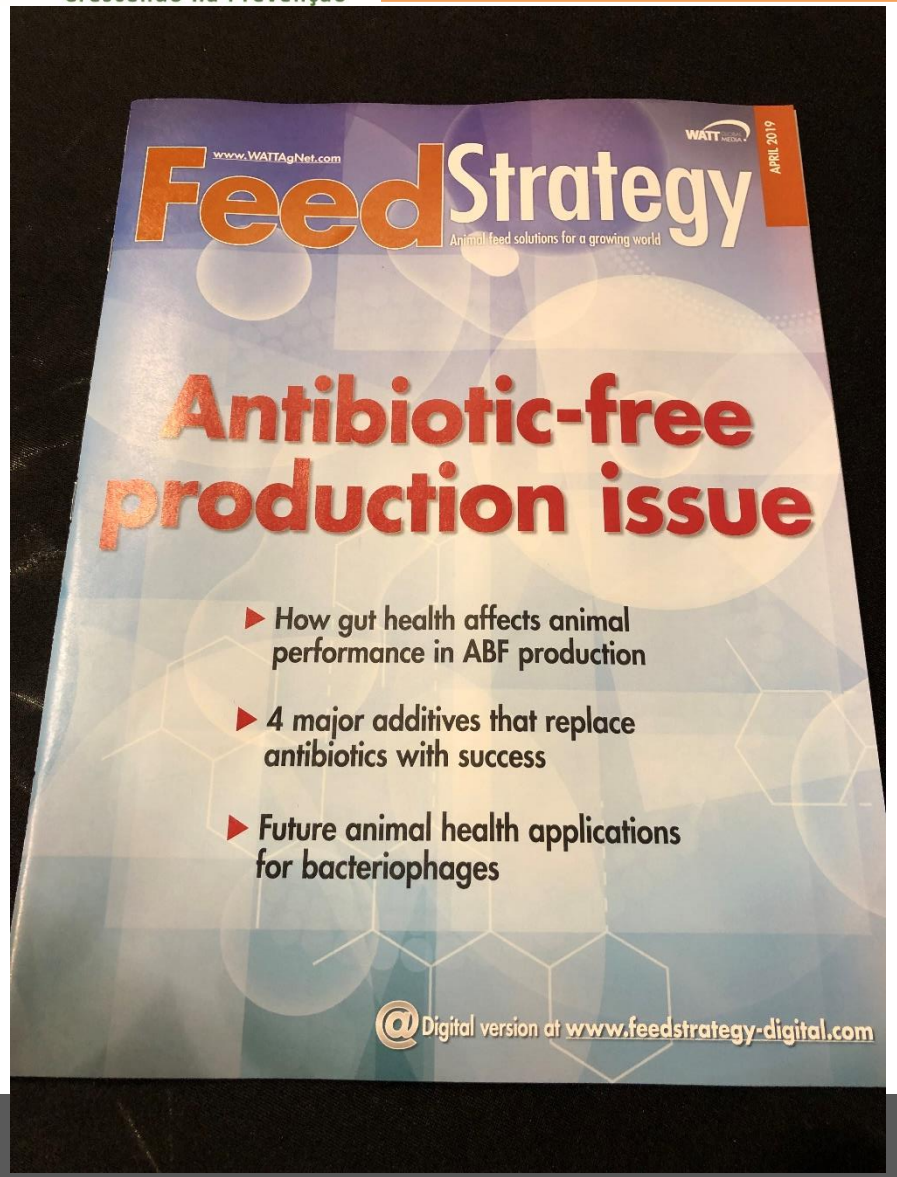
Google

- Gut
- Micro axis:

A saúde intestinal é a questão chave para a saúde geral na era pós-AGP

„… Manter um intestino saudável requer até 25% da proteína diária e 20% da energia dietética fornecida com a ração…“

Estratégia de alimentação



Acidificante e saúde intestinal

ALL ABOUT FEED

Thursday, 10 December 2020

How acidifiers improve g pigs

It is common now to see organic acids or simply acidifiers being replace antibiotic growth promotors. Acidifiers play an importan ways. read more

animals

MDPI

Review

From Acidifiers to Intestinal Health Enhancers: How Organic Acids Can Improve Growth Efficiency of Pigs

Benedetta Tugnoli [1], Giulia Giovagnoni [2], Andrea Piva [1,2,*] and Ester Grilli [2,3]

1 Vetagro S.p.A.-Via Porro 2, 42124 Reggio Emilia, Italy; benedetta.tugnoli@vetagro.com
2 Dipartimento di Scienze Mediche Veterinarie, DIMEVET-Università di Bologna-Via Tolara di sopra, 50-40064 Ozzano Emilia, Bologna, Italy; giulia.giovagnoni4@unibo.it (G.G.); ester.grilli@unibo.it (E.G.)
3 Vetagro Inc., 116 W. Jackson Blvd., Suite #320, Chicago, IL 60604, USA
* Correspondence: andrea.piva@unibo.it; Tel.: +39-051-209-7387

Received: 29 November 2019; Accepted: 9 January 2020; Published: 14 January 2020

check for updates

Simple Summary: Organic acids have been used for a long time to support pig growth particularly at weaning, and more recently have become the number one alternative to growth promoters to improve the production efficiency of pigs. This article will review the antimicrobial properties of organic acids and elucidate the different modes of action that organic acids can exert along the gastrointestinal tract of pigs. Moreover, it will be introduced the advantage of microencapsulation as a tool to deliver organic acids along the intestine and allow their positive effects.

