

the number of *Enterobacteriaceae* and hemolytic colonies were low, whereas *Lactobacillus* was high to compare with control group. Concretely, it was investigated by metagenomics analysis. The intestinal bacterial community in treatment group consisted of 13.0% of *Lactobacillus* and less than 1.0% of *Vibrio*, whereas those in control group consisted of less than 1.0% of *Lactobacillus* and 24.9% of *Vibrio* showing a decrease in distribution ratio of fish pathogenic bacteria after treatment with PSCPL13.

**Conclusions:** In the present study, the effect of *L. plantarum* PSCPL13 in *P. olivaceus* was estimated, in terms of growth, immunity and changes of intestinal microorganism as probiotics. This study suggested that *L. plantarum* PSCPL13 orally administered could be effective to enhance growth performance and improve of the intestinal beneficial bacteria of *P. olivaceus* and might be used as a probiotic candidate for *P. olivaceus*.

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## P-106

### Histopathological Characterization of the Horses with Hind Limb Ataxia in the Republic of Korea, 2008-2015

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**Introduction:** The horses showing ataxia has been increasing in the Republic of Korea since 2008. Differential diagnosis for ataxia in horses includes infectious diseases such as viruses, bacteria, parasites and non-infectious diseases such as congenital, degenerative and traumatic diseases. The aim of this study is to describe the histopathological findings obtained throughout an outbreak of the horses with hind limb ataxia from summer to autumn in 2008-2015.

**Materials and Methods:** Seventy-four horses suffering from ataxia were submitted for necropsy to Animal and Plant Quarantine Agency from 2008 to 2015. After necropsy, histopathological and molecular examinations with the nervous tissues were performed. HPLC for vitamin E level with the serum and ELISA for antibodies (Abs) against *Sarcocystis neurona* with the cerebrospinal fluid (CSF) were also done.

**Results:** Microscopic findings of the brain and spinal cord tissues revealed the eosinophilic encephalitis/myelitis (54 cases, 73%), encephalo/myelo-malacia (9 cases, 12%), nonsuppurative encephalitis (4 cases, 5.4%), suppurative encephalitis (1 case, 1.4%), tumor (1 case, 1.4%) and no significant lesions (5 cases,

6.8%). Eosinophilic encephalitis/myelitis cases revealed malacia with cavitations, hemorrhage and eosinophilic infiltration in the brain or spinal cord or both of them. Microscopically, nematodes were observed in the brain or spinal cord among 8 cases of eosinophilic encephalitis/myelitis. Seven of them showed similar appearance with approximately 100-200  $\mu$ m in diameter in cross sections and one of them were identified as *Setaria digitata* by DNA sequencing. One of them is identified as *Halicephalobus gingivalis* by morphology and DNA sequencing. A case of eosinophilic encephalitis/myelitis, the production of Abs against *Sarcocystis neurona* in CSF was confirmed manifesting equine protozoal myeloencephalopathy. A case of myelomalacia showed low serum level of vitamin E manifesting equine degenerative myelopathy. None of equine herpesvirus-1 or 4, rabies virus, equine influenza virus, Japanese encephalitis virus and West Nile virus was detected in all of the brain and spinal cord tissues.

**Conclusions:** Based on characteristic histopathological lesions, we suggest that cerebrospinal nematodiasis is one of the main causes in the horses with hind limb ataxia.

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## P-107

### Outbreak of Chronic Wasting Disease in captive deer, 2016

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**Introduction:** Chronic wasting disease (CWD) is a fatal, neurodegenerative disease of cervids caused by the accumulation of misfolded prion proteins in the brain. The disease was first recognized in a captive Rocky Mountain elk in 1979, and in wild moose in 2005. The first outbreak of CWD in Korea occurred in 2001 and was traced to accidental introduction of infected elks imported from Canada in 1994 and 1997. Since then, CWD outbreaks have been reported in 2004, 2005 and 2010 in Korea. No further outbreaks were reported until a suspect case was reported in a deer farm in Jinju city, Gyeongsangnam-do province on February 5, 2016. Here we report the case of a new outbreak of CWD in 2016.

