COMPARISON OF INTERLEUKIN-10 LEVELS IN PIGS VACCINATED WITH TYPE I AND TYPE II GENOTYPES MODIFIED LIVE PRRSV VACCINES

G. Temeeyasen¹, S. Boonyawatana², T. Pungchaipat³, T. Tripipat¹, S. Tangtanopajai², D. Nilubol¹

¹ Veterinary Microbiology, Chulalongkorn University, Bangkok, Thailand
² Intervet (Thailand) Ltd., Intervet (Thailand) Ltd., Bangkok, Thailand
³ Pharmaceutics and Industrial Pharmacy, Chulalongkorn University, Bangkok, Thailand

Topic: 10. Porcine Medicine / Infectious Diseases

This trial was designed to investigate the effect of the modified live PRRSV vaccines (MLV) of type I and II genotypes on interleukin (IL)-10 levels. Two hundred 20 kg PRRSV-positive pigs were allocated into three groups: Controls (n=30), and Type I, and Type II MLV-vaccinated groups (both n=85). Each group was housed in a separate pen in the same building. Three pigs from each group were randomly selected, identified and blood sampled on 0, 21 and 28 days post- vaccination (DPV). IL-10 was measured using intracellular flow cytometry. Performance data including mortality, ADG and FCR were calculated. The relative index of IL-10-producing cells in all treatment groups on 21 DPV was significantly higher than on 28 DPV. The Control group had a significantly higher relative index of IL-10-producing cells compared to the vaccinated pigs on both 21 and 28 DPV. In addition, Type I MLV-vaccinated pigs had a lower relative index of IL-10-producing cells compared to Type II-vaccinated pigs on 21 DPV. However, the relative indices of IL-10-producing cells of both vaccinated groups were not significantly different on 28 DPV. The performance data of the control group were worse than those of both vaccinated groups. The Type I MLV-vaccinated pigs performed slightly better than those of the Type II MLV-vaccinated group. Our results suggest that MLV vaccination can potentially reduce the production of IL-10. Furthermore, an MLV vaccine of the EU genotype induced relatively lower levels of IL-10 at 21 DPV compared with the NA genotype.
TRENDS IN ANTIMICROBIAL RESISTANCE AMONG SELECTED BACTERIAL PATHOGENS OF SWINE IN THE CZECH REPUBLIC

Z. Kucerova¹, K. Nedbalcova¹, P. Alexa², K. Nechvatalova¹

¹ Immunology, Veterinary Research Institute, Brno, Czech Republic
² Bacteriology, Veterinary Research Institute, Brno, Czech Republic

Topic: 10. Porcine Medicine / Use of Antimicrobials

The conditions of intensive production on swine farms where large numbers of animals are held in a small space contribute to the spread of infectious diseases. Antimicrobial treatment is one of the most effective infection control measures which, however, can be hampered by the occurrence of bacterial resistance. Therefore, the aim of our study was to estimate the prevalence of resistance and trends in resistance among selected pathogens (*Actinobacillus pleuropneumoniae*, *Pasteurella multocida* and *Escherichia coli*) isolated from pig herds in the Czech Republic between 2007 and 2011. High susceptibility of porcine respiratory pathogens to antimicrobials was found, with the exception of high-level resistance to tetracycline for *Pasteurella multocida* (32.2%) and *Actinobacillus pleuropneumoniae* (23.4%) and intermediate level of resistance to tiamulin for *Pasteurella multocida* (18.1%). Contrary to respiratory pathogens, low susceptibility of *Escherichia coli* to antimicrobials was detected: from high to extremely high-level resistance to trimethoprim/sulfamethoxazole (31.8%), ampicillin (56.2%) and tetracycline (74.7%). Regarding resistance trends, resistance and intermediate susceptibility of *Pasteurella multocida* isolates to tiamulin, *Actinobacillus pleuropneumoniae* to tetracycline and *Escherichia coli* to ampicillin significantly increased in 2011. Elevation to high and intermediate resistance rates, respectively, was found (among controlled-use antimicrobials) in *Escherichia coli* and *Pasteurella multocida* isolates to enrofloxacin. The results of our study can support empirical antibiotic choice when prompt treatment of pigs is necessary. The study was supported by the projects QJ 1210119 and MZE0002716202 and AdmireVet (CZ 1.05/2.1.00/01.0006 – ED0006/01/01).
TRENDS IN USE OF ANTIMICROBIALS IN PIGS IN THE CZECH REPUBLIC

