1. The effect of M-phase stage-dependent kinase inhibitors on inositol 1,4,5-trisphosphate receptor 1 (IP3R1) expression and localization in pig oocytes

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22. Serotype- and Virulence-Associated gene profile of streptococcus suis isolates from pig carcasses in Chiang Mai province, Northern Thailand

23. Social group formation and genetic relatedness in reintroduced Asian elephants (Elephas maximus) in Thailand

24. Comparison of Bone Tissue Elements Between Normal and Osteoarthritic Pelvic Bones in Dogs

25. Protectivity conferred by immunization with intranasal recombinant outer membrane protein H from Pasteurella multocida serovar A1 in chickens

26. Serodiversity and antimicrobial resistance profiles of detected salmonella on swine production chain in Chiang Mai and Lamphun, Thailand
The effect of M-phase stage-dependent kinase inhibitors on inositol 1,4,5-trisphosphate receptor 1 (IP3R1) expression and localization in pig oocytes

1,2,3Ito, J., 2,3Kashiwazaki, N., 4Parys, J.B., 5Wojcikiewicz, R.J.H., 2Kamoshita, M., 2Hirose, M., 2Kato, T., 2Fujiwara, K., 6Sathanawongs, A.,

ABSTRACT

At fertilization, inositol 1,4,5-trisphosphate receptor type 1 (IP3R1) has a crucial role in Ca2+ release in mammals. Expression levels, localization and phosphorylation of IP3R1 are important for its function, but it still remains unclear which molecule(s) regulates IP3R1 behavior in pig oocytes. We examined whether there was a difference in localization of IP3R1 after in vitro or in vivo maturation of pig oocytes. In mouse oocytes, large clusters of IP3R1 were formed in the cortex of the oocyte except in a ring-shaped band of cortex adjacent to the spindle. However, no such clusters of IP3R1 were observed in pig oocytes and there was no difference in its localization between in vitro and in vivo matured oocytes. We next tried to clarify which factor(s) regulates IP3R1 localization, phosphorylation and expression using M-phase stage-dependent kinase inhibitors. Our results show that treatments with roscovitine (p34cdc2 kinase inhibitor) or U0126 (mitogen-activated protein kinase inhibitor) did not affect IP3R1 expression or localization in pig oocytes, although the latter strongly inhibited phosphorylation. However, treatment with BI-2536, an inhibitor of polo-like kinase 1 (Plk1), dramatically decreased the expression level of IP3R1 in pig oocytes in a dose-dependent manner. From these results, it is suggested that Plk1 is involved in the regulation of IP3R1 expression in pig oocytes. © 2014 Japanese Society of Animal Science.
In vitro modulatory effects of quercetin on bovine neutrophil effector functions

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ABSTRACT

Bovine neutrophils perform numerous effector functions to overcome microbial invasions by utilizing innately-equipped intracellular and extracellular killing mechanisms. In this study, we explored the modulatory effects of quercetin hydrate (QH), an herbal flavonoid compound, on bovine neutrophil functional activities. Isolated neutrophils were incubated with various concentrations of QH (0-100 ?M). Neutrophil viability results showed no signs of cytotoxicity (p = 0.33). In other assays, neutrophils were stimulated with a pre-defined concentration of QH (50 ?M). Results showed promising effects of QH on enhancing intracellular ROS generation (p
Determination of serum lactate and glucose in dogs during swimming exercise

Ngavongpanit, K., Deein, P., See-Ngam, S., Yano, T., Siengdee, P., Kongsawasdi, S.,

ABSTRACT

The aims of this study were to investigate the levels of lactate and glucose in dogs during swimming and to determine the maximal lactate steady state in small and large breeds of dog. Twelve healthy dogs, including small breed (n = 6) and large breed (n = 6), were the study subjects. After swimming for different periods (5, 10, 15, 20, 25 and 30 min), blood was collected from the dogs which was then used to analyze changes in lactate and glucose levels during swimming. Results showed that the mean frequency of leg movement of the small breed was 99.7 ± 15.86 times/min, significantly higher (p < 0.05). However, the highest level of serum lactate was found in the small breed after 15 min of swimming. In conclusion, in the large breed of dog 30 min swimming at this intensity did not increase the serum lactate up to the maximal lactate steady state, but in the small breed the maximal lactate steady state was achieved after 15 min of swimming.
A comparative study of range of motion of forelimb and hind limb in walk pattern and trot pattern of Chihuahua dogs affected and non-affected with Patellar Luxation

