

Effects of Broiler Carcasses Washing Methods on *Salmonella* spp. Concentration

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Objective—This study was conducted to investigate the effects of washing broiler carcasses with water and chlorinated water solution on *Salmonella* spp. concentration.

Materials and Methods—Broiler carcasses were collected after evisceration from the 6 small abattoirs (10 carcasses per abattoir) in Khon Kaen province between April and December 2009. The samples were subdivided into 2 groups (30 samples per group) and then were washed with water or chlorinated water (20 ppm) for 10 minutes. *Salmonella* spp. was determined by modified the method of ISO 6579. The effectiveness of washing methods by prevalence and concentration of *Salmonella* spp. were analyzed by Chi square test and t-test, respectively.

Results—Before washing carcasses with water, *Salmonella* spp. were found in 18 from 30 samples (60%) with the average of 25.01±36.79 cells/g and after washing, *Salmonella* spp. contamination was reduced to 10 from 30 samples (33.3%) with the average of 2.41±5.10 cells/g. *Salmonella* spp. recovered from carcasses were found in 16 from 30 samples (53.3%) with the average of 39.10±92.43 cells/g before washing including chlorine. After chlorine washing, *Salmonella* spp. were isolated from 8 of 30 samples (26.67%) with the average of 3.98±9.97 cells/g. The prevalence and concentration of *Salmonella* spp. were significantly different ($p<0.05$) between before and after washing by both methods. The effectiveness of water and chlorinated water washing were not significantly different in terms of the reduction of *Salmonella* spp. ($p>0.05$).

Conclusion—Data from the present study showed that washing poultry carcasses including chlorine is slightly better than washing with water alone.

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A New Haplotype Revealed by Using Mitochondrial DNA in Captive Dholes (*Cuon alpinus*) in Thailand

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Objective—To assess the genetic diversity of maternal lineage by using partial sequences of cytochrome b and control region of mitochondrial DNA in eight captive dholes in Thailand.

Materials and Methods—Faecal samples were preserved in preservative buffer. Mitochondrial DNA of eight faecal samples of dhole were extracted, purified, and amplified with specific primers for cytochrome b and control region of dhole using Polymerase Chain Reaction (PCR) technique. The PCR products were used for DNA sequencing and compared with data in GenBank.

Results—The 407-base pair (bp) fragments of cytochrome b and 246-bp fragments of control region were analyzed. We revealed no variable site on cytochrome b but seven variable sites on control region were detected. These variable sites were identified as two haplotypes (R and U) among eight samples. Haplotype U was a new control region haplotype.

Conclusion—There are only two haplotypes of captive dholes in Thailand. This result has implications toward conservation management and captive breeding of dholes in Thailand.

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Keywords: Dhole; Genetic diversity; Mitochondrial DNA

The Comparison of Frozen-thawed Thamin Eld's Deer (*Cervus eldii thamin*) Sperm Head Morphometric in TRIS and BF5F Extender by Computer Assisted Sperm Analysis (CASA)

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Objective—To determine and compare characteristics of frozen-thawed Thamin Eld's deer sperm head morphometry using two different extenders.

Materials and Methods—Semen was collected from sixteen Thamin Eld's deer using electroejaculation. Semen was immediately evaluated for the percentage of progressively motility, volume, pH and sperm concentration. Seven samples were selected based on semen quality and used for cryopreservation with 2 extenders; TRIS and BF5F that contained 5% of glycerol. Semen of each animal was divided to 2 groups. Each part of divided semen was immediately diluted and cryopreserved with different extender. Frozen-thawed spermatozoa were prepared by twice adding 'washing' medium (1% BSA in HAM's F-10) followed by centrifugation for 5 minutes and 3 minutes at 200xg, respectively. The sperm concentration was adjusted to 100×10^6 sperm/ml by adding washing medium then smeared on cleaned glass slide, fixed with 95% ethanol and stained with Eosin and Polychrome methylene blue. At least 100 spermatozoa from two slides in each sample were analyzed by Computer Assisted Sperm Analysis at 60x magnification.

Results—The average of frozen-thawed sperm morphometric analysis in Tris extender were as followed: length 8.2 μm , width 4.3 μm , the ratio of width/length 51.9%, head area $28.7 \mu\text{m}^2$ and head perimeter 21.0 μm . The average of frozen-thawed sperm morphometrics analysis in BF5F extender were as followed: length 8.4 μm , width 4.4 μm , the ratio of width/length 52.6%, head area $29.8 \mu\text{m}^2$ and head perimeter 21.6 μm .

Conclusion—The significant differences ($P < 0.05$) in frozen-thawed sperm head morphometric of Thamin Eld's deer between in TRIS and BF5F extender demonstrated the effects of extender for cryopreservation which might be used as indicators for extender choosing in sperm cryopreservation.

