Title: PRELIMINARY RESULTS COMPARING PHYSIOLOGICAL MARKERS OF STRESS IN DIFFERENT HOUSING SYSTEMS FOR PREGNANT SOWS

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Introduction:
In 2013, only group housing of pregnant sows, between day 29 of pregnancy and 1 week before parturition, will be allowed in EU Member States (European directive on the protection of pigs, 2001/88/EC).This will affect the production (management and feeding) as well as welfare. Last one can be assessed by behavioural measurements and physiological parameters like cortisol, creatine kinase and acute phase proteins (APP). Haptoglobin and Pig-MAP are two APP proposed as possible indicators of pig welfare (stress and health status).

Aims:
The aim of this study was to analyse different physiological markers of stress in two different group housing systems, compared to sows kept in individual stalls.

Materials and methods:
Sixty pregnant sows Lw x Ld (153-288 kg) from first to eighth parity, were housed between day 29-30 of gestation and 1 week before parturition in three different systems: twenty sows were kept in individual feeding stalls (group 1), 20 sows were housed in two pens (10 per pen) with slow feeding system (Biofix®, group 2), and 20 sows were housed in one pen with electronic feeding system (Fitmix®, group 3). Blood samples were obtained the ninth and the fourteenth week of pregnancy from 6 to 9 sows per housing system. For statistical test, repeated measures ANOVA, paired t-test and Spearman correlation test were applied. Pig-MAP and haptoglobin plasma levels were analysed by inmunodiffusion. Sample were processed at the Veterinary Schools of Barcelona and Zaragoza (Spain).

Results:
Number of animals were reduced due to problems in blood sampling. Repeated measures ANOVA showed no differences in Pig-MAP. Haptoglobin plasma levels were lower in group 3 than in groups 1 and 2 ($p=0.050$). When comparing samples for each group separately, pig-MAP and haptoglobin were reduced in group 1 ($p=0.014$ and 0,030 respectively) but not in groups 2 and 3. Pig-MAP and haptoglobin correlations among samples were significant (0.679 and 0.686 respectively).

Conclusions:
Statistical tests' significance could be affected by reduction in number of animals sampled (not all animals were sampled because of handling procedures). Haptoglobin shows that animals in group 3 (Fitmix) could be less stressed than animals in groups 1 and 2. However, results in Pig-MAP plasma levels shows no differences. So, behavioural data (not presented) will be needed to achieve decisive conclusions about housing systems. Furthermore, if fitmix is a less stressant system, haptoglobin is a better welfare indicator than Pig-MAP. Decreasing pig-MAP values in group 1 (stalls) may show some degree of adaptation.