



Adipose-immune cell cross-talks in two pig lines divergently selected for feed efficiency - Part 1

Marie-Hélène Perruchot, Elodie Merlot, Isabelle Louveau, Nathalie Le Floc'H

► To cite this version:

Marie-Hélène Perruchot, Elodie Merlot, Isabelle Louveau, Nathalie Le Floc'H. Adipose-immune cell cross-talks in two pig lines divergently selected for feed efficiency - Part 1. 68. Annual Meeting of the European Federation of Animal Science (EAAP), Aug 2017, Tallin, Estonia. Wageningen Academic Publishers, Annual Meeting of the European Association for Animal Production, 2017, Annual Meeting of the European Association for Animal Production. hal-01595390

HAL Id: hal-01595390

<https://hal.science/hal-01595390>

Submitted on 2 Jun 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution - ShareAlike 4.0 International License

Titre: max 100 caractères + espaces

Total (tout compris+ espaces): max 2500 caractères

EAAP, Tallin, Estonie

Adipose-immune cross-talks in two pig lines divergently selected for feed efficiency. Part 1.

Perruchot, MH, Merlot, E, Louveau, I, and Le Floc'h N

PEGASE, Agrocampus-Ouest, INRA, 35590 Saint-Gilles, France; marie-

helene.perruchot@inra.fr

Adipose tissue is now recognized as an endocrine organ with a role in organ cross-talk. It produces a number of factors including inflammatory cytokines such as Tumor Necrosis Factor α (TNF- α). This factor regulates also adipocyte differentiation and adipokine secretion. The aim of this study was to determine if different levels of immune stimulation influenced the features of adipose tissue cells in two lines of pigs, divergently selected for residual feed intake (RFI), a measure of feed efficiency. Growing pigs (n =24) of low (RFI-) or high (RFI+) RFI were reared in clean or dirty housing conditions for 6 weeks, to obtain healthy and chronically inflamed animals, respectively. After subcutaneous adipose tissue collection, adipocytes and cells of the stromal vascular fraction (SVF) were isolated. Gene expression levels were determined in freshly isolated adipocytes and SVF cells. TNF- α , Toll-Like Receptor (TLR) 2 and 4 mRNA were expressed in SVF cells but were not detected in adipocytes. Levels of TLR2 were higher ($P < 0.05$) in RFI+ than in RFI- pigs in both housing conditions. The IL6 gene was expressed in both adipocytes and SVF cells with no difference between the experimental groups. SVF cells were cultured in differentiation medium in the absence or presence of TNF- α (1 and 10 ng/mL). TNF- α inhibited the accumulation of lipid droplets in SVF cells of the different groups, indicating an impaired differentiation ($P < 0.05$). Analysis of gene expression in differentiated cells demonstrated that TNF- α impaired Malic Enzyme (ME) ($P < 0.05$). In conclusion, the expression of the TNF- α gene in SVF cells and the response of these cells in culture to TNF- α did not differ between healthy and chronic inflamed animals. The finding of a higher TLR2 expression in RFI+ suggests difference in the immune response between the two pig lines that needs to be further investigated. Research has received funding from the EU FP7 program (PROHEALTH, grant agreement no. 613574).