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Keywords: Sperm morphometric; Eld's deer; Extender; CASA

Prevalence and Serovars of *Salmonella* spp. in Beef from Abattoir, Temporary Abattoir, and Butcher's Shop in Roi-Et Province

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Objective—The study was conducted to describe the prevalence and serovars of *Salmonella* spp. in beef from abattoir, temporary abattoir and butcher's shop located beside the streets in Roi-Et province.

Materials and Methods—The samples were collected from the 10 of abattoirs and 10 of butcher's shops during May 2009 to April 2010. *Salmonella* spp. was determined by modified standard convention method. Two hundred and forty samples were analyzed in this study.

Results—The prevalences of *Salmonella* spp. in beef at the abattoir and temporary abattoir were 11.67% (7/60) and 13.33% (8/60), respectively. At the butcher's shops, beef from abattoir and beef from temporary abattoir were detected in 8 (13.38%) of 60 samples and 9 (15.00%) of 60 samples, respectively. The prevalences of *Salmonella* spp. were not significantly different ($p > 0.05$) between abattoir and temporary abattoir, and various butcher's shops. Fourteen serovars of *Salmonella* spp. were isolated from the samples.

Conclusion— The prevalences *Salmonella* spp. in beef sample between the two abattoirs and various butcher's shops were not significantly different but it has tended upwards from abattoir to butcher's shop.

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Keywords: *Salmonella* spp.; Beef; Abattoir; Butcher's Shop

**Prevalence of *Salmonella* Isolated from Pigs, Pig carcasses, Water and Workers
at Slaughterhouses in Khon Kaen Province**

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Abstract

Objective—To determine prevalence and serovars of *Salmonella* isolated from pigs, pig carcasses, water and workers at three slaughterhouses in Khon Kaen province.

Materials and Methods—During February - April 2009, 545 samples from pigs (210), carcasses (210), water (41) and workers (84) were collected from three slaughterhouses in Khon Kaen province. All samples were examined for *Salmonella* isolation and identification by ISO 6597:2002 and Modified method.

Results—Overall prevalences from three slaughterhouses of *Salmonella* isolated from pigs, pig carcasses, water and workers were 27.14%, 36.67%, 19.51% and 10.71%, respectively. In each slaughterhouse A, B and C the prevalences from pigs, pig carcasses, water and workers were 20%, 18.33%, 8.33% and 10.34% for slaughterhouse A; 41.33%, 50.67%, 53.85% and 12% for slaughterhouse B; and 18.67%, 37.33%, 0% and 10% for slaughterhouse C, respectively. The most prevalent serovars from all samples in each slaughterhouse were *S. enterica* subsp. ser *enterica* 4,5,12:i:- (48.15%) for slaughterhouse A, *S. Rissen* (35.44%) for slaughterhouse B and *S. Rissen* (44.44%) for slaughterhouse C.

Conclusion—This study indicated high prevalence of *Salmonella* contamination in all sample types from the slaughterhouses. Isolation of similar *Salmonella* serovars from different type of samples within the slaughterhouse may be due to cross-contamination during the slaughtering processes. Therefore, effective measures are required for prevention and control of *Salmonella* contamination in pork.

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Keywords: *Salmonella*; Pig; Carcass; Water; Worker

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Prevalence of *Campylobacter* Contamination in Organic and Conventional Broiler Flocks

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Abstract

Objective—To compare the prevalence of *Campylobacter* contamination in environmental sources of organic broiler flocks versus conventional broiler flocks.

Materials and Methods—One-day-old broilers were assigned to rear in organic or conventional farms. In both farms, samples were taken 3 times at 1, 20, and 40 days of chicken's age and collected from 4 sources: (1) chickens (by cloacal swabs), (2) drinking water, (3) feed, and (4) floor. In each time of sample collection, 40 samples were taken for each source resulting in a total of 960 samples. Then, all samples were cultured for determining the presence of *Campylobacter*. Prevalence of *Campylobacter* contamination was determined and the results were compared between organic and conventional farms. In addition, at the end of the experiment, *Campylobacter* enumeration was determined from cecal contents of the chickens (n = 25/group).

Results—Prevalence of *Campylobacter* contamination in organic farming versus in conventional farming varied and depended on sources: in chickens, 14/120 (11.7%) vs 14/120 (11.7%); in drinking water, 40/120 (33.3%) vs 64/120 (53.3%); in feed, 40/120 (33.3%) vs 48/120 (40.0%); and in floor, 24/120 (20.0%) vs 24/120 (20.0%). With different times of sample collection, the prevalence in most sources (chickens, drinking water, and feed) in each farming system differed significantly. Mean \pm SD (log CFU/g) for *Campylobacter* enumeration was significantly lower in organic farming (5.31 ± 0.80) than in conventional farming (6.60 ± 0.59).

