



Keywords

Acute phase proteins, animal welfare, chicken, *Gallus gallus*

CORRESPONDING AUTHOR

Andreia T. Marques

andreia.tomas@unimi.it

JOURNAL HOME PAGE

riviste.unimi.it/index.php/haf

Widespread extrahepatic expression of acute phase proteins in chicken (*Gallus gallus*) tissues.

A. T. Marques^{a,*}, Cristina Lecchi^a, Laura Nordio^a, Chiara Giudice^a, Guido Grilli^a, Helena Ariño-Bassols^a, Fabrizio Cecilian^a

^aUniversità degli Studi di Milano, Department of Veterinary Medicine, Via Celoria 10, 20133 Milano, Italy.

Abstract

Acute Phase Proteins (APP) are plasma proteins that can modify their expression in response to inflammation caused by tissue injury, infections, immunological disorders, or stress. Although APP are produced mainly in liver, extrahepatic production has been described (Marques et al., 2016; Lecchi et al., 2012). The aim of this work was to study the extrahepatic gene expression of five APP, namely α 1-acid glycoprotein (AGP), Serum amyloid A (SAA), Haptoglobin-like protein (PIT54), C-reactive protein (CRP) and Ovotransferrin (OVT) (O'Reilly and Eckersall, 2014) in different healthy chicken (*Gallus gallus*) tissues by quantitative real time PCR (qPCR) and immunohistochemistry to detect the precise location of the proteins.

APP gene expression was higher in liver compared with other tissues. mRNA coding for CRP, OVT and SAA was detected in all tissues involved in this study with a higher expression in gastrointestinal tract, respiratory system and lymphatic system. SAA expression was particularly high in cecal tonsil, lung, spleen and meckel's diverticulum, whereas OVT showed a high expression in lung, bursa of Fabricius, pancreas, brain and adipose tissue. AGP and PIT54 was also detected in pericardial adipose tissue, spleen, kidney, lung, mucosa of proventriculus, mucosa of gizzard and pancreas but, oppositely to SAA, their mRNA was not detected in meckel's diverticulum, cecal tonsil and bursa of Fabricius. These results suggest that each tissue is able to express different amount of APP even in healthy conditions and mount a local acute phase reaction. Immunohistochemistry to detect the precise location for AGP, OVT and SAA using available antibodies is ongoing.

References

- Marques, A.T., Lecchi C., Grilli G., Giudice C., Nodari S.R., Vinco L.J., Cecilian F., 2016. The effect of transport stress on turkey (*Meleagris gallopavo*) liver acute phase proteins gene expression. *Res Vet Sci.* Feb 104:92-95.
- O'Reilly, E.L., Eckersall, P.D., 2014. Acute phase proteins: a review of their function, behaviour and measurement in chickens. *Worlds Poult. Sci. J.* 70, 27-44.
- Lecchi, C., Dilda, F., Sartorelli, P., Cecilian, F., 2012. Widespread expression of SAA and Hp RNA in bovine tissues after evaluation of suitable reference genes. *Vet. Immunol. Immunopathol.* 145 (1-2), 556-562.