

# **"Improving Swine Survivability and Performance through a Medium Chain Fatty Acids Technology"**

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# Outlines

1 Pig production: as strong as its weakest link

2 Design of a science-based MCFA solution

3 Meet more than users' needs

# 1 Pig production: as strong as its weakest link

Tremendous improvements of last 20y ...

- Genetics:
  - ☐ from litters of 7-10 to 15 piglets\*
- Nutrition:
  - ☐ +30% growth using -20% feed\*
- Housing:
  - Sensors, cameras, ...
- Biosecurity
- ...

... constantly challenged

- Economic crises
- Antibiotic resistance
- Consumer pressure
- Raw material qualities
- Virus spreading
- Zoonoses
- ...

\*Source: Pat Melgares – KSU - USA

# 1 Pig production: as strong as its weakest link

Virus X Biosecurity  
"iceberg"

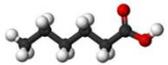


# 1 Pig production: as strong as its weakest link

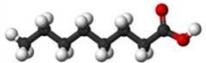


□ MCFAs as a relevant partner in mitigating virus risks in feed and RM while improving technical performances

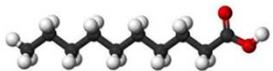
## 2 Design of a science-based MCFA solution



C6: Caproic acid



C8: Caprylic acid



C10: Capric acid



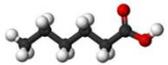
C12: Lauric acid



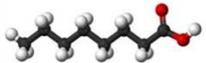
MCFAs have many diverse properties:

- Antibacterial (Kabara *et al.* 1972)
- Pro gut integrity (Linseisen *et al.* 1997)
- Immune stimulating (De Vos *et al.* 2021)
- Antiviral (Gebhardt *et al.* 2020)

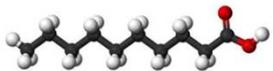
## 2 Design of a science-based MCFA solution



C6: Caproic acid



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C12: Lauric acid



Our MCFA are:

- Free (glycerol)
- Saturated (double bonds/rings)
- Unbranched (linear)
- Mono-carboxylic (-COOH)
- Dose-responsive
- Patented

## 2 Design of a science-based MCFA solution

- Examples of criteria for a feed-based innovative solution against viruses:

1	Effective	Active at low dosages	<i>e.g.</i> Space available for nutrients
2	Cost applicable	Documented benefits	<i>e.g.</i> Check synergies or benchmark
3	Meet the needs +	Provide more than a MoA	<i>e.g.</i> Better technical performance

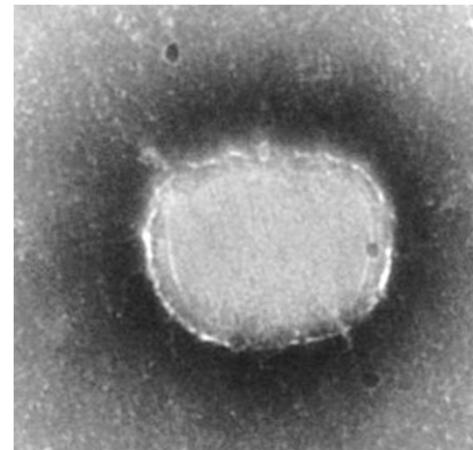


## 2 Design of a science-based MCFA solution

- Effective:

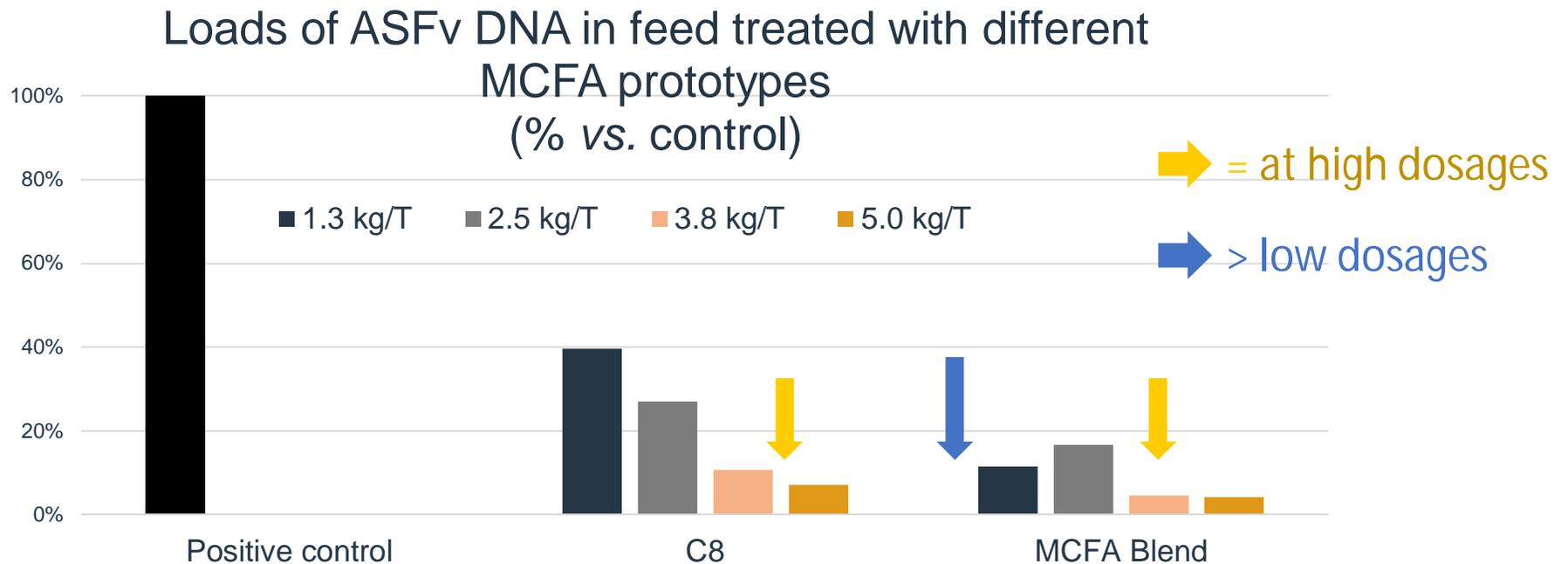
Swine pox virus (  x13,000) treated with 0.5% Patented MCFA blend

- T0' = MCFA Blend enters in contact with viral particles
- T30' = Viral envelope is visibly damaged
- T60' = Virus content leaks
- T120' = Viral particle is destroyed



## 2 Design of a science-based MCFA solution

- **Cost applicable:** mixes of MCFA to be preferred to single



From Tran et al., Open Vet J. 2021-11(3)

## 2 Design of a science-based MCFA solution

- **Cost applicable:** not all mixes of MCFA have the same efficacy

Loads of ASFv DNA in feed treated with different MCFA mixes  
(% vs. control preparation)



From Tran et al., Open Vet J. 2021-11(3)

### 3 Meet more than users' needs

- Can an MCFA Blend be active on other viruses?

#### ❓ Ice block challenge test

- 454g ice block loaded with SVAv, PRRSv and PEDv ( $10^5$  TCID<sub>50</sub>/ml x 100ml each)
- Freezing at -80°C
- Dropped in feed bin at D0 and D6 of the test
  
- 6 pens (7/8 pigs/pen) x 2 treatments (control and Feedlock)
- Ante-mortem sampling of feeders, oral fluids and clinical scores
- Post-mortem sampling of tonsils (SVAv), serum (PRRSv) and rectal swabs (PEDv)
- Performances (ADG, % mortality)



### 3 Meet more than users' needs

- Can an MCFA Blend be **active on other viruses?**

Detection of viral RNA in feed & oral fluid samples by PCR (6 dpi)

# positive pens/# total pens tested						
Treatment	PRRSV	PEDV	SVA	PRRSV	PEDV	SVA
MCFA Blend	2/6	3/6	3/6	3/6	1/6	2/6
(+) control	6/6	6/6	5/6	6/6	6/6	6/6

Detection of viral RNA in feed & oral fluid samples by PCR (15 dpi)

# positive pens/# total pens tested						
Treatment	PRRSV	PEDV	SVA	PRRSV	PEDV	SVA
MCFA Blend	0/6	0/6	0/6	0/6	0/6	0/6
(+) control	6/6	6/6	3/6	6/6	6/6	6/6