Desenvolvimento do Microbioma em Leitões

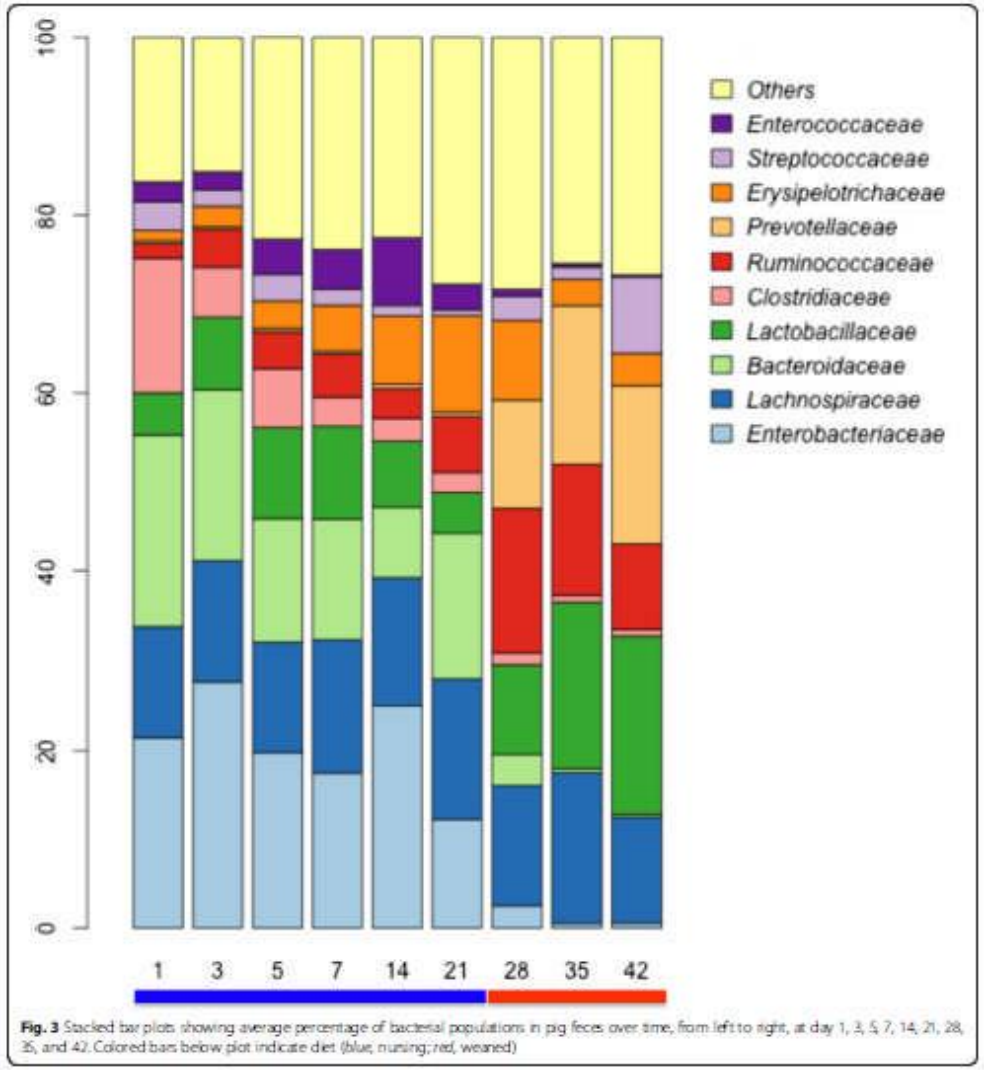
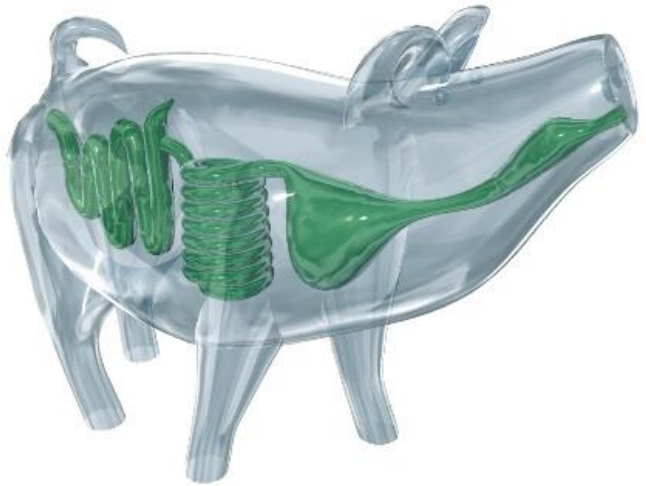


Fig. 3 Stacked bar plots showing average percentage of bacterial populations in pig feces over time, from left to right, at day 1, 3, 5, 7, 14, 21, 28, 35, and 42. Colored bars below plot indicate diet (blue, nursing; red, weaned)

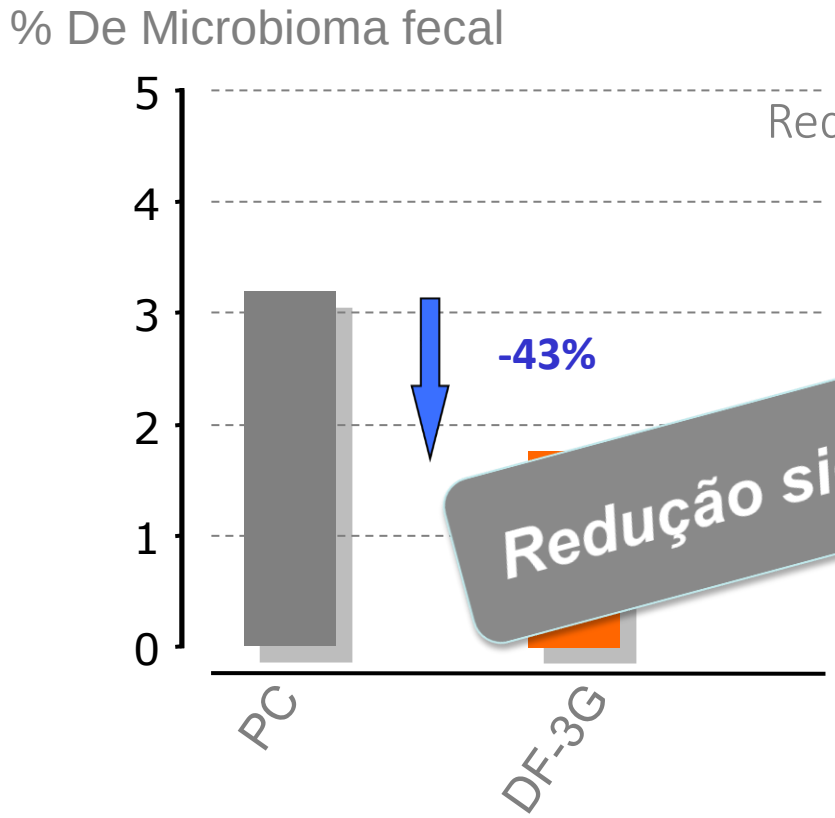
- **Desenvolvimento do Microbiome antes e após o desmame ... mudanças drásticas**
- **Desequilíbrios bacterianos**