Klinhom, S., Chaichit, T., Nganvongpanit, K.,

ABSTRACT

The study compared the Ranges of Motion (ROM) of forelimb and hind limb, and the cycle speeds of healthy and Patellar Luxation (PL) dogs in walking and trotting. 21 dogs were divided into three groups: The 5 normal dogs, 6 unilateral PL (PL-1) dogs and 10 bilateral PL (PL-2) dogs. All dogs with PL did not present lameness. The dogs were walking and trotting on a treadmill for the video record. The Kinovea program was employed to evaluate the cycle speed, Maximum Extension Angle (MEA), Maximum Flexion Angle (MFA) and ROM of the shoulder, elbow, carpal, hip, stifle and tarsal joints. The results showed that both the limb sides of the dogs in all the groups in both walking and trotting motions had no significant difference (p>0.05). It was found that the ROM of the shoulder, carpal, hip and tarsal joints in PL dogs had significant difference (p
Comparative Phenotypic and Genotypic Analyses of Salmonella Rissen that Originated from Food Animals in Thailand and United States

Patchanee, P., Erdman, M., Cray, P.F., Wittum, T., Lee, J., Gebreyes, W.A., Pornsukarom, S.,

ABSTRACT

Salmonella enterica serovar Rissen has been recognized as one of the most common serovar among humans and pork production systems in different parts of the world, especially Asia. In the United States, this serovar caused outbreaks but its epidemiologic significance remains unknown. The objectives of this study were to compare the phenotypic (antimicrobial susceptibility) and genotypic attributes of Salmonella Rissen isolated in Thailand (Thai) and the United States (US). All the Thai isolates (n = 30) were recovered from swine faecal samples. The US isolates (n = 35) were recovered from swine faecal samples (n = 29), cattle (n = 2), chicken (n = 2), dog (n = 1) and a ready-to-eat product (n = 1). The antimicrobial susceptibility of isolates was determined using the Kirby-Bauer disk diffusion method with a panel of 12 antimicrobials. Pulse-field gel electrophoresis (PFGE) was used to determine the genotypic diversity of isolates. All Thai isolates showed multidrug resistance (MDR) with the most frequent antibiotic resistance shown against ampicillin (100%), sulfisoxazole (96.7%), tetracycline (93.3%), streptomycin (90%) and chloramphenicol (30%). About half of the isolates of USA origin were pan-susceptible and roughly 30% were resistant to only tetracycline (R-type: Te). Salmonella Rissen isolated from Thailand and the USA in this study were found to be clonally unrelated. Genotypic analyses indicated that isolates were clustered primarily based on the geographic origin implying the limited clonality among the strains. Clonal relatedness among different host species within the same geography (USA) was found. We found genotypic similarity in Thai and US isolates in few instances but with no epidemiological link. Further studies to assess propensity for increased inter-regional transmission and dissemination is warranted. © 2015 Blackwell Verlag GmbH.
Prevalence and antimicrobial resistance of salmonella isolated from carcasses, processing facilities and the environment surrounding small scale poultry slaughterhouses in Thailand

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ABSTRACT

Salmonella is a major food-borne pathogen worldwide, including Thailand, and poultry meat plays a role as a vehicle for the spread of the disease from animals to humans. The prevalence and characteristics of Salmonella isolated from 41 small scale poultry slaughterhouses in Chiang Mai, Thailand were determined during July 2011 through May 2012. Salmonella’s prevalence in live poultry, carcasses, waste water, and soil around processing plants were 3.2%, 7.3%, 22.0% and 29.0%, respectively. Eighteen different serotypes were identified, the most common being Corvallis (15.2%), followed by Rissen (13.9%), Hadar (12.7%), Enteritidis (10.1%), [I. 4,5,12: i: -] (8.8%), Stanley (8.8%), and Weltevreden (8.8%). Antimicrobial susceptibility tests revealed that 68.4% of the Salmonella spp were resistant to at least one antimicrobial while 50.6% showed multiple drug resistance (MDR). Specifically, 44.3% of Salmonella were resistant to nalidixic acid, followed by streptomycin (41.8%), ampicillin (34.2%), tetracycline (34.2%), and sulfamethoxazole/trimethoprim (20.3%). Salmonella contamination was found in processing lines, carcasses, and in the environment around the processing stations. These findings indicate that improving hygiene management in small scale poultry slaughterhouses as well as prudent use of antimicrobial drugs is urgently needed if Salmonella contamination is to be reduced.