L. Pokludova¹, J. Bureš¹, A. Hera²,³

¹ Department of Marketing Authorisation, Institute for State Control of Veterinary Biologicals and Medicaments, BRNO, Czech Republic
² Head of Agency, Institute for State Control of Veterinary Biologicals and Medicaments, BRNO, Czech Republic
³ Department of Pharmacology and Pharmacy, University of Veterinary and Pharmaceutical Sciences, BRNO, Czech Republic

Topic: 10. Porcine Medicine / Use of Antimicrobials

The issue of the use of antimicrobials as a hot topic during last several years draws currently attention especially on mass medication (which is the most frequent in pigs and poultry) and use of certain classes of antimicrobials with high importance for both human and veterinary medicine.

There is broad portfolio of antimicrobials used in the treatment and prevention of diseases in pigs. The stratification according to the pharmaceutical forms (2010, percentage of total sales) shows that approx 33% of premixes, 22% of oral powders and 32 % oral solutions was used in food producing animals in the Czech Republic, remaining 13 % was mainly injectables, than intramammary, intrauterine and in minor part boluses and oral paste.

Despite the fact that in the last years premixes has started to be replaced by pharmaceutical forms intended for medication of drinking water, they still remain the most used forms in pigs.

Top „5“ as for amount of actives sold (CZ, 2010, in tonnes) used in the premixes are amoxicillin(7.2), chlortetracyclin(5.5), sulphonamides(3.3), macrolides(2), pleuromutilins(0.9). Special attention should be paid to the use of cephalosporins of the 3rd and 4th generation, (fluoro)quinolones and colistin, which seems to be less used according to the weight volumes, but their use should be rather evaluated considering treatment courses used.

Pressure on minimizing of use of antimicrobials should be rational and targeted on more responsible use of these substances and on preventive measures and vaccination programmes to ensure sustainable use of antimicrobials both in veterinary and human medicine.
THE EFFECT OF LIVE YEAST SACCHAROMYCES CEREVISIAE ON PERFORMANCE AND HEALTH IN PRE-WEANING AND POST-WEANING PIGLETS UNDER FIELD CONDITIONS

J. Vobr\textsuperscript{1}, J. Bernardy\textsuperscript{2}, D. Kumprechtova\textsuperscript{3}, R. D’Inca\textsuperscript{4}

\textsuperscript{1} Ruminant and Swine Clinic, University of Veterinary and Pharmaceutical Sciences Brno, Brno, Czech Republic
\textsuperscript{2} Independent researcher, Independent researcher, Brno, Czech Republic
\textsuperscript{3} Nutrition and feeding of farm animals, Institute of Animal Science, Prague, Czech Republic
\textsuperscript{4} Lesaffre Feed Additives, LFA, Marcq-en-Baroeul, France

**Topic:** 10. Porcine Medicine / Infectious Diseases

Live yeast *Saccharomyces cerevisiae* has been reported to improve growth performance and reduce diarrhea occurrence in pre- and postweaning piglets. The mode of action has not been fully elucidated yet. Research investigations suggest that live yeast stimulate the immune system and support microbial balance in the gut. The objective of the field study was to monitor the effect of live yeast dietary supplementation (ACTISAF\textsuperscript{®} Sc 47, Lesaffre Feed Additives, France) on the growth and health status of pre-weaning and post-weaning piglets under field conditions. The trial included litters from 12 sows, randomly assigned to 2 treatments with one replication (1. LY – commercial creep feed and starter diet with 6.25 ppm Actisaf Sc47, 2. Control - commercial creep feed and starter diet with no supplementation). Feed did not contain ZnO. Parameters under study included growth performance, presence of enteropathogenic *E. coli*, daily incidence of scours and biochemical (urea, creatinin, total protein, albumin, haptoglobin, CRP) and haematological (hematocrit) blood parameters of piglets. Blood and rectal swabs were taken on weaning day (30 days of age) and on D3, D7, D9 and D14 post-weaning.

