Research Paper

Genome Analysis of Antimicrobial Resistance Genes and Virulence Factors in Multidrug-Resistant Campylobacter fetus Subspecies Isolated from Sheath Wash.

Tshipamba ME, Lubanza N and Mwanza M.

ABSTRACT

Campylobacter fetus subspc species are mostly characterized by reproductions problems in cattle and sheep. This study aimed to study the genetic profile and assess the genes mechanism of resistance and their virulence factors using genome sequence analysis. A total of 59 confirmed Campylobacter fetus subspecies based on molecular assays and DNA sequencing were subjected to antimicrobial susceptibility test against 14 antibiotic agents representing the five classes of antibiotics using the disc diffusion method. In addition, sequencing the genome of all strains induced complete resistance against all tested antibiotics. The results of the antimicrobial test indicated that 54.4% had a resistance profile, 26.3% were intermediate, while 19.3% were observed to be susceptible. The Whole Genome Sequencing (WGS) result revealed the presence of different genes, such as Broad-specificity multidrug efflux pump and 16S rRNA (guanine )-methyltransferase (gidB), efflux pump conferring antibiotic resistance (MacA and MacB), protein-altering cell wall charge conferring antibiotic resistance (PgsA), which have never been reported in Campylobacter fetus subspecies. The WGS also revealed the presence of genes that involved in colonization, adhesion, motility, and invasion, such as type IV secretion system protein (VirD4), S-Layer, cytolethal distending toxin (A, B, and C), Campylobacter invasion antigen (CiaB), and fic domain protein (fic) were among important CDS. The presence of these uncommon genes explains the resistance of Campylobacter fetus subspecies against different tested antibiotics. The results of this study can be used to implement molecular surveillance of Campylobacter fetus subspecies and conduct further studies on the resistance mechanism in these subspecies.

Keywords: Broad-specificity multidrug efflux pump, Campylobacter fetus subspecies, Genome analysis, Methyltransferase gidB, Multidrug resistance.
Research Paper

Impact of In-Ovo Injection of Folic Acid and Glucose on Hatchability and Post-Hatching Performance of Broiler Chicken.

Abdel-Halim A, Mohamed FR, Elmenawey MA, Gharib HB.


ABSTRACT
The present study was designed to investigate the impact of in-ovo injection of folic acid and glucose on hatching eggs from 55 weeks old broiler breeders. A total number of 900 hatching eggs were collected from Arbor Acres broiler breeders, then, eggs were divided into 6 groups including 1) Negative Control (non-injected, NC), 2) Dry Punch Control (pricked without injecting any solution, DPC), 3) Positive Control (eggs were injected with 0.5 mL normal saline, PC), 4) Folic Acid group (eggs were injected with 0.2 mg/ egg folic acid, FA), 5) Glucose group (eggs were injected with 125 mg/ egg glucose, Glu), and 6) Folic Acid with Glucose group (eggs were injected with 0.2 mg folic acid with 125 mg/ egg glucose, FA+Glu). Each treatment was divided into five replicates of 30 eggs each. Eggs were injected into the albumen under the air sac. After in-ovo injection, the eggs were stored for four days before hatching. After hatching, the chickens were reared in groups according to the treatments. All treatments were divided into 10 replications of 9 chickens in each. In-ovo injection with folic acid decreased the albumen pH significantly to 9.19 after 4 days of injection, while the negative control was 9.43. Hatching quality was severely affected by all in-ovo injection treatments, but no significant differences were found between the treatment groups concerning the hatchability of fertile eggs. Injection treatments had no significant effect on the growth rate or the production number in any of the weeks. Injection of folic acid and (FA+Glu) significantly increased chickens’ body weight at two and four weeks of age. Also, the dressing percentage when using folic acid and (FA+Glu) was significantly increased to 72.1% and 72.5%, respectively, compared to the positive control group (68.3%). In conclusion, our data suggested that in-ovo injection with a mixture of folic acid and glucose (0.2 mg folic acid+ 125 mg/ egg glucose) could be used to enhance carcass characteristics. Further studies should be conducted to find the effects of in-ovo injection folic acid and glucose on different incubation days and at different sites of injection.

