

A blend of active compounds to optimize growth in finishing pigs exposed to heat stress

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Introduction

Heat stress (HS) in pigs occurs in tropical countries as in European countries during summer. As a result, pigs have a lower feed intake to minimise metabolic heat production and growth rate may be severely affected (Cottrell *et al.*, 2015). Physiological consequences of HS are metabolic acidosis due to higher respiratory rate, excessive free radical production resulting in increased permeability to macromolecules such as endotoxins, inflammation and reduction of nutrient digestion and absorption due to villus damage (Cottrell *et al.*, 2015; Ross *et al.*, 2016). Body condition of pigs may also be altered. In addition, mortality can be increased in case of HS, which leads to economic loss together with the lower growth performance. Therefore, it is important to provide to pig adequate diet in case of HS in order to improve their welfare conditions and growth performance.

The objective of the study was to evaluate a blend of plant extracts, micro and macro minerals and flavouring agents targeting inflammation, gut permeability, acid-base homeostasis and nutrient absorption on growth performance in finishing pigs raised under heat stress conditions.

Materials and Methods

• Animals:

- 72 pigs housed in eight mixed pens (females and barrows) of nine individuals (73.7 ± 0.6 kg BW, 111 d of age on average)

• Diet:

- Control: Finishing diet (10 MJ NE/kg, 14.5% CP, 0.80% SID Lys)
- Fresh Up: Finishing diet supplemented with a blend of active compounds (plant extracts, micro and macro minerals and flavouring agents)
- Diet offered *ad libitum* during the finishing period: from 111 d of age to slaughter

• Barn environment:

- 32°C during the day
- 28°C during the night
- Relative humidity between 40% and 50%

• Measurements, Calculations and Statistical analysis:

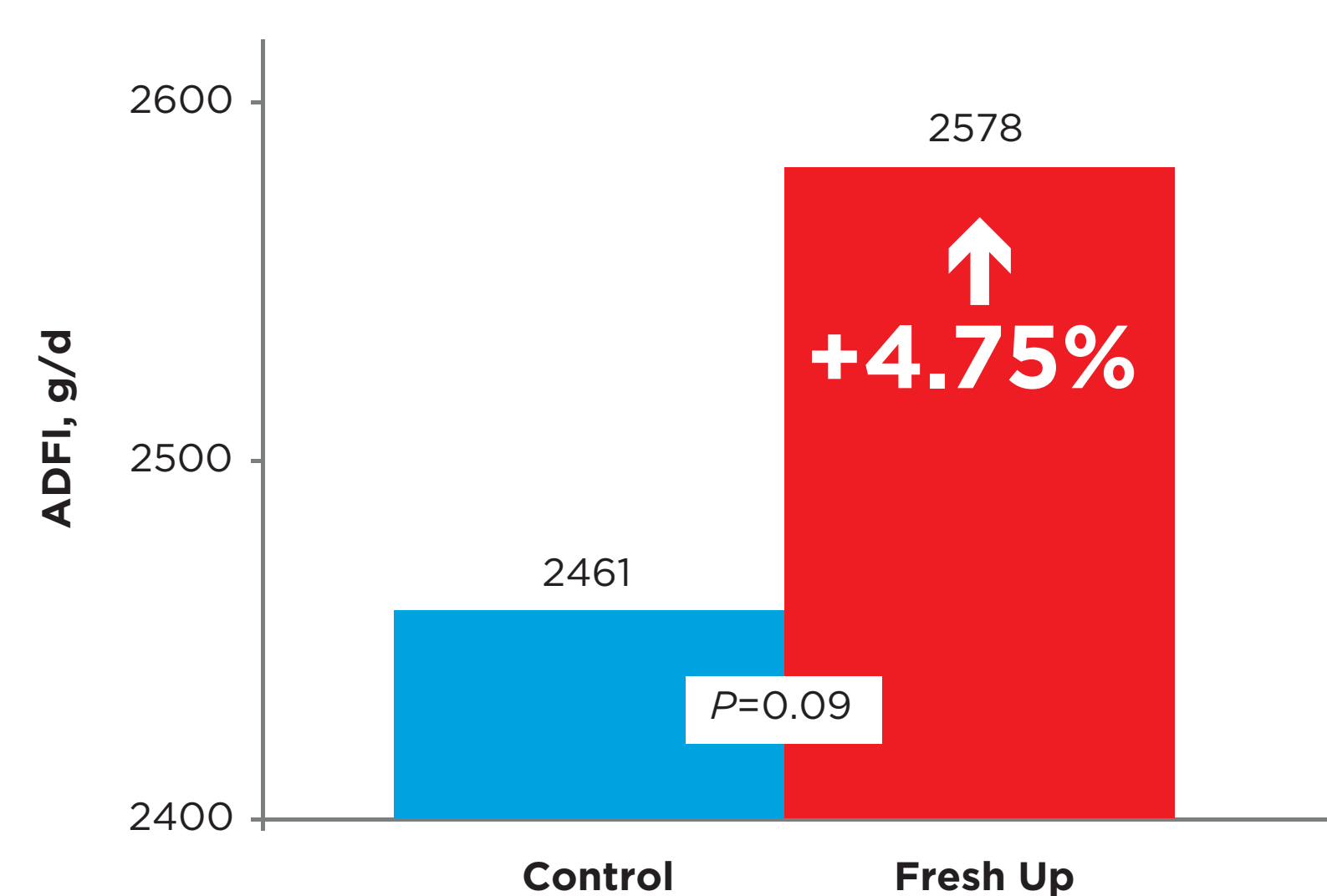
- Growth parameters recorded individually: ADG, ADFI and FCR
- Linear model with Sex, Diet and the interaction as fixed effects and weight at 111 d as covariate