Freese et al., 2015

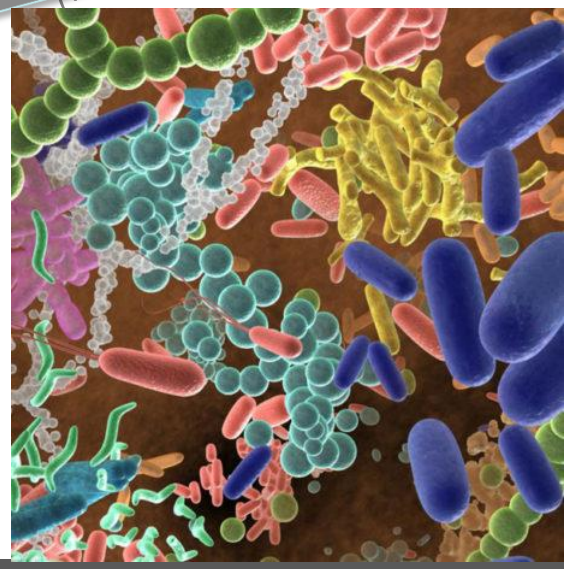
Impacto do Formi 3G na redução de estreptococos nas fezes de porcas - estudo do microbiomo I

Contagem de estreptococos-fecais em porcas alimentadas por 19 dias com ou sem 1,0% de Formi 3G (n = 24)



Redução da percentagem de estreptococos do microbioma fecal de porcas alimentadas por 19 dias com Formi 3G vs Controle (Diformato): Microbiome: p =

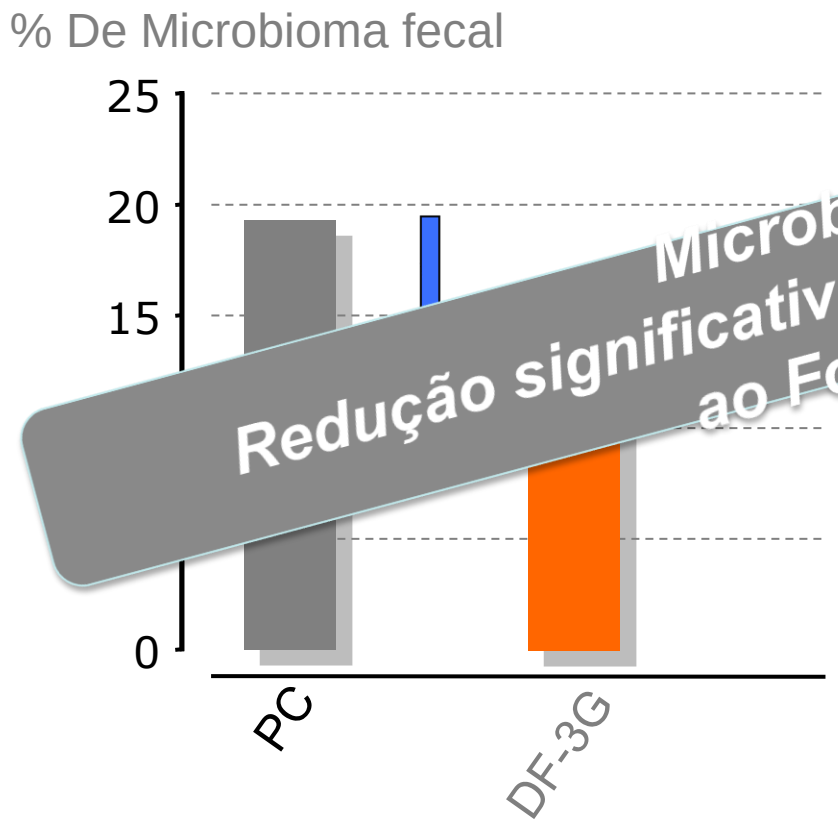
Redução significativa de estreptococos devido ao Formi 3G



Lückstädt et al., RAAN, 2021

Impacto do Formi 3G na redução de Clostridia em fezes de porcas - Estudo de Microbioma II

Contagem fecal de clostrídios em porcas alimentadas 19 dias com ou sem 1,0% de Formi 3G (n = 24)



Redução significativa de Clostridia devido ao Formi 3G

Microbiome:

Redução d… …ídios

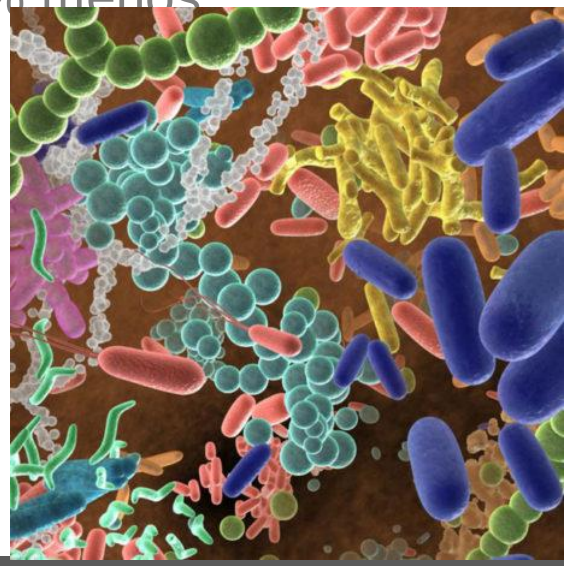
…cas

…dias com Formi 3G vs.

…Positivo (Diformato): 42% menos

Clostrídios (P = 0,02)

