

## PSYCHOLOGICAL STRESS CAUSED BY CHANGES IN FEEDING MANAGEMENT DOES NOT MODIFY THE CONCENTRATION OF ACUTE PHASE PROTEINS IN PIGS

Piñeiro C<sup>1</sup>, Piñeiro M<sup>1</sup>, Morales J<sup>1</sup>, Ruiz de la Torre JL<sup>2</sup>, Mateos GG<sup>3</sup>, Manteca X<sup>2</sup>  
<sup>1</sup>PigCHAMP Pro Europa S.A., Spain, <sup>2</sup>UA Barcelona, Spain, <sup>3</sup>UP Madrid, Spain

### Introduction

In a previous study, Pineiro *et al.* (2003) demonstrated that acute phase proteins (APP) can be used to detect stressful situations in pigs. In that study, pigs ( $26.3 \pm 0.4$  kg BW) were allotted to two treatments based on two feeding systems: *ad libitum* (AL) or disorderly (DIS) which consisted in alternating periods of AL food administration with periods of no feeding at all. DIS fed pigs showed higher APP concentrations (Pig-MAP, haptoglobin, SAA and CRP), than AL fed group. Also, the concentration of negative APP increased slightly with time in the AL pigs, but not in the DIS group. Differences in APP values between the two groups were evident in males, whereas in females the concentrations were similar for both groups. These results were associated with lower growth rates in DIS fed males than in AL fed males. However, in this trial pigs were allotted to pens in groups of 12 and, it was not possible to distinguish if the observed increases in APP's levels in the DIS group were caused directly by psychological stress or were the result of an increase of fights and lesions in this group of pigs. Therefore, two studies with individual penned pigs have been performed with the aim to ascertain if the effect was due to psychological or social stress.

### Aim

To assess the use of APPs as biomarkers of psychological stress promoted by changes in feeding management during the growing (study 1) or the finishing (study 2) period of pigs housed individually.

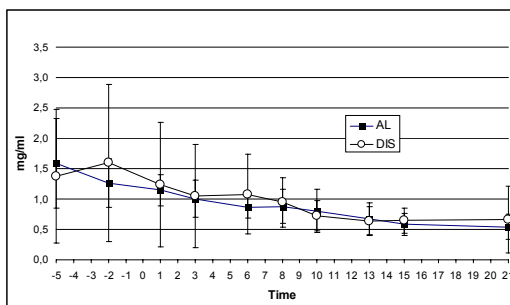
### Material and Methods

Twenty-four and twenty pigs were used in the growing (about 25 kg BW) and finishing (about 80 kg BW) studies, respectively. Pigs were housed individually and distributed in two groups that differ in the feeding pattern used (AL and DIS). The trial lasted 20 days. At days -5, -2, 1, 3, 6, 8, 10, 13, 15 and 21 in the growing study and at days -5, 1, 4, 15 and 21 in the finishing study, pigs were bled and Pig-MAP serum concentration analysed by ELISA using a commercial kit (PigCHAMP Pro Europa, S.A., Segovia, Spain). Data were analysed as repeated measures including feeding pattern, time and their interaction as main effects.

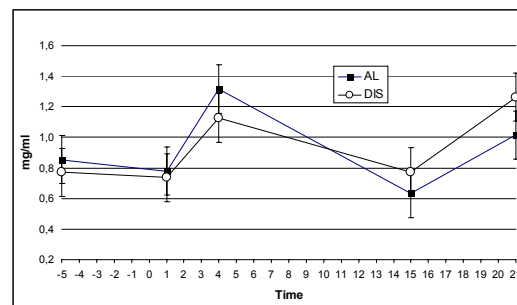
### Results and Discussion

Feeding pattern did not affect APP concentrations in any of the two periods studied. Evolution of Pig-MAP with time for the growing and finishing periods are shown in figure 1 and 2, respectively. Psychological stress did not affect APP concentrations, suggesting that the stress previously reported was a response to social stress in the DIS fed group.

**Figure 1a.** Changes of Pig-MAP concentration with time. Growing period



**Figure 1b.** Changes of Pig-MAP concentration with time. Finishing period.



**Conclusion**

APP were not valid biomarkers to assess the psychological stress caused by changes in feeding management.

**Reference:**

Pineiro C, Lorenzo E, Morales J, Gomez E and Mateos GG (2003) Effect of stressors on serum concentration of acute phase proteins and performance in pigs. *J. Anim. Sci* (81) Suppl. 1. Abstract n° 621, p 157.