Diarrhea was observed in 16 Control piglets and 13 LY piglets. There was no mortality due to diarrhea. The occurrence of enteropathogenic strains of *E. coli* was significantly increased in the Control.
DETECTION OF SWINE INFLUENZA VIRUS IN ORAL FLUIDS COLLECTED FROM EXPERIMENTALLY INFECTED PIGS

I. Decorte, N. De Regge, B. Cay

Operational Direction Viral Diseases, Enzootic and (Re)emerging diseases, CODA-CERVA, Ukkel, Belgium

Topic: 10. Porcine Medicine / Infectious Diseases

Swine influenza A virus (SIV) is a highly contagious respiratory swine disease with an important economic impact in swine industry and a potential public health risk. In this perspective, the surveillance of SIV has become a point of interest. However, the most common problem in diagnosing SIV remains the short detection period. Since the presence of SIV in oral fluids has recently been described, it was our objective to evaluate the detection of SIV in oral fluid samples compared to nasal swabs. Ten Belgian Landrace piglets were intranasally inoculated with 1 mL of $10^{8.5}$ EID$_{50}$ of a H1N1 strain (sw/Gent/28/10). Six pigs served as negative control animals. Oral fluid samples and nasal swabs were collected at 0, 1, 2, 3, 5, 7, 10, 14 and 21 dpi. RNA from all samples was extracted with the MagMAX Pathogen RNA/DNA kit (Life Technologies) and amplified with the Vetmax Gold SIV detection kit (Life Technologies). In nasal swabs, SIV could be detected from 1 till 5 dpi with a detection rate of 100% at 1 to 3 dpi and 20% at 5 dpi. In oral fluids, detectability went from 100% at 1 to 3 dpi; 80% at 5 and 7 dpi; 50% at 10 and 14 dpi to 25 % at 21 dpi. All samples from the negative control animals remained negative throughout the trial. Since SIV detection in oral fluids was superior to nasal swabs, oral fluids could become a valid alternative for virological diagnosis of swine influenza A virus.
There is a need for quantitative data that can be used in risk assessments to evaluate interventions that are most beneficial in decreasing pathogen prevalence. While clinically ill animals are removed at ante-mortem inspection, it is possible that animals with subclinical illness or lesions from previous illness can pass ante-mortem inspection. Extra trimming and handling are required to remove lesions, which are often in the form of peel-outs. The objectives of this project are to 1) estimate the prevalence of peel-outs across the United States, 2) determine what common respiratory pig pathogens are more likely to be associated with peel-outs, and 3) determine if peel-outs are associated with an increase in food-borne pathogens, specifically *Salmonella*. Approximately 1 in 15, or 7%, of all carcasses have some degree of adhesions. Data from a survey of US pork plants will be presented comparing the *Salmonella* prevalence between carcass with and without peelouts. Logistic regression of similar data showed that carcasses with a peelout were 90% more likely to be positive for Salmonella. The increased sample size and scope of this research project will allow for detection of a significant association.
A SWINE VETERINARY NETWORK FOR PRACTITIONERS

J. Berezowski¹, C. Byra², E. Brockhoff³, D. Hurnik⁴, L. Bergeron⁵, C. Klopfenstein⁶, H. Kloeze⁷, G. Charbonneau⁸, F. Cardinal⁹, T. Herntier¹⁰