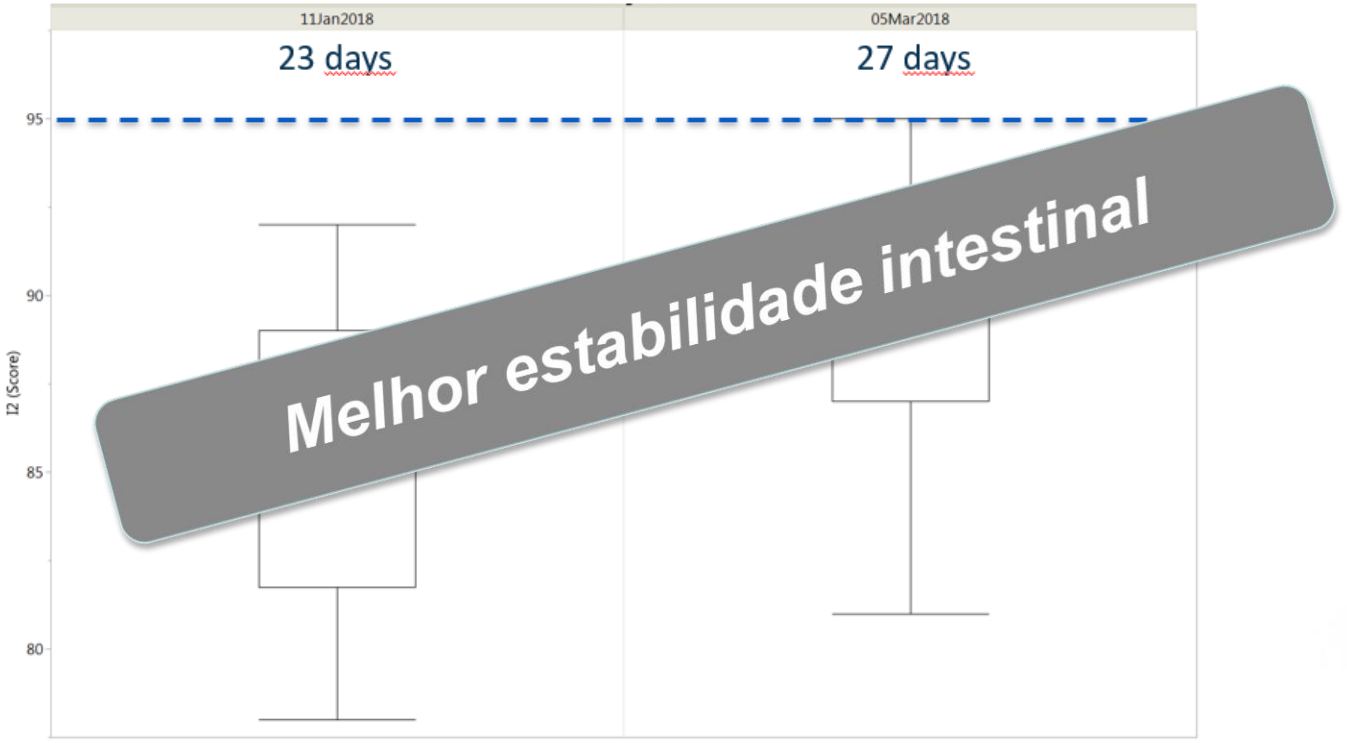
Lückstädt et al., RAAN 2021



Formi Alpha em aves – impacto na saúde intestinal

MÉTODOS E MATERIAIS:

Dados de teste no campo sobre "estabilidade intestinal", de acordo com Elanco Gut Health Assessment
Grupo de controle: sem acidificante, sem antibióticos - Grupo de teste: 2,5 kg FORMI® 3G / t de ração



Intestinal stability index (I2) = 22 parameter

pwrPlanz em ação

Resultados no desempenho em frangos de corte - dia 0 ao dia 15

Formi Alpha a 2,5 kg / t-Formi NDF (controle positivo) a 3,0 kg / t
Desafio de Salmonella heidelberg no dia 0 @ 3,0 x 107 CFU
25 pássaros por curral

	Ingestão de ração (k	FCR		lade (%)
Controle infeç			445	18.3[a]
Form	12.87[b]	1.26[b]	459	9.7[b]
PC (Formi NDF)	12.73[b]	1.30[ab]	459	13.0[b]

Melhoria significativa da eficiência alimentar apesar do desafio bacteriano de 5,7%

SPRG institute, USA, 2021

Problema 3:

Alimentação com redução de nitrogénio e fósforo

O contexto

sustainability

MDPI

Review

"What a Waste"—
Food Animal Proc
Waste Streams int
Climate, and Ecor

Gerald C. Shurson

Department of Animal Science, Un

Received: 11 July 2020; Accepted: 2

Abstract: Food waste has been
sustainability for many decade
many countries because of sup
Swine Fever epidemic. Althoug
into animal feed, countries tha
States and the European Union, have lagged far behind. Concerns about the risk of transmission

Preservation with organic acids

COMBATING FOOD AND FEED WASTE

by Christian Lückstädt, Technical Director, Feed, ADDCON GmbH

eeding the world's population is an ever- safeguard overall economic animal production.

O Contexto (cont.)

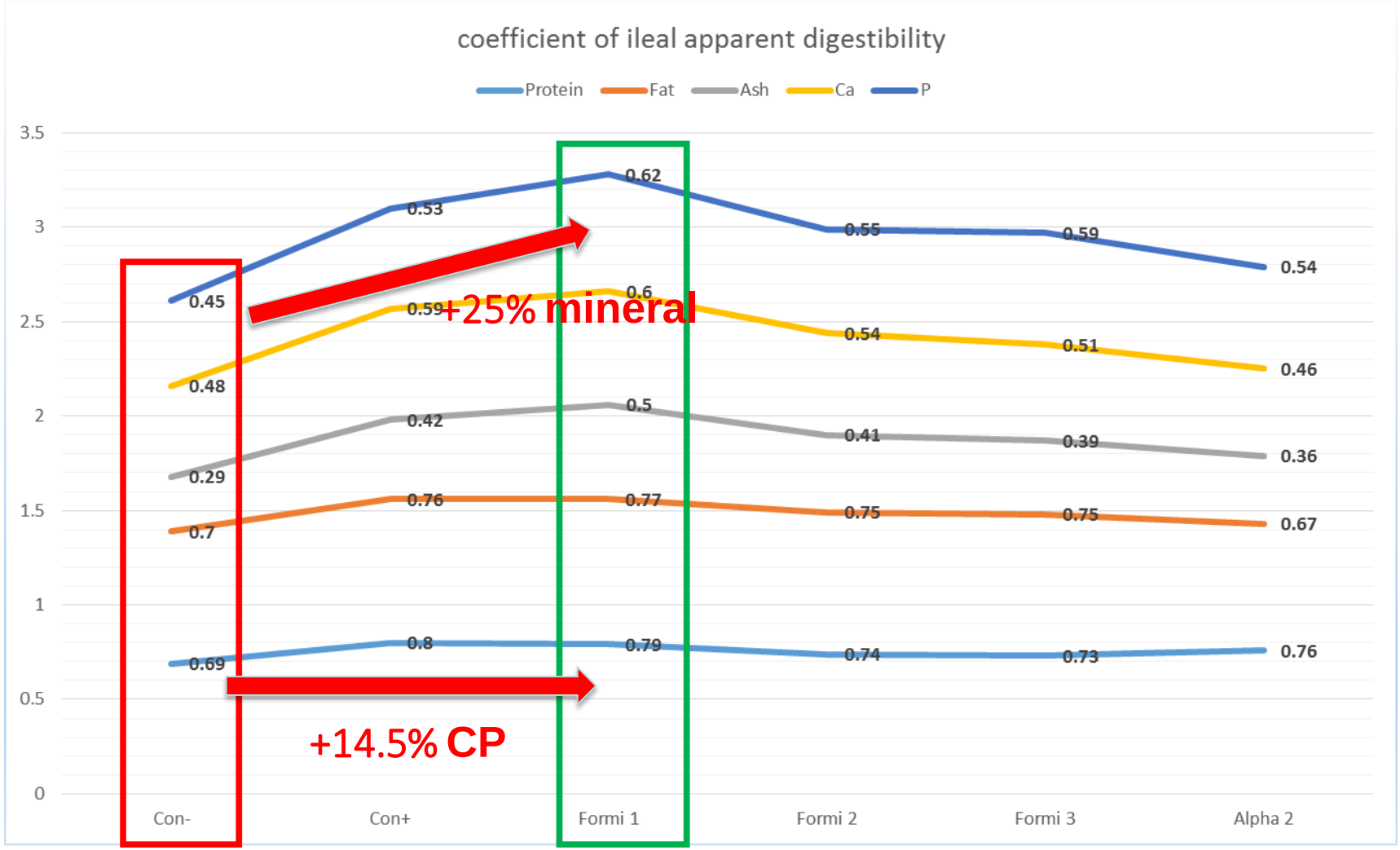
Digestibilidade de proteínas em desmamados