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Virulence characterization of Campylobacter jejuni isolated from resident wild birds in Tokachi area, Japan

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ABSTRACT

The prevalence of Campylobacter jejuni in wild birds is a potential hazard for human and animal health. The aim of this study was to establish the prevalence of C. jejuni in wild birds in Tokachi area, Hokkaido, Japan and investigate their virulence in vitro. In total, 173 cloacal swabs from individual wild birds were collected for the detection of Campylobacter spp. Thirty four samples (19.7%) were positive for Campylobacter of which 94.1% (32/34 samples) were C. jejuni. Additionally, one C. coli and one C. fetus were isolated. Seven C. jejuni isolates (one from crows and the other from pigeons) had important virulence genes including all three CDT genes (cdtA, cdtB and cdtC) and flaA, flaB, ciaB and cadF, and the other isolates were lacking cdtA gene. Further studies on in vitro virulence-associated phenotypes, such as motility assay on soft agar and invasion assay in Caco-2 cells, were performed. The wild bird C. jejuni isolates adhered and invaded human cells. Although the numbers of viable intracellular bacteria of wild bird isolates were lower than a type strain NCTC11168, they persisted at 48-hr and underwent replication in host cells. © 2015 The Japanese Society of Veterinary Science.
Effect of sedation on fore- and hindlimb lameness evaluation using body-mounted inertial sensors

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ABSTRACT

Reasons for performing study: Diagnostic analgesia is an integral part of equine lameness examinations, but is challenging to perform in uncooperative horses. Using sedation to facilitate this might, because of analgesic and ataxia-inducing effects, interfere with lameness evaluation. Objectives: To evaluate whether sedation with low-dose xylazine would alter lameness amplitude as measured by body-mounted inertial sensors. Study design: Controlled experiment. Methods: Forty-four horses were randomly split into 2 groups. Lameness was measured using body-mounted inertial sensors before and after injection of xylazine (0.3 mg/kg bwt) or saline. Sedation was measured at 5, 20 and 60 min following treatment, and lameness evaluations were performed before (Time 0) and at 20 and 60 min after treatment. Forelimb lameness was determined by measuring the vector sum of mean head height maximum and minimum differences between all right and left forelimb strides (n>25) collected with the horse trotting in a straight line. Hindlimb lameness amplitude was determined by measuring mean pelvic height maximum and minimum differences between right and left hindlimb strides. Numbers of horses staying the same, improving or worsening were compared between groups at each time interval. Results: There were no significant differences in head or pelvic movement asymmetry between xylazine and saline treatment groups. However, a few horses with forelimb lameness in the xylazine treatment group showed a large decrease in head movement asymmetry (decrease in forelimb lameness) at 60 min following sedation. Conclusions: Low-dose sedation with xylazine may be used without the concern of potential lameness-masking effects for hindlimb lameness evaluation, but caution should be used in some horses with forelimb lameness of mild severity. © 2015 EVJ Ltd.
Comparison of the efficacy of firocoxib and carprofen in clinical use for canine coxofemoral osteoarthritis

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ABSTRACT

Firocoxib and carprofen, non-steroidal anti-inflammatory drugs (NSAIDs), are used in the treatment of canine osteoarthritis. This study evaluated the efficacy and provided information of these NSAIDs in clinical practice. Sixteen healthy dogs of large breeds over 5 years old without systemic diseases and pregnancy that had coxofemoral osteoarthritis were divided into 2 groups, firocoxib group (n=9) and carprofen group (n=7). The study was conducted for 16 weeks. Firocoxib (5mg/kg body weight) or carprofen (4.4mg/kg body weight) was administered to all dogs once daily for 2 weeks, on alternate days for 6 weeks and every 2 days for 8 weeks. Of all samples, serum OA biomarkers (hyaluronan (HA) and chondroitin sulfate epitope WF6), hematological profiles together with physical, orthopedic and radiographic examination, passive range of motion measurement, pain and lameness scoring, urinalysis, fecal examination and owner preference scoring were assessed. Evaluations of the study took place at weeks 0, 2, 4, 8, 12 and 16. Although the serum WF6 levels of the firocoxib group were gradually increased until week 12 and decreased at week 16 and those of the carprofen group were decreased at week 2 and then gradually increased until week 16, the levels of WF6 revealed that the chondroprotective effect of firocoxib and carprofen was still indistinct. Passive range of motion (ROM) measurement revealed evidences of increased hip flexion of the firocoxib group at weeks 2, 4 and 16 (p
Class 1 integrons characterization and multilocus sequence typing of Salmonella spp. from swine production chains in Chiang Mai and Lamphun provinces, Thailand