¹ Biomedical Sciences, Ross University School of Veterinary Medicine, Basseterre, Saint Kitts and Nevis
² Greenbelt Swine Veterinary Services, Greenbelt Swine Veterinary Services, Chilliwack, BC, Canada
³ Prairie Swine Health Services, Prairie Swine Health Services, Red Deer, AB, Canada
⁴ Atlantic Veterinary College, University of Prince Edward Island, Charlottetown, PEI, Canada
⁵ Ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec, Quebec City, PQ, Canada
⁶ Le Centre de développement du porc du Québec, Montreal, Canada
⁷ Canadian Animal Health Surveillance Network, Canadian Food Inspection Agency, Owen Sound, ON, Canada
⁸ South Western Ontario Veterinary Services, South Western Ontario Veterinary Services, Stratford, ON, Canada
⁹ Consultants Avi-Porc, Consultants Avi-Porc, Drummondville, Québec, Canada
¹⁰ FD Solutions, FD Solutions, Winnipeg, MB, Canada

Topic: 10. Porcine Medicine / Infectious Diseases

The Canadian Swine Health Intelligence Network (CSHIN) is a non-governmental organization, managed by the veterinarians participating in the network and the Canadian Swine Health Board (CSHB). It is a new organization, built under the auspices of the CSHB; an organization that provides leadership, coordination and support for the management of the health of the Canadian swine herd. The primary goal of the CSHIN is to help practicing veterinarians deal more effectively with swine health problems. The CSHIN is made of two integrated networks that work together to produce and communicate information to swine veterinarians. One is a social network of veterinarians and swine specialists and the other is a web-based veterinary practice data collection, analysis and reporting system.

The Swine Veterinary Network (SVN) is made up of three regional networks forming one national network. The three regional networks are: 1) Western Provinces, 2) Ontario-Maritimes and 3) Quebec (Réseau porcin) (figure 1). Networks are composed primarily of swine veterinarians with the addition of epidemiologists, pathologists, swine specialists, government surveillance veterinarians, researchers, and other stakeholders. The networks meet every three months to discuss changing health issues. Participants in regional meetings include a small group of veterinarians plus a pathologist, epidemiologist and other experts as needed. Prior to each meeting a web-based clinical impression survey is filled out by members of the regional networks. The survey data is collated, diagnostic laboratory data is added and information is prepared for each meeting (figure 2). The SVN has been well supported by Canadian Veterinarians
### Clinical Impressions Report

#### Summary Report - Analysis

**MULTISYSTEMIC**

<table>
<thead>
<tr>
<th>Disease</th>
<th>Never (%)</th>
<th>Rare (%)</th>
<th>Common (%)</th>
<th>Very Prevalent (%)</th>
<th>Total Responses</th>
<th>Decreased (%)</th>
<th>Stable (%)</th>
<th>Increased (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edema disease</td>
<td>13 (81%)</td>
<td>3 (19%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>16</td>
<td>0 (0%)</td>
<td>12 (88%)</td>
<td>1 (6%)</td>
</tr>
<tr>
<td>Erysipelas</td>
<td>2 (12%)</td>
<td>12 (75%)</td>
<td>2 (12%)</td>
<td>0 (0%)</td>
<td>16</td>
<td>1 (6%)</td>
<td>14 (88%)</td>
<td>1 (6%)</td>
</tr>
<tr>
<td>Actinobacillus suis</td>
<td>3 (19%)</td>
<td>8 (50%)</td>
<td>4 (25%)</td>
<td>1 (6%)</td>
<td>16</td>
<td>0 (0%)</td>
<td>12 (80%)</td>
<td>3 (20%)</td>
</tr>
<tr>
<td>Grassers disease</td>
<td>1 (6%)</td>
<td>5 (31%)</td>
<td>9 (56%)</td>
<td>1 (6%)</td>
<td>16</td>
<td>0 (0%)</td>
<td>13 (81%)</td>
<td>3 (19%)</td>
</tr>
<tr>
<td>Streptococcus suis</td>
<td>0 (0%)</td>
<td>3 (19%)</td>
<td>11 (69%)</td>
<td>2 (12%)</td>
<td>16</td>
<td>0 (0%)</td>
<td>11 (69%)</td>
<td>5 (31%)</td>
</tr>
<tr>
<td>Circovirus type II Disease</td>
<td>0 (0%)</td>
<td>14 (88%)</td>
<td>2 (12%)</td>
<td>0 (0%)</td>
<td>16</td>
<td>0 (0%)</td>
<td>11 (73%)</td>
<td>1 (7%)</td>
</tr>
<tr>
<td>Mycoplasma hyorhinis</td>
<td>7 (47%)</td>
<td>6 (40%)</td>
<td>2 (13%)</td>
<td>0 (0%)</td>
<td>15</td>
<td>0 (0%)</td>
<td>11 (73%)</td>
<td>3 (21%)</td>
</tr>
<tr>
<td>Mulberry heart disease</td>
<td>7 (44%)</td>
<td>8 (50%)</td>
<td>1 (6%)</td>
<td>0 (0%)</td>
<td>16</td>
<td>2 (13%)</td>
<td>12 (80%)</td>
<td>1 (7%)</td>
</tr>
</tbody>
</table>