	Controle	*FORMI 1.8%*
Ingestão N (g/kg lw^{0,75}/dia)	**2.03**	**2.04**
N nas feses (g/kg lw^{0,75}/day)	**0.39^{a}**	**0.35^{b}**
N na urina (g/kg lw^{0,75}/day)	**0.37^{a}**	**0.33^{b}**
Digestibilidade N (g/kg lw^{0,75}/day)	**80.8^{a}**	**82.7^{b}**

Digestibilidade de fósforo em desmamados

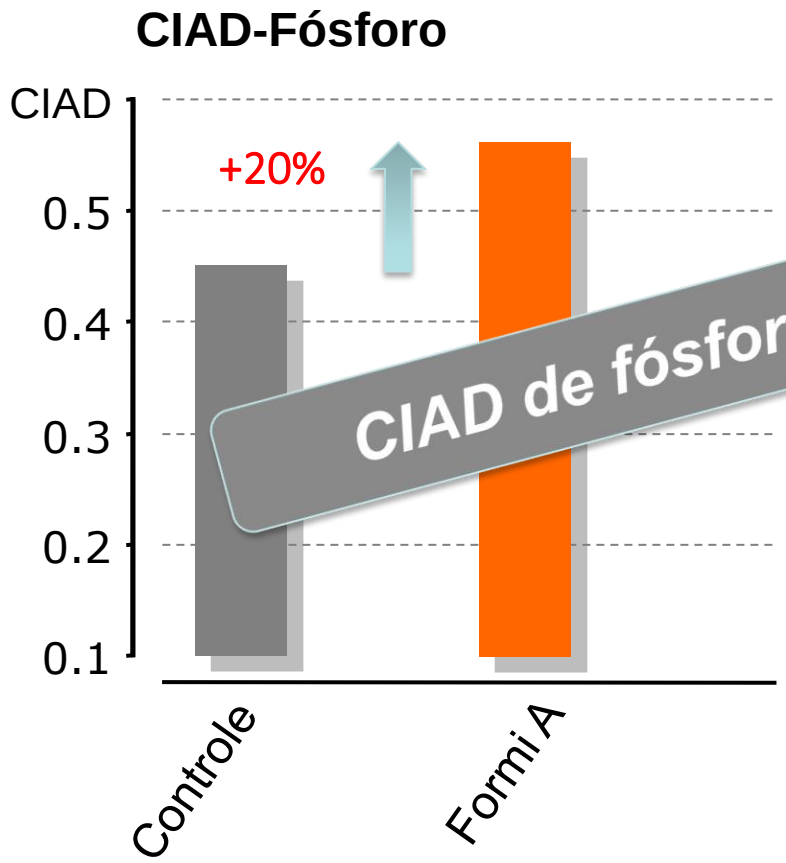
	Controle	*FORMI 1.8%*
Ingestão P (g/kg $lw^{0,75}$/dia)	484	488
P nas feses (g/kg $lw^{0,75}$/dia)	239^{a}	221^{b}
P na urina (g/kg $lw^{0,75}$/dia)	0.3^{a}	0.5^{b}
P digestabilidade (%)	50.6^{a}	54.6^{b}

Digestibilidade ileal em frangos de corte



Impacto na digestibilidade do fósforo

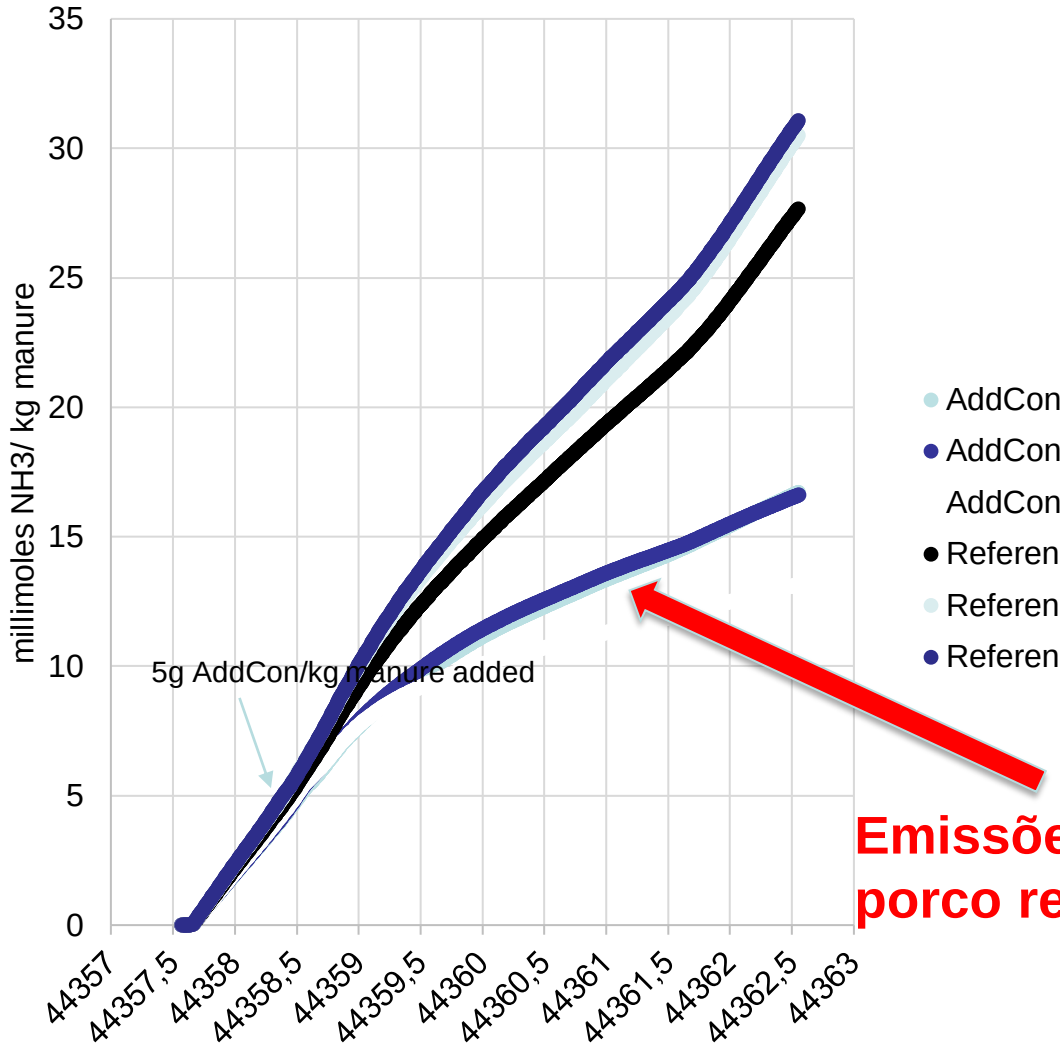
Coeficiente de Digestibilidade Aparente Ileal (CIAD) em frangos (Ross 308) alimentados com ou sem Formi Alpha (2,0 kg / t) ao dia 42



