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. galli 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.

General information
Publication status: Published
Organisations: National Veterinary Institute, Section for Immunology and Vaccinology, National Food Institute, Aarhus University, DHI Water - Environment - Health
Number of pages: 8
Pages: 79-86
Publication date: 2015
Peer-reviewed: Yes

Publication information
Journal: Veterinary Immunology and Immunopathology
Volume: 164
Issue number: 1-2
ISSN (Print): 0165-2427
Ratings:
BFI (2015): BFI-level 2
Scopus rating (2015): CiteScore 1.67 SJR 0.862 SNIP 0.748
Web of Science (2015): Impact factor 1.664
Web of Science (2015): Indexed yes
Original language: English
Keywords: IMMUNOLOGY, VETERINARY, MANNAN-BINDING LECTIN, MAJOR HISTOCOMPATIBILITY COMPLEX, SINGLE-DOSE INFECTION, FREE-RANGE CHICKENS, LAYING HENS, ANTIMICROBIAL PEPTIDES, HELMINTH INFECTION, EIMERIA-TENELLA, PASTEURELLA-MULTOCIDA, POPULATION-DYNAMICS, Ascaridia galli, Nematodes, Chickens, Systemic immune response, Immune gene expression, Microfluidic qPCR
Electronic versions:
post_print_Immune_gene_expression_in_the_spleen_of_chickens_experimentally_infected_with_Ascaridia_galli.pdf
DOIs:
10.1016/j.vetimm.2015.01.003
Source: FindIt
Source ID: 274720210
Research output: Contribution to journal › Journal article – Annual report year: 2015 › Research › peer-review