Conclusion—In most environmental sources (chickens, feed, and floor), prevalence of *Campylobacter* contamination in organic and convention farms did not differ significantly. However, the prevalence differed among rearing periods. Population of *Campylobacter* in chickens was lower in organic farming than in conventional farming.

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Keywords: *Campylobacter*; Organic farming; Conventional farming; Environment; Broilers

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Antibacterial Activity of *Clausena harmandiana* Leaf Extract against Pathogenic Bacteria Isolated from Animals

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Abstract

Objective—To evaluate antimicrobial activity of *Clausena harmandiana* leaf extracted by ethanol against pathogenic bacteria isolated from animals.

Materials and Methods—*Clausena harmandiana* leaf was extracted by ethanol, and crude extract was tested for antimicrobial activity against 77 isolates of pathogenic bacteria from dogs, fish and pigs, by microdilution broth method. *E. coli* ATCC 25922, *Staphylococcus aureus* ATCC 25923 and gentamycin were also tested as experimental control. Minimum inhibitory concentration (MIC) and maximum bactericidal concentration (MBC) from each test was determined.

Results—*Clausena harmandiana* leaf extract had antibacterial activity against bacteria isolated from dogs with otitis externa such as *S. aureus*, α -hemolytic Streptococcus, β -hemolytic Streptococcus, *E. coli*, *Proteus mirabilis*, *P. aeruginosa*, *Pseudomonas* spp., *Klebsiella* spp., *Enterobacter* spp. and bacteria that were isolated from fish such as *S. agalactiae*, *Aeromonas hydrophila* and also *S. hyicus* which was isolated from swine, with minimal inhibition concentration (MIC) values of 8.33, 20.45, 9.45, 66.67, 68.06, 35.25, 30.47, 83.60, 50.00, 14.54, 28.65, 12.50 mg./ml and minimal bactericidal (MBC) values of 20.96, 23.57, 16.15, 141.67, 161.11, 70.17, 65.63, 118.75, 137.50, 14.54, 37.24 and 12.50 mg./ml, respectively.

Conclusion—Ethanol extract of *Clausena harmandiana* leaf had antibacterial activity against various types of pathogenic bacteria that were isolated from animals. In comparison, MIC and MBC values of Gram positive bacteria groups were significantly lower than those of Gram negative bacteria groups.

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Keywords: *Clausena harmandiana* leaf; Pathogenic bacteria; Antimicrobial activity; MIC; MBC

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Antimicrobial Activity of Neomycin against Bacteria Isolated from Otitis Externa in Dogs

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Abstract

Objective—To evaluate antimicrobial activity of neomycin against bacteria isolated from otitis externa in dogs.

Materials and Methods—Neomycin was diluted by 2 fold dilution and tested against 66 bacterial isolates from dogs with otitis externa by microdilution broth method. *E.coli* ATCC 25922, *Staphylococcus aureus* ATCC 25923 and gentamicin were also tested as standard controls. Minimal inhibitory concentration (MIC) and minimal bactericidal concentration (MBC) from each test were determined.

Results—Neomycin can inhibit both gram-negative bacteria: *Klebsiella* spp., *Escherichia coli*, *Pseudomonas* spp., *Pseudomonas aeruginosa*, *Enterobacter* spp. and *Proteus mirabilis* with MIC values of 2.62, 3.52, 4.65, 4.86, 9.06 and 60.70 µg/ml and MBC values of 3.75, 14.77, 38.46, 50.04, 11.99 and 215.16 µg/ml, respectively and gram-positive bacteria: β -hemolytic *Streptococcus*, *Staphylococcus aureus* and *Staphylococcus* spp. with MIC values of 2.56, 28.38, 15.41 and MBC values of 14.12, 76.44, 37.77 µg/ml, respectively.

Conclusion—MIC values of neomycin against Gram-positive and Gram-negative bacteria showed no significant difference ($P>0.05$), but significant difference of MBC ($P<0.01$).

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Keywords: Neomycin; Otitis externa; Antimicrobial activity; Dog

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Uses of Antibody Therapy for Bacterial Infection

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Abstract

Antibiotic resistances of several clinically-important bacteria have led scientists to find new drugs or methods of treatment. Antibody therapy is among these new methods with promising value. Mechanisms of action are well-known and opsonization is the major mechanism for bacterial clearance. Two types of antibodies, polyclonal and monoclonal antibodies, can be used with different advantages and disadvantages, and their effectiveness have been demonstrated both in human and veterinary medicine. Safety of these antibodies, nowadays, is much safer than before based on production technology. Besides, these antibodies are very stable and can be stored for a long period of time. However, availability and cost can limit their usage compare to antibiotics, therefore, their indications will include only those serious infection with antibiotic-resistant bacteria and some other special conditions.

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