**Keywords:** Broilers, Folic Acid, Glucose, Hatchability, In- Ovo injection, Old breeders, Post-hatch
samples (i.e., wound swabs, Fecal swabs, and urine samples) were collected from dogs and E. coli synergy test were carried out for the identification of ESBL producing E. coli spp. was reported as 0.15 mg/ml and 0.3 mg/ml, respectively. Consequently, the expression of E. coli spp. in vitro as well as their effect on the expression of antibiotic resistance genes. Different E. coli spp. Silver nanoparticles were tested for their in vitro antibacterial potential and there were blaCTX Nanoparticles have been extensively used as an applicable and safe alternative to antibiotics. Research Paper Khalil OA, Enbaawy MI, Salah T, Mahmoud H and Ragab E. Klebsiella a promising antibacterial activity and could be considered an applicable alternative for the antibacterial effect where the minimum inhibitory concentration of AgNPs for ESBL producing ESBL-producing Moreover, the effect of silver nanoparticles on the expression of antibiotic resistance genes (i.e., blaTEM, blaSHV, spp.=6) were confirmed as ESBL producing. Silver nanoparticles indicated a promising antibacterial activity and could be considered an applicable alternative for the antibacterial effect where the minimum inhibitory concentration of AgNPs for ESBL producing ESBL-producing E. coli and...
This study aimed to identify S. gigantea and S. sarcocystis. The 18S rRNA gene presented that all isolates produced bands of expected sizes on gel naturally infected domestic sheep and goats using the molecular method, as well as investigating the morphological and the ultrastructural characteristics of the Ultrastructural and Molecular Characterization of Sarcocystis Species Derived from Sheep and Goats in Soran City, Erbil, Iraq. The findings from the phylogenetic analysis revealed that the identified species were identified molecularly by 18S rRNA gene sequence analysis. Moreover, the results of electron microscopy indicated the characteristic features of the macroscopic esophagi, and isolated species. A total of 1000 esophagi were collected from sheep and goats and examined for macroscopic sarcocysts. The cysts contained numerous merozoites and banana-shaped bradyzoites. The ultrastructure of the sarcocysts was investigated by both scanning and transmission electron microscopy. The macroscopic sarcocysts were detected in 9.1% (91/1000) of the esophagi. The study was conducted to detect Single Nucleotide Polymorphism in the Pituitary Positive Transcription Factor-1 gene and its association with the bodyweight traits in BC1 hybrid chicken (Gallus gallus gallus Linnaeus, 1758). The Single Nucleotide Polymorphism was analyzed using the Pearson correlation test between the bodyweight of 49-days-old chickens with the polymorphism points. The conclusion was that the Pituitary Positive Transcription Factor-1 gene is closely related to chicken growth and productivity. This research was conducted to detect Single Nucleotide Polymorphism in the Pituitary Positive Transcription Factor-1 gene and its association with the bodyweight traits in BC1 hybrid chicken (Gallus gallus gallus Linnaeus, 1758) from Cross Breeding between Female F1 Broiler and Male Pelung. The Positive Transcription Factor-1 gene was amplified by PCR, DNA band was visualized utilizing electrophoresis, and the PCR product was sequenced using Sanger method. The DNA productivity. This research was conducted to detect Single Nucleotide Polymorphism in the Pituitary Positive Transcription Factor-1 gene and its association with the bodyweight traits in BC1 hybrid chicken (Gallus gallus gallus Linnaeus, 1758). The Single Nucleotide Polymorphism was analyzed using the Pearson correlation test between the bodyweight of 49-days-old chickens with the polymorphism points. The conclusion was that the Pituitary Positive Transcription Factor-1 gene is closely related to chicken growth and productivity. This research was conducted to detect Single Nucleotide Polymorphism in the Pituitary Positive Transcription Factor-1 gene and its association with the bodyweight traits in BC1 hybrid chicken (Gallus gallus gallus Linnaeus, 1758) from Cross Breeding between Female F1 Broiler and Male Pelung. The Positive Transcription Factor-1 gene was amplified by PCR, DNA band was visualized utilizing electrophoresis, and the PCR product was sequenced using Sanger method. The DNA
Canine Parvovirus Infection in Dogs: Prevalence and Associated Risk Factors in Egypt.