Results and Discussion

- **Health events:** 2 pigs died in the Control group and 2 pigs were excluded during the trial in the Fresh Up group

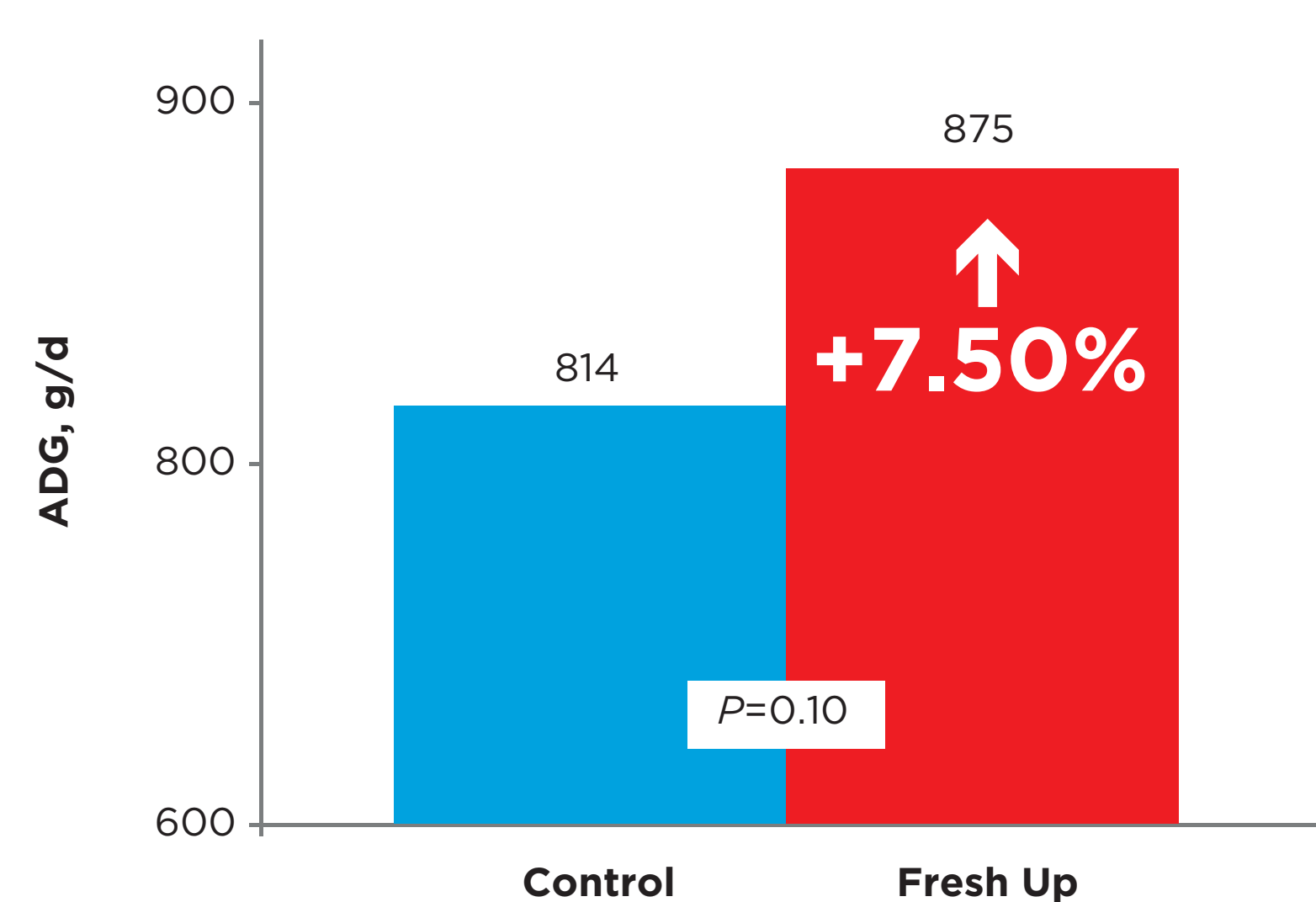
- Performance parameters from d 111 to slaughter

