Poster 14

USING HAPTOGLOBIN AS PRELIMINARY INFORMATION TO ASSESS CARCASS´S EXAMINATION RESULTS AND SALMONELLA STATUS OF SLAUGHTER PIGS

Gödderz A[1], Witten I[1], Knura S[1], Wendt M[2], Petersen B[1]
[1]*Department of Preventive Health Management, University of Bonn, Bonn, Germany* [2]*Forensic Medicine and Ambulatory Service, School of Veterinary Medicine, Hannover, Germany*
Email:andreas.goedderz@uni-bonn.de

Introduction

Haptoglobin (hp) is one of the major acute phase proteins in swine. Several authors have reported an increase of blood hp concentration in pigs due to acute inflammatory infections but also due to subclinical diseases. Therefore hp is discussed as a screening parameter to assess swine´s health status along the pork production chain. In order to get additional information of slaughtered pig´s health status this study examined whether there is a relation between measured hp concentrations in slaughter blood and meat juice (mj) and findings of the carcass`s examination and the Salmonella status of the slaughtered pigs.

Material and Methods

At a German abattoir 330 fattening pigs were randomly selected and carcass and the appendant organs were tested for pathological findings by means of checklists. Slaughter blood was collected in EDTA covered vacutainers from each pig. The samples were centrifuged for 10 minutes at 2500 U/min and the supernatant was aliquoted. Two mj samples of each pig were obtained by deep freezing (-21°C, 24 hours) walnut sized pieces of musculus brachiocephalius (mj 1) and of the diaphragmatic pile (mj 2) and following thawing at room temperature. Hp concentrations of blood and mj samples were determined by an ELISA (HISS et al. in Vet. Immunol. Immunopath. 2003). Additionally the Salmonella antibody titer of mj 2 was determined (Salmotype® Fleischsaft ELISA, Labor Diagnostic Leipzig). A pig was assumed sero positive if optical density was above 40 %. Faecal samples were extracted by incision of the illeum and qualitative checked for the presence of Salmonella spp. Statistics were done by using SPSS 12.0 for windows and the calculation of the Odds Ratios (OR) by using Win Episcope 2.0. For the calculation of OR two categories of the measured hp concentration were composed: One below the according mean concentration and one above. The level of confidence was determined at 95 %.

Results and Discussion

According to previous investigation correlations ($p \leq 0.01$) between hp concentration in blood and mj samples were found (blood and mj 1: $r = 0.75$ / blood and mj 2: $r = 0.70$). The statistical significant OR and the according Confidence Interval (CI) for a carcass or organ finding depending on an increased hp concentration (> overall mean) are shown in table 1.

Table 1: OR and CI for a carcass/organ finding, if hp exceeds the mean concentration of all 330 pigs

hp (> overall mean concentration)	**scratches**		**pericarditis**		**pleurisy**		**pneumonia**	
	OR	**CI**	**OR**	**CI**	**OR**	**CI**	**OR**	**CI**
blood (>1.08 mg/ml)	0.553	0.322-0.920	3.962	1.568-10.010	-	-	-	-
mj 1 (> 0.14 g/ml)	0.573	0.337-0.974	3.876	1.580-9.507	2.320	1.236-4.355	2.199	1.347-3.589
mj 2 (> 0.12 mg/ml)	0.522	0.312-0.871	4.061	1.514-10.890	-	-	-	-

These results indicate increased risks for specific organ findings of animals having higher hp concentrations. The long time interval between the origin (acute disease) of detected pathological findings and the time of blood resp. mj sampling must be taken into consideration when assessing the results. The lower risk for scratches of pigs with increased hp concentrations may be attributed to reduced activity due to disturbances of health. For the hp and the Salmonella status of the pig as well as all other findings no statistical significant OR could be calculated. This might be the consequence of the fact that most of these findings were chronical.

Confirming actual literature an OR of 1.837 (CI: 1.029-5.279) was determined by regarding Salmonella sero-positive animals in relation to detected milk-spots in the liver. Furthermore Salmonella sero-positive pigs showed higher (p = 0,054) mean blood hp concentration (1,03 mg/ml) than sero-negative pigs (1,26 mg/ml). This tendency could also be shown in pigs with Salmonella detection in faeces (shedders). The elevation of the hp concentration after induction of the acute phase reaction caused by several pathogens had already been shown in former investigations. In this studie it could be suggested that the presence of Salmonella might cause increased hp levels. In conclusion Hp quantification in mj or slaughter blood might be an useful parameter to assess meat quality at slaughter and further along the processing chain in terms of animal health.

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