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ABSTRACT

Pigs and pork products are well known as an important source of Salmonella, one of the major zoonotic foodborne pathogens. The emergence and spread of antimicrobial resistance is becoming a major public health concern worldwide. Integrons are genetic elements known to have a role in the acquisition and expression of genes conferring antibiotic resistance. This study focuses on the prevalence of class 1 integrons-carrying Salmonella, the genetic diversity of strains of those organisms obtained from swine production chains in Chiang Mai and Lamphun provinces, Thailand, using multilocus sequence typing (MLST) and comparison of genetic diversity of sequence types of Salmonella from this study with pulsotypes identified in previous study. In 175 Salmonella strains, the overall prevalence of class 1 integrons-carrying Salmonella was 14%. The gene cassettes array pattern “dfrA12orfF-aadA2” was the most frequently observed. Most of the antimicrobial resistance identified was not associated with related gene cassettes harbored by Salmonella. Six sequence types were generated from 30 randomly selected strains detected by MLST. Salmonella at the human-animal-environment interface was confirmed. Linkages both in the farm to slaughterhouse contamination route and the horizontal transmission of resistance genes were demonstrated. To reduce this problem, the use of antimicrobials in livestock should be controlled by veterinarians. Education and training of food handlers as well as promotion of safe methods of food consumption are important avenues for helping prevent foodborne illness. © 2015, Hokkaido University. All rights reserved.
Histopathological and immunohistochemical characterization of spontaneous uterine leiomyomas in two captive Asian Elephants

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ABSTRACT

Two captive female Asian elephants (Elephas maximus) in Thailand were euthanatized after prolonged recumbency, weakness, and unresponsive treatment. Necropsy revealed multinodular masses of 5-10 cm in diameter which were irregular, large, white and firm in consistency scattered throughout the uterine horns and uteri of both the elephants. Histologically, the tumors displayed mildly pleomorphic, spindle-shaped cells arranged in interlacing pattern interpreted as muscle bundles. The bundles of the muscle cells were interspersed by small amounts of collagen fibers and blood vessels. For immunohistochemistry, the tumor cells showed diffuse positivity for vimentin, desmin, and smooth muscle actin. Based on the pathological results, uterine leiomyomas were diagnosed. This study describes the morphology and immunohistochemical characteristics of the uterine smooth muscle tumor in Asian elephants.
A survey of Alaria alata mesocercariae in slaughter pigs (Sus scrofa domestica, Linnaeus, 1758) in the Mekong delta area, Vietnam

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ABSTRACT

Objective: To analyze the prevalence of Alaria sp. mesocercariae in slaughter pigs in the Mekong Delta in Vietnam. Methods: From December 2012 to March 2013, 621 carcasses of slaughter pigs originating from nine Vietnamese provinces (69 carcasses per province) bordering the Mekong Delta were tested for the presence of Alaria alata mesocercariae. From each carcass, 30 g tissue (a mix of peritoneal fat and cheek tissue) were examined using the Alaria-migration-technique. Animals originated from traditional farming with free access of pigs to water/wetlands. Fattening pigs (5.5–7.5 months of age, 84% males) constituted 97.1% of the sample set, whereas sows>26 months accounted for 2.9%. Results: All samples tested were negative for motile mesocercariae. Conclusions: Results indicate that the actual prevalence of this parasite will not exceed 5% (?=0.05) in pigs from the study area. Further studies could elucidate if this is due to (unapproved) antimollusc and antiparasitic treatment in the study area or if the parasite is absent in the wildlife at all. © 2015 Asian Pacific Tropical Medicine Press.
Taeniasis among refugees living on Thailand–Myanmar border, 2012


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ABSTRACT

We tested refugee camp residents on the Thailand–Myanmar border for Taenia solium infection. Taeniasis prevalence was consistent with that for other disease-endemic regions, but seropositivity indicating T. solium taeniasis was rare. Seropositivity indicating cysticercosis was 5.5% in humans and 3.2% in pigs. Corralling pigs and providing latrines may control transmission of these tapeworms within this camp. © 2015, Centers for Disease Control and Prevention (CDC). All rights reserved.
Effect of PCSO-524 on OA biomarkers and weight-bearing properties in canine shoulder and coxofemoral osteoarthritis

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ABSTRACT

This study was designed to compare the therapeutic benefits of a compound of omega-3 fatty acids from the New Zealand green-lipped mussel (Perna canaliculus) (PCSO-524) and omega-3 fatty acids in fish oil on clinical outcomes and osteoarthritis biomarkers (chondroitin sulfate WF6 epitope) in 66 dogs that had osteoarthritis (OA); 39 dogs with OA hip joints, 15 dogs with OA shoulder joints and 12 dogs with OA shoulder and hip joints. The animals were presented at the Small Animal Hospital, Faculty of Veterinary Science, Chulalongkorn University. The dogs were allocated into two groups randomly. One group received PCSO-524 (n = 33) and the other group received fish oil (n = 33), administered orally for 24 weeks. Serum OA biomarkers (WF6), lameness scores, weight-bearing scores, range of motion (ROM) and peak vertical force gait analysis were evaluated before treatment and two, four, eight, 12, 16, 20 and 24 weeks after the treatment began. The mean of serum WF6 of the PCSO-524 group (262.46±118.06 ng/ml) was significantly (p
Comparative phenotypic and genotypic characterization of Salmonella spp. in pig farms and slaughterhouses in two provinces in northern Thailand

