Immune gene expression in the spleen of chickens experimentally infected with Ascaridia galli

Ascaridia galli is a gastrointestinal nematode infecting chickens. Chickens kept in alternative rearing systems or at free-range experience increased risk for infection with resulting high prevalences. A. gall infection causes reduced weight gain, decreased egg production and in severe cases increased mortality. More importantly, the parasitised chickens are more susceptible to secondary infections and their ability to develop vaccine-induced protective immunity against other diseases may be compromised. Detailed information about the immune response to the natural infection may be exploited to enable future vaccine development. In the present study, expression of immune genes in the chicken spleen during an experimental infection with A. galli was investigated using the Fluidigm (R) BioMark (TM) microfluidic qPCR platform which combines automatic high-throughput with attractive low sample and reagent consumption. Spleenic transcription of immunological genes was compared between infected chickens and non-infected controls at week 2, 6, and 9 p.i. corresponding to different stages of parasite development/maturation. At week 2 p.i. increased expression of IL-13 was observed in infected chickens. Increased expression of MBL, CRP, IFN-alpha, IL-1 beta, IL-8, IL-12 beta and IL-18 followed at week 6 p.i. and at both week 6 and 9 p.i. expression of DEF beta 1 was highly increased in infected chickens. In summary, apart from also earlier reported increased expression of the Th2 signature cytokine IL-13 we observed only few differentially expressed genes at week 2 p.i. which corresponds to the larvae histotrophic phase. In contrast, we observed increased expression of pro-inflammatory cytokines and acute phase proteins in infected chickens, by week 6 p.i. where the larvae re-enter the intestinal lumen. Increased expression of DEF beta 1 was observed in infected chickens at week 6 p.i. but also at week 9 p.i. which corresponds to a matured stage where adult worms are present in the intestinal lumen. (C) 2015 Elsevier B.V. All rights reserved.

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