*Green and Red denote that at least 2 vets saw an decrease/increase.*
NATIONAL SURVEILLANCE TO HELP PRACTICING VETERINARIANS

J. Berezowski¹, C. Byra², E. Brockhoff³, D. Hurnik⁴, L. Bergeron⁵, C. Klopfenstein⁶, H. Kloeze⁷, G. Charbonneau⁸, F. Cardinal⁹, T. Herntier¹⁰

¹ Biomedical Sciences, Ross University School of Veterinary Medicine, Basseterre, Saint Kitts and Nevis
² Greenbelt Swine Veterinary Services, Greenbelt Swine Veterinary Services, Chilliwack, BC, Canada
³ Prairie Swine Health Services, Prairie Swine Health Services, Red Deer, AB, Canada
⁴ Atlantic Veterinary College, University of Prince Edward Island, Charlottetown, PEI, Canada
⁵ Ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec, Ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec, Quebec City, Quebec, Canada
⁶ Le Centre de développement du porc du Québec, Le Centre de développement du porc du Québec, Montreal, Quebec, Canada
⁷ Canadian Animal Health Surveillance Network, Canadian Food Inspection Agency, Owen Sound, ON, Canada
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¹⁰ FD Solutions, FD Solutions, Winnipeg, MB, Canada

Topi c: 10. Porcine Medicine / Infectious Diseases

The Canadian Swine Health Intelligence Network (CSHIN) is a national swine surveillance network that was designed to help veterinarians deal more effectively with all diseases on their clients’ farms, while providing other benefits such as trade support. The CSHIN is a new initiative that was implemented by the Canadian Swine Health Board (CSHB)¹, an organization that provides leadership, coordination and support for the management of the health of the Canadian swine herd.

The CHSIN currently collects data in two primary ways. The first is through a quarterly web-based clinical impression survey of participating veterinarians and the second is through a real time practice based medical record data system called Practice Based Surveillance (PBS).

Data is collected through a web-based practice management application called SDS2 (figure 1). Veterinarians evaluate the health of swine on their clients’ farms and enter the data into SDS. Data includes clinical estimates of the prevalence of each of 13 clinical syndromes (coughing, lameness, morbidity, etc.) within each subpopulation (boars, sows, nursery, grower etc.) examined. Also
included are the veterinarians’ clinical diagnoses and the results of the laboratory testing, which are received at a later time. The data is transported electronically to a secure CSHIN server every night.

To protect the confidentiality of farmers, no identifying data is sent to the CSHIN server. The CSHIN server automatically processes data into reports that include National and regional tables, charts and maps. Reports are emailed to CSHIN managers and are available on the CSHIN server.

1. www.swinehealth.ca
2. www.sdsinfo.ca