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ABSTRACT

Salmonella spp. are an important group of bacterial zoonotic pathogens which can cause acute food-borne diseases in humans. Pork products are the main source of salmonellosis, but the origins and transmission routes of the disease have not been clearly determined. The purpose of this study was to characterize Salmonella spp. isolated in pig production lines both from pig farms and from slaughterhouses in Chiang Mai and Lamphun provinces in northern Thailand. The study focuses on the association among serotypes, antimicrobial resistance patterns and Pulse Field Gel Electrophoresis (PFGE) patterns to investigate possible sources of infection and to provide information which could help strengthen salmonellosis control programs in the region. A total of 86 strains of Salmonella comprising five majority serotypes were identified. Antibiotic resistance to tetracycline was found to be the most prevalent (82.56%) followed by ampicillin (81.40%) and streptomycin (63.95%). Seven clusters and 28 fingerprint-patterns generated by PFGE were identified among strains recovered from various locations and at different times, providing information on associations among the strains as well as evidence of the existence of persistent strains in some areas. Study results suggest that Salmonella control programs should be implemented at slaughterhouse production lines, including surveillance to insure good hygiene practices, in addition to regular monitoring of large populations of farm animals. © 2015 Tadee et al.

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ABSTRACT

The objectives of study were to determine the transmission parameters ($\beta$), durations of infection, and basic reproductive numbers (R0) of both Streptococcus agalactiae and Streptococcus uberis as pathogens causing mastitis outbreaks in dairy herds. A 10-mo longitudinal study was performed using 2 smallholder dairy herds with mastitis outbreaks caused by Strep. agalactiae and Strep. uberis, respectively. Both herds had poor mastitis control management and did not change their milking management during the entire study period. Quarter milk samples were collected at monthly intervals from all lactating animals in each herd for bacteriological identification. The durations of infection for Strep. uberis intramammary infection (IMI) and Strep. agalactiae IMI were examined using Kaplan-Meier survival curves, and the Kaplan-Meier survival functions for Strep. uberis IMI and Strep. agalactiae IMI were compared using log rank survival-test. The spread of Strep. uberis and Strep. agalactiae through the population was determined by transmission parameter, $\beta$, the probability per unit of time that one infectious quarter will infect another quarter, assuming that all other quarters are susceptible. For the Strep. uberis outbreak herd (31 cows), 56 new infections and 28 quarters with spontaneous cure were observed. For the Strep. agalactiae outbreak herd (19 cows), 26 new infections and 9 quarters with spontaneous cure were observed. The duration of infection for Strep. agalactiae (mean = 270.84 d) was significantly longer than the duration of infection for Strep. uberis (mean = 187.88 d). The transmission parameters ($\beta$) estimated (including 95% confidence interval) for Strep. uberis IMI and Strep. agalactiae IMI were 0.0155 (0.0035-0.0693) and 0.0068 (0.0008-0.0606), respectively. The R0 (including 95% confidence interval) during the study were 2.91 (0.63-13.47) and 1.86 (0.21-16.61) for Strep. uberis IMI and Strep. agalactiae IMI, respectively. In conclusion, the transmission parameter and R0 values were not different between both pathogens; however, the duration of infection for Strep. agalactiae was longer than Strep. uberis. These suggest that Strep. uberis may have a different transmission dynamic compared with Strep. agalactiae. © 2016 American Dairy Science Association.
Differences in compact bone tissue microscopic structure between adult humans (Homo sapiens) and Assam macaques (Macaca assamensis)

Ngavongpanit, K., Phatsara, M., Settakorn, J., Mahakkanukrauh, P.,

ABSTRACT

This study investigated the osteon structure of adult humans and Assam macaques, which served as a nonhuman primate model, to find an adequate key for species identification. Samples of compact bone from humans (n = 5) and Assam macaques (n = 5) - including humerus (n = 20), radius (n = 20), ulna (n = 20), femur (n = 20), tibia (n = 20) and fibula (n = 20) - were processed using conventional histological techniques. 100 secondary osteons from each sample were evaluated under light microscopy. Parameter measurements included: diameter, perimeter and area of Haversian canal and osteon; distance between centers of Haversian canals; and ratio between diameter of Haversian canal and osteon. Four parameters, including diameters and areas of Haversian canal and osteon, demonstrated significantly higher (P
Differential testosterone response to GnRH-induced LH release before and after musth in adult Asian elephant (Elephas maximus) bulls