The overall prevalence of CPV infection in dogs was reported as 59.7%. Dogs between 0 and 3 months of age indicated the highest prevalence of 68% followed by 4-6 months of age and 6 months and above with 53.3%. The lowest prevalence of CPV was reported in dogs above 6 months of age. The prevalence was highest in autumn (25%) and winter (16.6%). The season was found to be a significant risk factor in dogs older than 6 months of age. Age and seasonal variations are risk factors in the prevalence of CPV. Young, unvaccinated puppies and exotic breeds were more prone to CPV infection. Regarding vaccination, dogs between 0 and 3 months of age showed the highest prevalence of 68% followed by 4-6 months of age and 6 months and above with 53.3%. This study aimed to investigate the prevalence of CPV and potential risk factors of parvovirus infection in dogs residing in Egypt. A total of 122 dogs suffering from vomiting and diarrhea were screened by antigen rapid CPV/Canine Coronavirus Ag test kit for the diagnosis of CPV infection from March 2012 to February 2013. Age, breed, season, and vaccination of each dog were recorded to study the prevalence of CPV. The prevalence was highest in autumn (25%) and winter (16.6%). Thus, CPV is an infectious and highly contagious viral disease of dogs. Age and seasonal variations are risk factors in the prevalence of CPV. Identification of the potential risk factors associated with the disease may be helpful to construct the ideal preventive measures.

Sayed-Ahmed MZ, Elbaz E, Younis E and Khodier M.

Keywords: Canine parvovirus, Egypt, Epidemiology, Prevalence, Risk factors.

Microbiological Studies on Naturally Present Bacteria in Camel and Buffalo Milk.

The aim of current study was to isolate and identify naturally occurring probiotic Lactobacilli strains in camel milk and urine. A total number of seven samples were collected and used in this study. The samples were cultured, and 18 Lactobacilli strains were found in both camel milk and camel urine. The isolated strains were identified by using 16S rRNA multiplex Polymerase Chain Reaction. The species in buffalo milk, camel milk, and camel urine to investigate their susceptibility to antibiotics. A total number of seven samples were collected and used in this study. The samples were cultured, and 18 Lactobacilli strains were found in both camel milk and camel urine. The isolated strains were identified by using 16S rRNA multiplex Polymerase Chain Reaction. The species in buffalo milk, camel milk, and camel urine to investigate their susceptibility to antibiotics. Buffalo and camel strains that were found in both camel milk and camel urine, were also found in buffalo milk, as well. The results indicated that fish exposed to thiobencarb (36µg/L); the third group was fed on a commercial feed containing 200 mg of S-methyl cysteine/kg only. Fishes were sacrificed at the end of the experimental course (two months) and sampling was carried out. Catalase, Glutathione S transferase activities, Glutathione reduced, and Malondialdhyde levels were assayed. S-Methyl Cysteine Protective Effects in Oreochromis Niloticus Fish Contaminated by Thiobencarb Herbicide.


Keywords: Antibacterial, Antibiotics, Carbamate, Fish, Genotoxic damage, Histopathology.

S-Methyl Cysteine Protective Effects in Oreochromis Niloticus Fish Contaminated by Thiobencarb Herbicide.

ABSTRACT

A retrospective study was conducted to determine the epidemiology of Contagious Bovine Pleuropneumonia in the Central Zone of Tanzania. The present study used data from the Epidemiological Management and Assessment (EMA-i) reports submitted to the zone. The past five years of Central Zone Veterinary Centre (CZVC) records were used to analyze the number of reported cases of Contagious Bovine Pleuropneumonia (CBPP). The number of cases varied with the reported disease rate, and the highest number of cases was reported from November to January, which is the rainy season in Tanzania. It was also revealed that there was a clear temporal pattern of CBPP occurrence, with more cases being reported between August to December. In the ABSTRACT, 3.8%, 13%, and 0.5% were reported as CBPP prevalence, case fatality rate, and mortality rate, respectively. It was also revealed that there was a clear temporal pattern of CBPP occurrence, with more cases being reported between August to December. In the conclusion, CBPP was a seasonal problem in Central Tanzania. Therefore, the present research recommended the strengthening of control measures against this disease in the central zone of Tanzania. In order to be able to assess the actual burden of the disease on-site, 56, 426, and 11147 cases were reported as deaths, and the cattle at risk lower compared to the situation on-site.

Keywords:

Contagious Bovine Pleuropneumonia, Prevalence and distribution, Central zone, Tanzania.
Identifying the Virulent Factors of *Clostridium perfringens* Locally Isolated from Different Species.


<table>
<thead>
<tr>
<th>Species</th>
<th>CPA Gene</th>
<th>CPE Gene</th>
<th>Net B Gene</th>
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<tbody>
<tr>
<td><em>Clostridium perfringens</em></td>
<td>yes</td>
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The PCR was carried out to elucidate the virulence factors. It was indicated that all the 26 *Clostridium perfringens* isolates had CPA gene and contained CPA, Net B, and CPE genes as virulence factors. Consequently, those isolates are highly recommended to be used in the preparation of enterotoxemia and necrotic enteritis vaccines as they are more virulent strains.