### 3 Meet more than users' needs

- Can an MCFA Blend be **active on other viruses?**

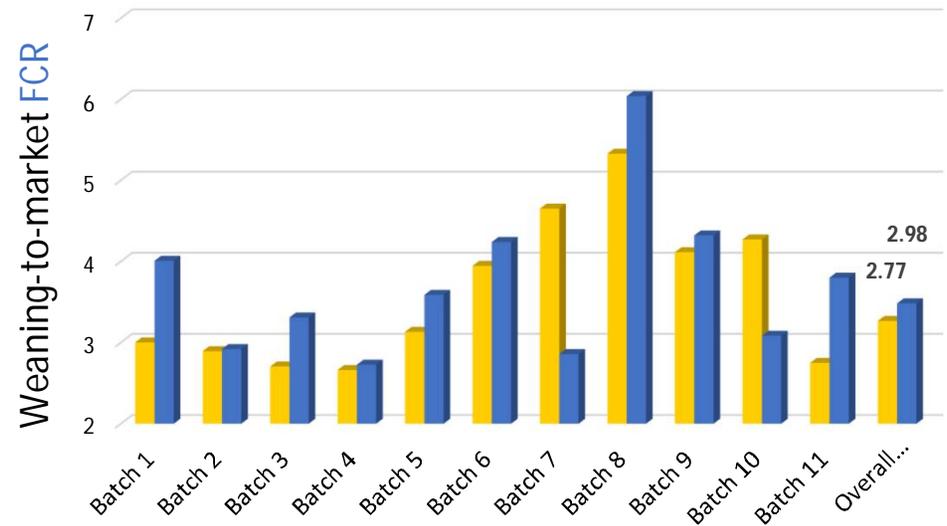
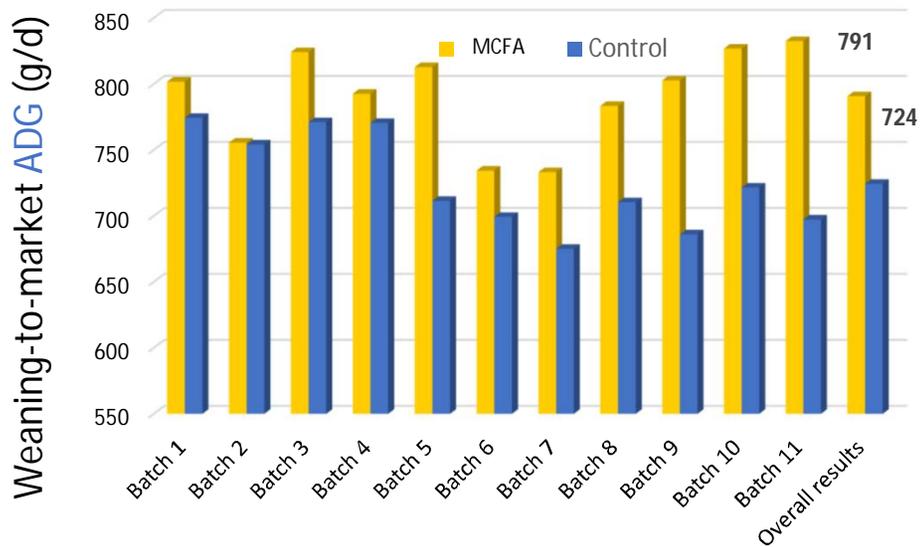
#### Postmortem & growth performance measures

Treatment	PRRSV	PEDV	SVA	PRRSV	PEDV	SVA	ADG
MCFA Blend	0%	0%	0%	0%	0%	0%	2.52a
(+) control	100%	77%	20%	100%	100%	100%	1.33b

☐ MCFA Blend contributes to **reduce the impact of enveloped virus** in exposed pigs

### 3 Meet more than users' needs

- Is an MCFA Blend impact **visible in field conditions?**



- ☑ MCFA Blend impact **is consistent along successive batches**

# Take-away messages

1 Feed remains a threat for viruses entry in farm

2 Science-based natural solutions can mitigate in-feed risks

3 Patented MCFA Technology provides more than a protective action



*more than*  
**INSURANCE**

# Want to know more?

- Connect with us!



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