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ABSTRACT

Bull elephants exhibit marked increases in testosterone secretion during musth, and studies have shown a heightened sensitivity of the testis to GnRH-stimulated testosterone production in musth compared to nonmusth males. However, activity of the hypothalamo-pituitary-gonadal axis before or soon after musth has not been studied in detail. The aim of this study was to evaluate LH and testosterone responses to GnRH challenge in nine adult Asian elephant (Elephas maximus) bulls during three periods relative to musth: premusth, postmusth, and nonmusth. Bulls were administered 80 μg of a GnRH agonist, and blood was collected before and after injection to monitor serum hormone concentrations. The same bulls were injected with saline 2 weeks before each GnRH challenge and monitored using the same blood collection protocol. All bulls responded to GnRH, but not saline, with an increase in LH and testosterone during all three periods. The mean peak LH (1.76 ± 0.19 ng/mL; P
Elemental Analysis of Asian Elephant (Elephas maximus) Teeth Using X-ray Fluorescence and a Comparison to Other Species

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ABSTRACT

Elemental composition in bone of the different species has variation depending on genetic and environmental factors especially their food habitat. The aims of this study were to conduct an elemental analysis of Asian elephant teeth, both deciduous (first molar, second molar, and tusk) and permanent (molar and tusk), and compare the elemental composition of permanent teeth among 15 species, mostly mammalian. These teeth were analyzed using X-ray fluorescence at two voltages: 15 and 50 kV. In Asian elephants, deciduous tusk showed a lower Ca/Zn ratio compared to permanent tusk, because of the lack of Zn in permanent molars. Ca/Fe ratio was higher in deciduous than permanent molars. For permanent teeth, elephant molars presented a high Ca/Pb ratio but no Ca/Zn, Ca/Sr, and Zn/Fe ratios because of the lack of Zn and Sr in the samples tested. The key elemental ratios for differentiating elephant deciduous and permanent tusk were Ca/P and Ca/Zn. The considerable variation in elemental ratio data across 15 species was observed. All tooth samples contained Ca and P, which was not surprising; however, Pb also was present in all samples and Cd in a large majority, suggesting exposure to environmental contaminants. From discriminant analysis, the combination of Ca/P+Ca/Zn+Ca/Pb+Ca/Fe+Ca/Sr+Zn/Fe can generate two equations that successfully classified six (dog, pig, goat, tapir, monkey, and elephant) out of 15 species at 100 % specificity. In conclusion, determining the elemental profile of teeth may serve as a tool to identify the tooth "type" of elephants and to potentially classify other species. © 2015 Springer Science+Business Media New York
Tropism and induction of cytokines in human embryonic-stem cells-derived neural progenitors upon inoculation with highly-pathogenic avian H5N1 influenza virus

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ABSTRACT

Central nervous system (CNS) dysfunction caused by neurovirulent influenza viruses is a dreaded complication of infection, and may play a role in some neurodegenerative conditions, such as Parkinson-like diseases and encephalitis lethargica. Although CNS infection by highly pathogenic H5N1 virus has been demonstrated, it is unknown whether H5N1 infects neural progenitor cells, nor whether such infection plays a role in the neuroinflammation and neurodegeneration. To pursue this question, we infected human neural progenitor cells (hNPCs) differentiated from human embryonic stem cells in vitro with H5N1 virus, and studied the resulting cytopathology, cytokine expression, and genes involved in the differentiation. Human embryonic stem cells (BG01) were maintained and differentiated into the neural progenitors, and then infected by H5N1 virus (A/Chicken/Thailand/CKU2/04) at a multiplicity of infection of 1. At 6, 24, 48, and 72 hours post-infection (hpi), cytopathic effects were observed. Then cells were characterized by immunofluorescence and electron microscopy, supernatants quantified for virus titers, and sampled cells studied for candidate genes. The hNPCs were susceptible to H5N1 virus infection as determined by morphological observation and immunofluorescence. The infection was characterized by a significant up-regulation of TNF-α gene expression, while expressions of IFN-α2, IFN-β, IFN-γ and IL-6 remained unchanged compared to mock-infected controls. Moreover, H5N1 infection did not appear to alter expression of neuronal and astrocytic markers of hNPCs, such as ß-III tubulin and GFAP, respectively. The results indicate that hNPCs support H5N1 virus infection and may play a role in the neuroinflammation during acute viral encephalitis. Copyright © 2015 Pringproa et al.
Effects of low molecular weight hyaluronan combined with carprofen on canine osteoarthritis articular chondrocytes and cartilage explants in vitro