Fig. 1: Average Daily Feed Intake, g/d



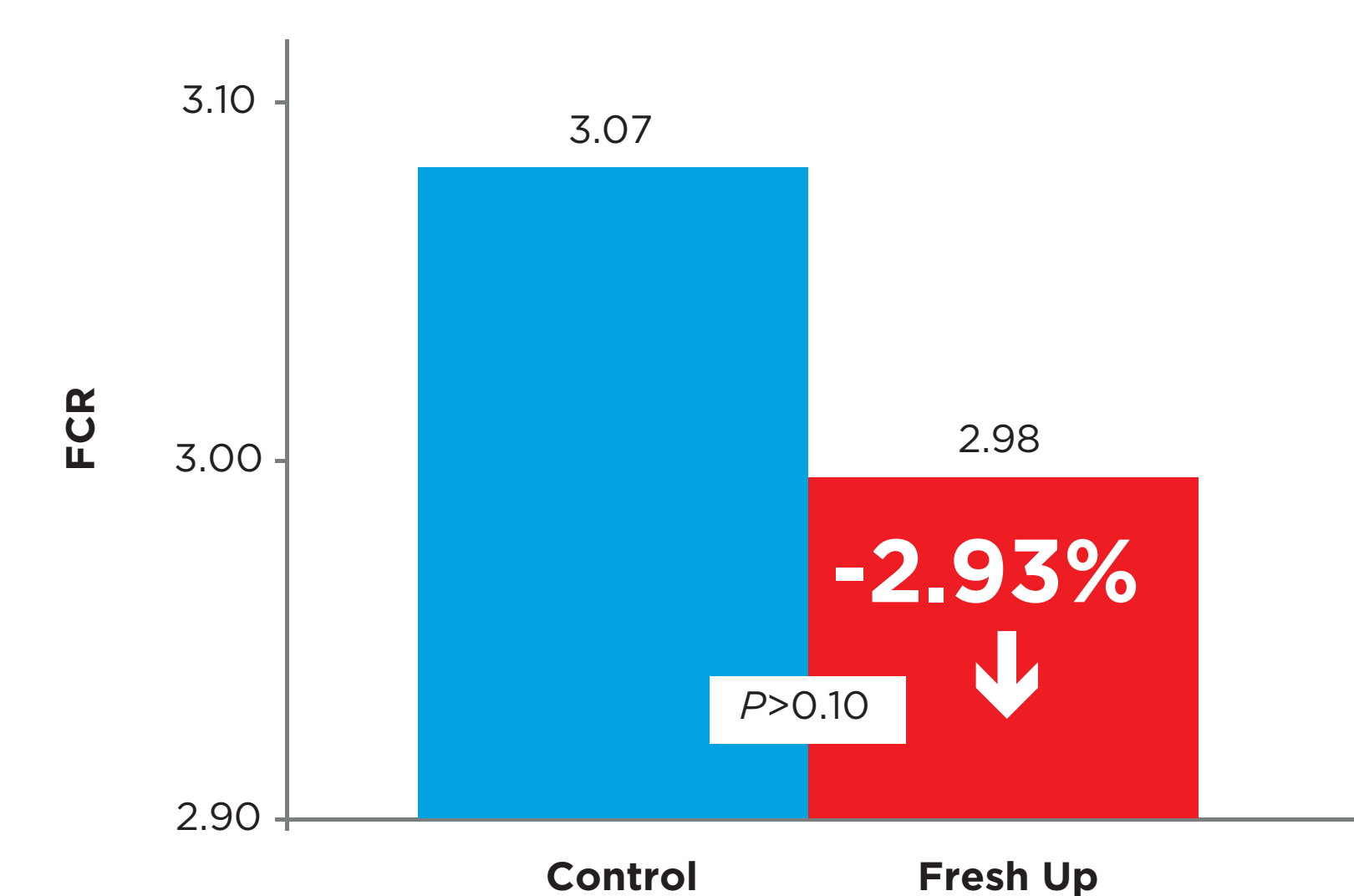
Tendency to improve feed intake for pigs supplemented with Fresh Up (+117 g/d)

Fig. 2: Average Daily Gain, g/d



Tendency to improve growth rate for pigs supplemented with Fresh Up (+61 g/d)

Fig. 3: Feed Conversion Ratio



Numerical reduction of the FCR for pigs supplemented with Fresh Up (-0.09)

→ Fresh Up alleviated the negative impacts of HS in finishing pigs probably through a better palatability of the feed, a better gut integrity and a reduction of the oxidative stress and inflammation.

Conclusion

A holistic approach dealing with the different physiological damages induced by heat stress seems beneficial to optimize growth performance in finishing pigs raised under heat stress conditions.

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