CIAD de fósforo 20% devido ao FORMI Alpha

Problema 4:
Projetos para reduzir as emissões de amoníaco

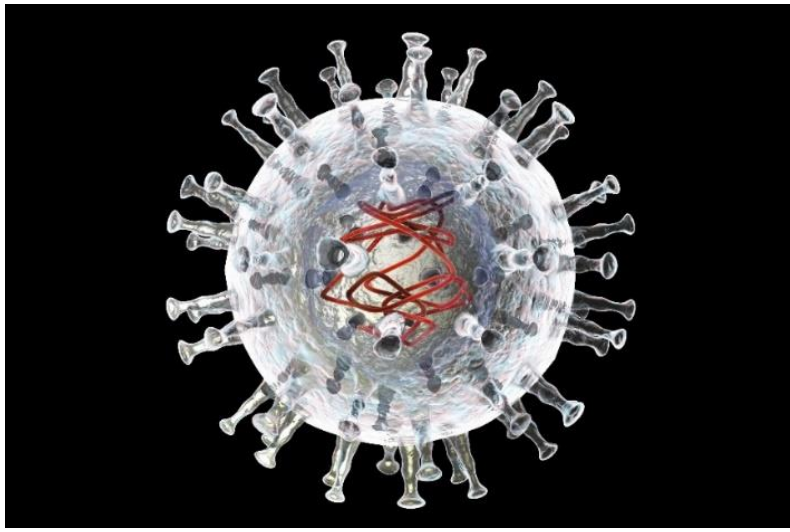
pwrPlanz novamente em ação



Emissões em estrume de porco reduzidas em 50%

Problema 5:

Doenças emergentes



…com bactérias

Qualitätssicherung. **Vom Landwirt bis zur Ladentheke.**

Circular SCHEME PARTICIPANTS

feed manufacturers and traders

Increased salmonella findings in feeds

Expanding sampling is reasonable

Dear Sir or Madam

Salmonella is currently being increasingly founded in protein-rich feed materials, especially in rape seed and soya bean extraction meal.

Please therefore pay particular attention to this parameter when examine your products and analyse your raw materials and final products as closely as possible for salmonella. Contacting your suppliers can also be helpful in assessing the risk and limiting the problem.

Please remember also to deposit the sample related data and results of the additional analyses in the QS database. A large number of data helps to follow up and narrow down the incidents and thus serves the entire industry.

If you have any questions, please do not hesitate to contact us.

Kind regards

i.V. Katrin Spemann

i.V. Claudia Brill

Ihre Ansprechpart
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Bonn, 18.12.2019

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Amtsgericht Bonn
HRB 9790

Geschäftsführer
Dr. Hermann-Jose

USt-Id. DE813388

Deutsche Bank AG

anses

SALMONELLA AND PARASITES IN FRENCH ALTERNATIVE PIG FARMS: FIRST RESULTS IN 35 HERDS

DELSART Maxime[1], REPERANT Jean-Michel[2], KEROUANTON Annaelle[3], DENIS Martine[3], SOUQUIERE Marie[4], DUFOUR Barbara[1], ROSE Nicolas[4], POL Françoise[4], FABLET Christelle[4]

1- EnvA, Epidémiologie des Maladies Animales Infectieuses.
2- Anses Ploufragan-Plouzané-Niort, Unité Virologie, immunologie et parasitologie aviaires et cunicoles.
3- Anses Ploufragan-Plouzané-Niort, Unité Hygiène et qualité des produits avicoles et porcins.
4- Anses Ploufragan-Plouzané-Niort, Unité Épidémiologie, santé et bien-être.

BACKGROUND & AIM

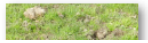
Pig farms on litter or with outdoor access (runs, free-range) are widely popular with consumers and citizens, particularly for reasons of animal welfare[1]. However, these alternative farms have their critical points.

This study is part of a large research project (PIGAL) jointly studying animal health, biosecurity, animal welfare and veterinary public health in alternative pig farms. **It aims to assess *Salmonella* shedding by growing and finishing pigs and their level of parasitism.**

MATERIAL & METHODS

The study is conducted in 35 alternative pig farms (size > 100 pigs), in continental France.
Factors concerning the farm structure, management and husbandry are recorded and observations of the animals are made.

Samples:



RESULTS

In 17.1% of the herds neither *Salmonella* nor parasites were detected.

<u>*Salmonella*</u>:

Salmonella was detected in 42.9% of the herds; 34.3% of the herds were positive at the growing step, 34.3% at the finishing step and 25.7% at the two steps (Figure 2). On the 700 samples of faeces, 17.9% were *Salmonella* positive, 18.3% at the growing step and 17.4% at the finishing step. Eleven serotypes were found in positive samples (Figure 3).

Figure 2: Number of positive pigs per stage for the 15 positive farms

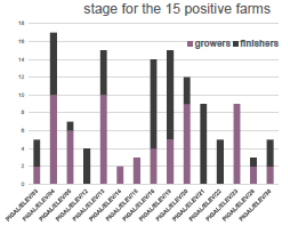
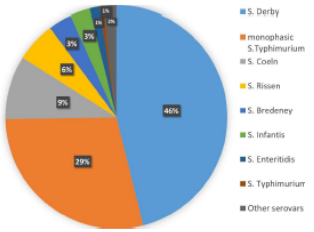


Figure 3: Frequency of serovars in positive samples



<u>Coprology</u>:

Parasites were detected in 71.4% of the herds; 45.7%, 65.7% and 40.0% of the herds were positive at the growing, finishing and at the two steps respectively.