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ABSTRACT

Intra-articular injection with non-steroidal anti-inflammatory drugs (NSAIDs) is used to treat inflammatory joint disease, but the side effects of NSAIDs include chondrotoxicity. Hyaluronan has shown positive effects on chondrocytes by reducing apoptosis and increasing proteoglycan synthesis. The purposes of this study were to evaluate the effects of low molecular weight hyaluronan (low MW HA), carprofen 25 mg/ml, carprofen 12.5 mg/ml, and a combination of HA and carprofen on canine osteoarthritis (OA) articular chondrocytes and a cartilage explant model in terms of cell viability, extracellular matrix remaining, and gene expression after exposure. In chondrocyte culture, MTT assay was used to evaluate the chondrotoxicity of IC50 and IC80 of carprofen with HA. In cartilage explant culture, two kinds of extracellular matrix (uronic acid and collagen) remaining in cartilage were used to evaluate cartilage damage for 14 d after treatment. Expression of COL2A1, AGG, and MMP3 was used to evaluate the synthesis and degradation of the matrix for 7 d after treatment. In chondrocyte culture, low MW HA could preserve OA chondrocyte viability but could not reduce the chondrotoxicity level of carprofen (P...
Serotype- and Virulence-Associated gene profile of streptococcus suis isolates from pig carcasses in Chiang Mai province, Northern Thailand

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ABSTRACT

In this present study, the serotype of 40 Streptococcus suis isolates from submaxillary glands of pig carcasses sold in wet markets in Chiang Mai Province, northern Thailand, was investigated. Eleven serotypes, including types 2, 3, 4, 5, 7, 8, 9, 17, 21, 22 and 31, were found in the isolates by a Multiplex PCR combined with serum agglutination. Of the eleven serotypes present, type 3 was the most prevalent, while types 2, 4, 5 and 21 were of primary interest due to their human isolate serotype. The mrp+/epf⁻/sly⁻ genotype was found to be the most prevalent genotype. This study indicates the importance of effective control of human S. suis infection due to raw pork or pig carcass handling in northern Thailand. ©2015 The Japanese Society of Veterinary Science
Social group formation and genetic relatedness in reintroduced Asian elephants (Elephas maximus) in Thailand

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ABSTRACT

Captive-held elephants were recruited from several parts of Thailand and released as part of a reintroduction project. Wild elephants with a herd matriarch generally contain the same matrilineal line and are genetically related. However, reintroduced elephants are less likely to be related, but are known to establish social groups. The objective of this study was to investigate the genetic relatedness and behavioral relationships of elephants reintroduced into forested areas in central and northern Thailand. Blood samples were collected from 53 elephants before release into the Sublanka (SLK) and Doi Phamuang (DPM) Wildlife Sanctuaries, and DNA was extracted for microsatellite and mitochondrial analysis. Direct observations of social bonding behaviors were done weekly for 12 months after release, and an association index (AI) calculated for each individual. The results showed a low relatedness for both populations; the observed heterozygosity and number of mitochondrial haplotypes were 0.739 and 13 at SLK (n = 26), and 0.808 and 11 at DPM (n = 27), respectively. Across both locations, 33 elephants formed into 11 groups (range 2-6 individuals/group). The average AI and pairwise genetic relatedness of elephant groups were 0.517 ± 0.039 and 0.078 ± 0.019, respectively, and were not correlated (r = -0.036; p= 0.78). Twenty elephants were not associated with specific groups and had average AI and pairwise genetic relatedness of 0.002 ± 0.001 and 0.047 ± 0.013, respectively, which were not correlated (r= -0.074; p= 0.491). Several mitochondrial haplotypes were found within the same group. Thus, social bonding of the reintroduced elephants was not influenced by genetic relatedness. Rather, groups formed in association with the presence of an elephant calf. Additionally, many elephants occasionally preferred isolation. Thus, reintroduction procedures should favor introducing elephant calves, or adults with calves to increase the chance of group formation and establishment of stable elephant herds. © 2015 Elsevier B.V.
Comparison of Bone Tissue Elements Between Normal and Osteoarthritic Pelvic Bones in Dogs