**Materials and Methods:** Tissue samples (obex, retropharyngeal lymph node:RPLN, tonsil) from a 30-month-old, male red deer (*Cervus elaphus*) having a history of emaciation, ataxia and inability to stand due to unknown reasons were submitted to the CWD OIE Reference

Laboratory, Animal and Plant Quarantine Agency for CWD testing on February 4, 2016. The samples (Obex, RPRN, tonsil) were analyzed by using a commercial ELISA test (rapid test) for detection of PrP<sup>CWD</sup> (HerdChek<sup>®</sup> BSE-scrapie Ag Test, IDEXX) according to the manufacturer's instructions. After an initial positive result, the presence of PrP<sup>CWD</sup> was demonstrated by a commercially available Western blot test (TeSeE<sup>™</sup> Western blot, Bio-Rad), and immunohistochemical method using the polyclonal antibody S1 (made in QIA, ROK) at a dilution of 1:3000 for confirmation. These tissues were stained with hematoxylin-eosin (HE) to see spongiosis and gliosis.

**Results:** The red deer was found to be positive for the abnormal prion protein in the obex, RPLN and tonsil by the rapid test (OD values 1.6~3.7). Furthermore, all samples of the red deer demonstrated proteinase K(PK)-resistant three bands pattern (mono-, di-, un-glycosylated band) between 17 and 29 kDa. The microscopic lesion identified was spongiform encephalopathy in the obex. Diffuse patterns of PrP<sup>CWD</sup> immunolabelling was presented in the obex region, especially, in the dorsal motor nucleus of the vagus nerve (DMNV) and solitary tract, and in the germinal center of lymphoid follicles in RPLN and tonsil.

**Conclusions:** The suspect case of CWD in a captive red deer was confirmed to be a new outbreak of CWD in 2016. The disease was detected through the routine CWD testing (passive surveillance) of cervids showing suspect clinical signs at the QIA. The western blot and immunohistochemical staining patterns and intensity demonstrated in the present case were similar to the previous cases of CWD infection in red deer, elk and Sika deer in Korea, and those shown by CWD isolates from American elk. Although epidemiological investigations are ongoing, it may be possible not all CWD infected deers that had been sold from the infected farm were traced during the previous outbreaks due to lack of records, and these infected deer may have caused of the new outbreaks in 2016. Therefore, a traceability system for deer will be needed in the future as well as an ongoing CWD surveillance to control and eradicate CWD in Korea. Further study is required to characterize and compare the CWD prion with the previous strain.

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P-108

### A preventative effect of *Curcuma longa* extract for the control of *Salmonella* spp. in pigs

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**Introduction:** Natural *Curcuma* extract has been widely used as a component of oriental medicine and is proven to possess various biological characteristics including antimicrobial, antioxidative, and anti-inflammation activities. This study was performed to evaluate preventive effect of the natural *Curcuma* extract to control *Salmonella* spp. in pigs.

**Materials and Methods:** Study population was divided into 4 groups; HA, HB, CA, and CB. H groups, including HA and HB, were treated with *Curcuma* extract, while C groups, including CA and CB, were not. *Salmonella enteritidis* was administered orally to B groups, including HB, and CB. A groups, including HA, and CA, served as control group of *Salmonella* administration. Blood samples were collected for six times with one-week interval. Various parameters of toxicity including complete blood cell counts, clinical chemistry were investigated. CBC included PCV, RBC, hemoglobin, MCV, MCH, MCHC, platelet, MPV, and WBC. Serum chemistry analysis included ALT, AST, ALP, GGT, BUN, Creatinine, Calcium, Phosphorus, Total protein, Albumin, Glucose, Total Cholesterol, triglyceride, and electrolytes involving sodium, potassium and chloride were observed and subjected to statistical analysis by ANOVA (P = 0.05) using R program (GNU, MA, USA). Tukey's method was adopted as multi comparison post-test method.

**Results:** All of the animals were survived throughout the experiment. Treatment with *Curcuma* extract induced no differences in PCV, RBC, hemoglobin, MCV, MCHC, and platelet count. All the serum chemistry results, except BUN, did not show significant alteration. WBC and BUN had statistically significant difference (P < .05). Post-test revealed that CB population had elevated WBC on 7 days after *Salmonella* administration. Also increased BUN was observed in CB population on 21 days after *Salmonella* administration. There were no remarkable findings on histopathologic examination.

**Conclusions:** Considering the increased WBC and BUN level of CB, this *in vivo* analysis revealed the anti-inflammatory and protective effect of *Curcuma* extract after *Salmonella enteritidis* injection. In conclusion, *Curcuma longa* is not toxic to pigs and may be a valuable candidate of salmonella control measure.

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### Detection of Novel Oxazolidinone and Phenicol resistance gene *optxA* in Enterococcal isolates from Food Animals and Animal Carcasses

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