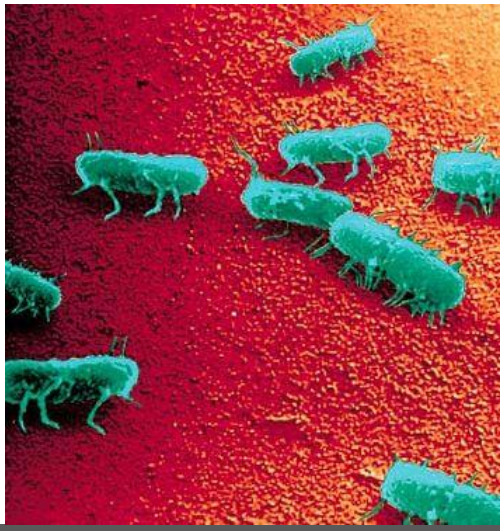
Ocorrência de bactérias na água potável Alemanha 2020

- ***Saxónia:***

- 11,850 CFU ml^{-1} bactérias aeróbias totais a 20 ° C [10,000]
- **10,950 CFU ml^{-1} bactérias aeróbias totais a 37 ° C**[1,000]

- *Coliformes*: ***2420*** **CFU 100 ml^{-1}** [100]

Contagem de coliformes 24 x mais alta



Estudos MIC

Estudos MIC com ADDCON XL forte confirmados contra vários antimicrobianos

Os acidificantes de 3ª geração são o caminho a seguir para neutralizar as bactérias Gram-negativas E Gram-positivas.

ADDCON XL forte

„Acidificador de última geração“

Antiviral?

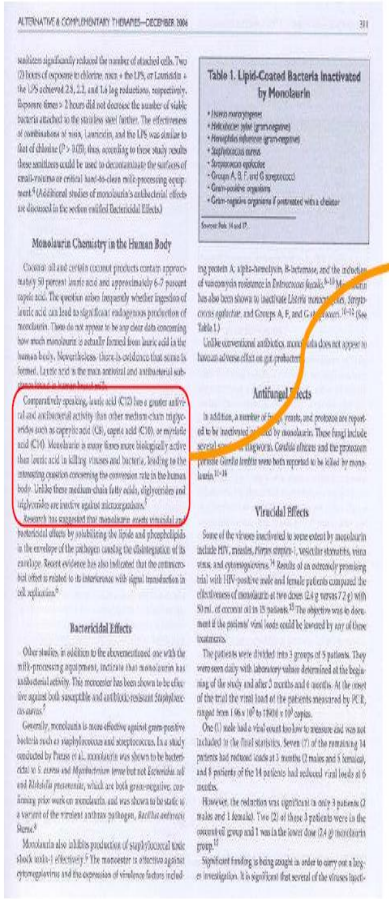


Table 1. Lipid-Coated Bacteria Inactivated by Monolaurin

Monolaurin Chemistry in the Human Body

Antifungal Effects

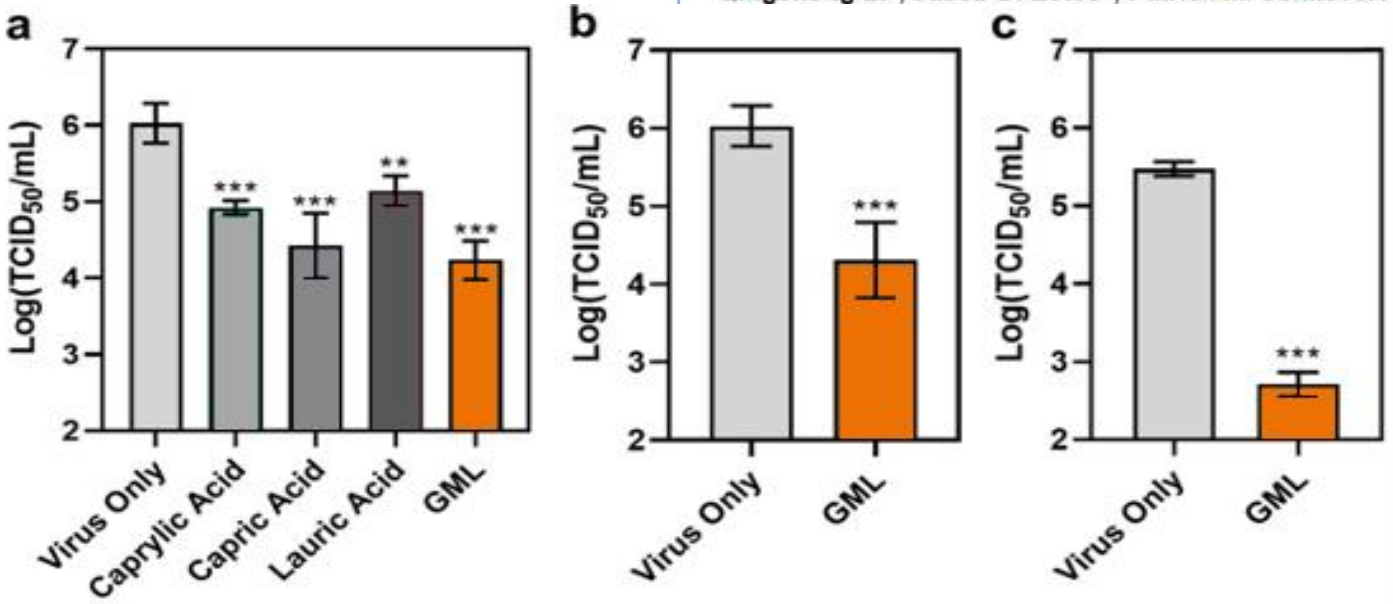
Virucidal Effects

Bactericidal Effects

Glycerol monolaurate prevents mucosal SIV transmission

Qingsheng Li[1], Jacob D. Estes[2], Patrick M. Schlievert[1], Lijie Duan[1], Amanda J. ie L. Peterson[4], Nancy Schultz-Pambuccian[6], Jeffrey D. Lifson[2],

te (GML)
ll signaling
upting lipid



Evaluation of MCFA and GML to inhibit ASFv infectivity in aqueous solution. a Virucidal screening assay to determine inhibitory effect on extracellular ASFv particles. The compound concentration was 5 mmol/L. Infectious viral titers were measured by CPE-based assay ($n = 6$ in virus-only control and $n = 3$ in other groups). b Virucidal assay results for 250 μmol/L GML treatment ($n = 6$ in virus-only control and $n = 3$ in GML-treated group). Same method as panel (a). c Antiviral assay results for 250 μmol/L GML treatment ($n = 3$ per group). Viral titers were determined by CPE-based assay. In panels (a)-(c), data are reported as mean ± standard deviation. The markers ** and *** indicate $P < 0.01$ and $P < 0.001$, respectively, versus the virus-only control

an

acid widely utilized in food, cosmetics, and
l agent that targets a range of bacteria, fungi,
ML also has immunomodulatory functions.
ffects the signaling and functional output of
ed order and disorder dynamics in the plasma
C-γ, and AKT microclusters. Altered membrane

events induced selective inhibition of TCR-induced phosphorylation of regulatory P85 subunit of PI3K and AKT as well as abrogated calcium influx. Ultimately, GML treatment potently reduced TCR-induced production of IL-2, IFN-γ, TNF-α, and IL-10. Our data reveal that the widely used anti-microbial agent GML also alters the lipid dynamics of human T cells, leading to their defective signaling and function.