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ABSTRACT
Physiochemical analysis of bones affected with osteoarthritis (OA) can be used to better understand the etiology of this disease. We investigated the percentage of chemical elements in canine pelvic bone affected with varying degrees of OA using a handheld X-ray fluorescence (XRF) analyzer that discriminates magnesium (Mg12) through bismuth (Bi83). A total of 45 pelvic bones, including both ilium and subchondral acetabular bone plates, were categorized as normal (n = 20), mild grade OA (n = 5), moderate grade OA (n = 15), and severe grade OA (n = 5). In normal pelvic, seven elements (P, Ca, Mn, Ag, Cd, Sn, and Sb) differed (p < 0.005) in percentage between ilium and acetabulum. Comparisons among the four OA groups found Mn and Fe to be highest in severe grades (p < 0.05) in both ilium and acetabulum. Three heavy metals (Ag, Sn, and Sb) were detected in high percentages (p < 0.05) in the severe OA group in the acetabulum, but in ilium only Sn was high (p < 0.05) in severe OA. In conclusion, the percentages of several elements differed between pelvic types in dogs, and also with increasing severity of OA. The finding of high Mn and Fe in severe grade OA bone suggests these two elements may be useful in future studies of the etiology and pathophysiology of OA. © 2015 Springer Science+Business Media New York
Protectivity conferred by immunization with intranasal recombinant outer membrane protein H from Pasteurella multocida serovar A:1 in chickens

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ABSTRACT

Recombinant outer membrane protein H (rOmpH) is a potential fowl cholera vaccine candidate. The present study was aimed at developing rOmpH formulations for intranasal administration. The rOmpH was purified and formulated with either Escherichia coli enterotoxin B (LTB) or CpG oligodeoxynucleotides (ODN) as an adjuvant. Antibody responses in chickens intranasally immunized with rOmpH in combination with 2 different adjuvants were significantly increased (P
Serodiversity and antimicrobial resistance profiles of detected salmonella on swine production chain in Chiang Mai and Lamphun, Thailand

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ABSTRACT

Background: Foodborne illness is growing public health problem worldwide. Salmonella is recognized as a major cause of this problem. Salmonella serotyping is a phenotypic characteristics which provided useful epidemiological markers for primary discrimination. The emergence and spread of antimicrobial resistant of this pathogen have become a major public health concern. The objectives of this study were to determine Salmonella serotypes, and antimicrobial resistance profiles on swine production chain (Farm-to-slaughtering process) in Chiang Mai and Lamphun, Thailand.

Materials, Methods & Results: A total of 300 Salmonella strains were randomly selected from isolates recovered in 2011-2013 in Chiang Mai and Lamphun, Thailand, including the isolates from fecal, lymph node, pest and environmental samples. Serotyping and antimicrobial susceptibility testing was performed by WHO National Salmonella and Shigella center (Thailand). Salmonella isolates were serotyped by agglutination tests with antisera (S&A Reagents Lab Ltd., Thailand) on the basis of somatic-O, as well as phase 1 and phase 2 flagellar antigens according to the Kauffmann-White scheme. In addition, all serotyping Salmonella isolates were detected for antimicrobial susceptibility testing by using the disk diffusion method of the Clinical and Laboratory Standard Institute. Ten antimicrobial agents were determined. The data were collected and analyzed for descriptive statistical analysis by Epi Info™7. Twenty-one Salmonella serotypes were detected in both farms and slaughterhouses. Salmonella Rissen is the highest frequency found in both farms and slaughterhouses (30.7% and 38.0%, respectively). Thirty three antimicrobial resistance patterns were demonstrated. There were including 10 common patterns isolated from pig farms and slaughterhouses. The highest frequency antimicrobial resistant pattern was "AMP, S, TE" (47 isolates, 15.7%) followed by "AMP, SXT, C, S, TE" (44 isolates, 14.7%) and "AMP, SXT, S, TE" (36 isolates, 12.0%). Considering in each antibiotic agent, the highest frequency found was ampicillin (83.33%) followed by tetracycline (75.67%) and streptomycin (64%). The resistance of ciprofloxacin and norfloxacin of Salmonella isolates were not observed. There were no statistical differences in numbers of Salmonella found in different sources in each antimicrobial agent except cefotaxime and sulfamethoxazole-trimethoprim. Finally, ciprofloxacin and norfloxacin resistant strains were not found in both farms and slaughterhouses. Resistance to amoxicillin-clavulanic acid was not observed in Salmonella strains isolated from slaughterhouses. Discussion: Salmonella Rissen was also the majority serotypes in this region. Contrasting with the study in Germany, S. Rissen was found few in pig farms and slaughterhouses. Almost 90% of Salmonella spp. tested were resisted to antimicrobial at least 1 drug and 72% were multi drug resistance. Even though, we could not conclude the contamination from farms to slaughterhouses linked to the common source, but this study indicated that antimicrobial resistance- Salmonella can contaminate any steps of pig production.
line. Good practices and hygiene should be implemented to minimize this problem. Nevertheless, molecular epidemiology could further confirm the linkage of the contamination. The studies of antimicrobial resistance gene and molecular epidemiology should be performed.