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Impact of a short term dietary challenge on growth performance and feeding behavior in finishing pigD. Renaudeau¹, L. Brossard¹, B. Duteil² and E. Labussière¹¹INRA, PEGASE, Domaine de la Prise, 35590 Saint-Gilles, France, ²INRA, UEPR, 35590 Saint-Gilles, France; ludovic.brossard@inra.fr

Pigs are frequently facing environmental perturbations with subsequent short and long-term effects on their health and performance. The objective of this study was to evaluate the consequences of an acute dietary challenge on growth performance and feeding behavior in finishing pigs. A total of 160 pigs (average initial BW of 69.1 kg, 115 d of age) were used in two successive replicates of 80 animals with 4 treatments. In the control group (CC), pigs were fed a standard diet (7.6 g digestible Lys/kg and 9.6 MJ NE/kg) during the whole experimental period (55 days). The DC, CD, and DD groups were challenged with a 'diluted' diet for a 7-d period at 130 d, at 153 d, and at 130 and 153 d of age, respectively. Digestible Lys and NE contents were reduced by 20% in the diluted diet in comparison to the control diet, using wheat bran and sunflower meal as diluters. In both diets, essential amino acids were kept constant relative to Lys. Within each replicate, all pigs were equipped with a RFID ear-tag and housed in a same room. The room consisted of a resting area and 2 feeding areas separated by a weighing-sorting station, which allowed for continuous measurements of individual BW. The 2 feeding areas were equipped with 4 feeding stations each. These electronic feeder systems automatically distributed the chosen diet to each pig and recorded the visits to the feeder, with their time and the amount of feed consumed. The average daily BW gain and the BW at slaughter were significantly reduced in the CD and DD groups when compared to the CC group (1,052 g/d and 125.5 kg on average vs 1,119 g/d and 129.5 kg, respectively; $P < 0.01$). Intermediate results were reported for DC group (1,073 g/d and 127.1 kg). Feed conversion ratio was higher in DC and DD groups than in CC and CD groups (3.13 and 3.15 vs 2.93 and 2.95 kg/kg, respectively; $P < 0.01$). Over the total duration of the experiment, mean feeding behavior traits were not influenced ($P > 0.05$) by treatments. Carcass traits were similar in the 4 experimental groups. This study demonstrates an age-of-exposure effect of a dietary challenge on growth performance in finishing pigs. This study is part of the Feed-a-Gene project and received funding from the European Union's H2020 program under grant agreement no. 633531.

Session 24

Poster 16

Feed restriction on growth of mice divergently selected for birth weight environmental variabilityN. Formoso-Rafferty Castilla¹, I. Cervantes¹, J.P. Sánchez², J.P. Gutiérrez¹ and L. Bodin³¹Universidad Complutense de Madrid. Facultad de Veterinaria, Avda. Puerta de Hierro s/n, 28040, Madrid, Spain, ²IRTA – Torre Marimon, Caldes de Montbui, 08140, Barcelona, Spain, ³INRA – GenPhySe, CS 52627, 31326, Castanet-Tolosan, France; n.formosorafferty@ucm.es

Nowadays, the selection for feed efficiency is one of the main aims in animal breeding to decrease the production costs. On the other hand, selection for less sensitivity with respect to environmental effects, as indicated by a low variation around the optimum trait value, may have benefits in terms of productivity and animal welfare. Therefore, the objective of this work was to analyze the influence of food restriction, understood as an environmental challenge, on weight at different ages in two lines divergently selected for birth weight variability in mouse lines with either a low variability (LV) or high variability (HV). A total of 40 females (four full-sib females from 10 random different litters from the 12, 13, and 14 generations of selection), were chosen within lines and fed either *ad libitum* or restricted from 21 to 77 days. Restriction consisted of feeding with 75%, 90%, or 85% of *ad libitum* feed consumption in the respective three studied generations. Weekly weights from 21 to 77 days were analyzed. The model was adjusted for the diet (restricted or *ad libitum*), mouse line, generation, and litter size, and included also the interaction between the line, generation, and the diet. The ASReml Release 4.1 program was used for the analysis. Animals fed *ad libitum* of the LV line had similar weights in all generations unlike those of the HV line, which had lower weights in successive generations. The feed restriction had a negative effect on the body weight of the animals but the interaction between line and diet was significantly different only after day 35, showing a differential response of the lines to the environmental challenge. Animals from the LV line were less sensitive to the feed restriction. This study is part of the Feed-a-Gene project and received funding from the European Union's H2020 program under grant agreement no. 633531.