

Toll-like receptor expression in avian heterophils

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BACKGROUND

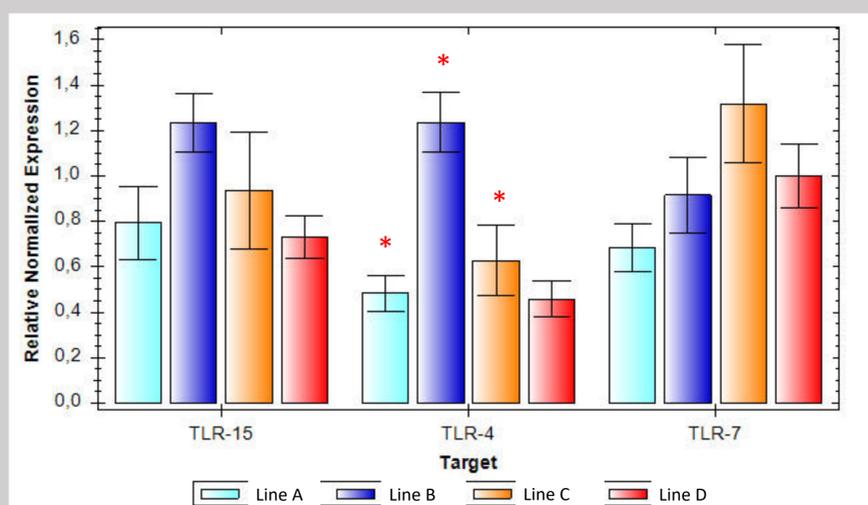
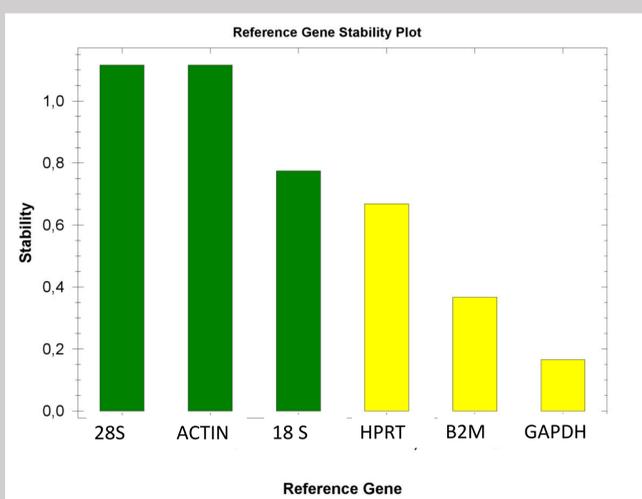
Toll-like receptors (TLRs) are a major class of innate immune pattern recognition receptors that have a key role in immune homeostasis and defence against infections [1]. Assessment of innate immune indices, such as cytokine mRNA expression by avian heterophils, may be a useful tool that will indicate the overall immunological responsiveness of a particular line of commercial poultry [2].

The aim of the present study was to investigate the expression of TLR-4, TLR-7 and TLR-15 in heterophils of four different slow-growing avian genetic lines.

MATERIALS & METHODS



RESULTS



TLR-15 and TLR-7 showed no significant differences among the four genotypes. TLR-4 showed a significant up-regulation in Line B, compared to Line A ($P=0.034$) and Line C ($P=0.033$).

DISCUSSION & CONCLUSION

Our results showed a differential expression of TLR-4 in an avian genetic line, compared to the others. This finding is in accordance with previous published papers of Kogut et al., [3] and Ramasamy et al., [4]. Further studies will be directed to the heterophils stimulation with *Salmonella enterica* serovar Enteritidis in order to verify TLRs expression after the challenge. Indeed, the production of cytokines by heterophils may be useful biomarkers for breeders to consider when developing new immunocompetent chicken lines.

REFERENCES

[1] Keestra et al. Unique features of chicken Toll-like receptors. *Developmental and Comparative Immunology*. 41:316-323, 2013. [2] Swaggerty et al. Heterophil cytokine mRNA profiles from genetically distinct lines of chickens with differential heterophil-mediated innate immune responses. *Avian Pathol*. 35(2):102-8, 2006. [3] Kogut et al. Gene Expression Analysis of Toll-Like Receptor Pathways in Heterophils from Genetic Chicken Lines that Differ in Their Susceptibility to *Salmonella enteritidis*. *Front Genet*, 4(3):121, 2012. [4] Ramasamy et al. Toll-like receptor mRNA expression, iNOS gene polymorphism and serum nitric oxide levels in indigenous chickens. *Vet Res Communic*, 35 (5):321-7, 2011.

