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EFFECT OF *SALMONELLA TYPHIMURIUM* ON THE PROTEOME OF PIG GUT

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Salmonella typhimurium is the serotype most frequently isolates from ill pigs in Europe. *Salmonella* outbreaks and subclinical infections are often not only a cause of economic and animal welfare costs, but also a source of contamination of pork products entering the food chain. Because of this, a complete understanding of the process seems likely and, while some successful physiological, biochemical or genetic approaches have been developed at intestinal level, no proteomic assays have been performed until now. *S. typhimurium* infection and pathogenicity are complex, highly integrated processes that cannot be attributed to any single protein activity. Advances in proteomic technologies do now possible to characterize host-pathogen interactions from a global proteomic view. We used a proteomic approach to study proteins of intestinal mucosa differentially expressed as response to Salmonella infection. For that purposes, two groups of pigs were analyzed: controls (n=3) and naturally infected pigs (n=3). Intestinal mucosa resections were resuspended in sample buffer and submitted to mechanical dissociation by scraping and gentle squeezing. Protein extracts for each group were pooled and analyzed by DIGE, because this approach had the advantage of an improved sensitivity and accuracy. Samples were cup-loaded onto IPG strips, 24 cm, pH 3-11NL, and subjected to isoelectrofocusing. For the second dimension, strips were loaded on top of 12.5% polyacrylamide gels. 2D gels were scanned using a Typhoon™ Trio Imager and analyzed using DeCyder 6.5 software. We found 49 spots exhibiting statistically significant differences ($p<0.05$), corresponding to 42 different proteins, with 12 proteins showing up-regulation and 30 down-regulation. These proteins were analysed by MALDI and NanoLC-ESI MS/MS. The data set were analyzed through the use of Ingenuity Pathway Analysis and the physiological function most significantly perturbed was immunological, infectious and gastrointestinal disease, cellular assembly and organization, tissue morphology, cell death and immune response.