O produto

Organic Acids 3.0

ADDCON

FORMI® 3G

The next generation of acidifiers.

FORMI 3G is a synergistically acting combination of 2 patented performance enhancers in which the Glycerin-Monolaurate will enhance the impact of the Diformate.

The advantages of FORMI 3G speak for themselves:

- Increased growth performance
- Strong and broad antimicrobial impact
- Significant reduction of diarrhoea risk

Hygiene and efficiency for the animals as well as optimal safety in producing meat are key requirements for modern animal production.

- Optimum safety for humans and the environment
- No residues
- Secure and easy handling

New mode of action

Strong and broad antimicrobial effect

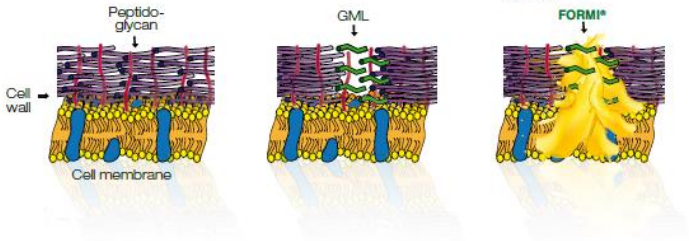
Reduced risk of diarrhoea

Safe and easy to handle; non-corrosive

1. Step:
The cell wall protects Gram-positive bacteria from the influence of organic acids

2. Step:
Glycerin-Monolaurate is inserted into the Peptido-glycan and is inducing cell wall-lysis

3. Step:
Diformates can enter into the bacteria through the cell membrane (Trojan horse principle) → no duplication / cell death



Formi 3G

Problema 6:

Aditivos para rações e agricultura orgânica

TLH®
Crescendo na Prevenção

ADDCON

organicinputs
evaluation network

FiBL

www.organicinputs.org

18/02/2021

CERTIFICATE OF CONFORMITY

On the basis of the documents submitted, it is confirmed that the following commercial products meet the requirements for use in Organic Farming in accordance with the Regulations or Standards listed below.

Company: **ADDCON GmbH**
Parsevalstraße 6 DE 06749 Bitterfeld-Wolfen
E-Mail: info@addcon.com Internet: www.addcon

Product: **Formi® Farm**
Feed and related pr...

Certification:
...wing
...bove cited categorie(s).

...ture in Germany, resp. FiBL Inputs list for organic processing

Mais de 10 produtos ADDCON estão aprovados

Ainda mais?

Outros:

Antioxidantes, produção de leite

AOX

SACHSEN-ANHALT

EUROPÄISCHE UNION
EFRE
Europäischer Fonds für regionale Entwicklung

EINGEGANGEN
19. Juni 2020

Investitionsbank Sachsen-Anhalt

ADDCON Europe GmbH
vertreten durch die Geschäftsführer
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Abteilung:	IB LSA Zuschuss Gewerbliche Wirtschaft
Vorgangsnummer:	ZS/2019/12/104782
Projektnummer:	2004/00026
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	Frau Rossa
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der Bewilligung:	18.06.2020

Desenvolvimento de um novo AOX natural

Zuwendungsbescheid

Gewährung von Zuwendungen zur Förderung von Einzel-, Gemeinschafts- und Verbundprojekten im Forschungs-, Entwicklungs- und Innovationsbereich

Zuwendungsbescheid-Nr.: **2004/00026**

The impact of dietary potassium diformate (FORMI) on the milk yield in sows

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Introduction:

Optimising the sow condition and growth rates of suckling piglets are key requirements for success in today's pig production systems. Organic acids, particularly salts of organic acids, have been reported by many experts to enhance growth performance in swine production sustainably. Potassium diformate (traded as FORMI, ADDCON, hereafter referred to as KDF), a double-salt of formic acid, has been shown in numerous trials to improve health and performance in piglets, growing-finishing pigs and sows. The impact of KDF on sows and their suckling piglets is noteworthy and has been studied recently in more detail worldwide. However, to gain more insights into the i... the additive onto the performance of sows during late gestation and lactation, more data are needed, especially regarding estimation of milk yield during lacta... essential to understand the magnitude of the impact of feed intake on sow milk production, as well as the milk energy output, since insufficient so... reduction in milk produced – leading to smaller litters of lighter pigs at weaning.

Materials and methods:

To estimate the impact of feeding KDF in the lactation diet of sows on their milk production, a meta-analysis ... 5 documented studies with KDF-inclusion in the lactation diet, ranging from 0.8% to 1.2%. Including KDF ... were weaned (28 days). Daily milk production and daily milk energy output were calculated consi... to the equations of Noblet and Etienne (1989). Data were analysed using the t-test and ...

Results:

The average dietary KDF level included across the dataset was ... 9.1 kg/d to 9.6 kg/d, while milk energy output rose (P<0.01... feed intake of the lactation diet by the sow.

...creased significantly (P<0.01) by more than 5.3% from ...his finding agrees with studies in sows, which found an increased

Formi leva 5% mais leite em porcas

Table 1: The average impact of potassium diformate (FOR... ...k production (kg/d) and milk energy output (MJ GE/d) in lactating sows (n = 5 studies; av... ...RMI-dosage: 0.96%)

	Milk production (kg/d)		Milk energy output (MJ GE/d)	
Study	**Negative Control**	**KDF**	**Negative Control**	**KDF**
I	8.25	8.74	42.40	45.03
II	8.14	8.95	41.83	46.16
III	10.48	10.95	54.37	56.96
IV	9.32	9.69	48.32	50.30
V	9.32	9.62	48.32	49.98
Average	**9.10**	**9.59**	**47.05**	**49.69**
SD	*0.85*	*0.77*	*4.60*	*4.18*
P-level		0.003		0.002

Conclusion:

Based on the results above, carried out under European and South African conditions, it can be concluded that the addition of FORMI into the lactation diet of sows can improve conditions during the suckling period, when it comes to the supply of their piglets with milk and energy.

TLH, Lda
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