Keywords: isolates (n=26, 19.25%). The PCR was carried out to elucidate the virulence factors. It was *Clostridium perfringens* enterotoxin (CPE gene), whereas 23% of isolates of chicken and cattle intestinal samples high...
ABSTRACT

This paper aimed to examine the management of urinary calculi of a sulcata tortoise. A 2-year-old sulcata tortoise presented with a history of hematuria and cystitis. A radiography examination revealed a radiopaque mass in the urinary bladder. The cystotomy and plastron osteotomy were performed to remove the urinary calculi mass. The postoperative course was uneventful, and the tortoise was discharged 1 week later.

Keywords: Urinary calculi, Cystotomy, Plastron osteotomy, Sulcata tortoise

REFERENCES


The Effect of Dietary Supplementation of Cod Liver Oil on Ratio of Saturated and Unsaturated Fatty Acids in Pangasius Fish

ABSTRACT


The present research aimed to determine the effects of adding lysine essential amino acid to commercial feed on fatty acid contents of pangasius fish. In the present study, the treatment was done by adding lysine with different doses including P0 (0%), P1 (1.2%), P2 (2.2%), and P3 (3.2%). Each treatment was repeated five times. The main parameters studied were the content of saturated and unsaturated fatty acids in pangasius fish meat. The observed changes in saturated fatty acids content were significant at dose levels P1 (1.2%), P2 (2.2%), and P3 (3.2%). The content of unsaturated fatty acids was also significantly increased at dose levels P2 (2.2%) and P3 (3.2%). The effects of adding lysine to commercial feed indicated significant differences in the content of saturated fatty acids, Monounsaturated Fatty Acids (MUFA) and Polyunsaturated Fatty Acids (PUFA) in pangasius meat; a decrease in the content of saturated fatty acids was found in P3 with 3.2% (3.5882 mg/dl). In P2, an increase in the MUFA content of 2.2% (5.9630 mg/dl) was found. An increase in the PUFA content was also observed in P3 (3.2%). The effects of adding lysine to commercial feed showed a significant increase in the content of unsaturated fatty acids. A comparison between control treatments (P0) and treatments with lysine showed that the use of lysine in commercial feed indicated significant differences in the content of saturated and unsaturated fatty acids.

Key words: Lysine essential amino acid, Saturated fatty acids, Unsaturated fatty acids.

Effect of Heat Stress on Developmental Competence of In Vitro Matured Oocytes of Camelus Dromedaries with Different Qualities

ABSTRACT


The deleterious effect of heat stress on cumulus-oocytes complexes (COCs) competence is well recognized in different livestock species. Therefore, the present study aimed to investigate the effect of heat stress on developmental competence of in vitro matured COCs of Camelus dromedaries with different qualities. World Vet. J. 10(4): 653-657, 2020; pii:S232245682000079-10; DOI: https://dx.doi.org/10.29252/wvj2020.scil.78

A total of 1548 COCs were divided into six groups in this study. The groups were named K1 and K2 representing good and low-quality COCs incubated at 38.5°C for the first 6 hours of IVM. After exposure of COCs to heat stress at 41°C and 42°C during IVM, the groups were named K3, K4, K5, and K6. The cleavage rate was lower for low quality (K2; 63 ± 1.28) than good quality COCs (K1; 53 ± 1.85). The percentages of oocytes that developed to the blastocyst stage were lower for K2, K3, K4, K5, and K6 than K1. Moreover, the blastocyst rate was lower in K4 and K6, compared to other treatment groups. The maturation of COCs exposed to 42°C significantly decreased the Pb (polar body) extrusion rate in K4 and K6, compared to other treatment groups. The cleavage rate and the percentage of oocytes that developed to the blastocyst stage were significantly lower for K4, K5, and K6 than K1. The results of this study indicated that exposure of camel COCs to heat stress for 6 hours during IVM would be detrimental to their developmental competence. The embryo cleavage rate was significantly lower for good and low-quality COCs exposed to 41°C and 42°C during IVM than those exposed to 38.5°C.

Key words: Maturation, the COCs were incubated at 38.5°C for 24 hours of IVM. The developed embryos were cultured in vitro for 7 days post parthenogenetic activation. The results of this study indicated that heat stress at 41°C and 42°C during IVM would be detrimental to their developmental competence.
ABSTRACT

The contamination of goat milk with pathogenic fungi can cause health hazards for the consumers either they consume it raw or even in the processed form. Since there are few studies concerning yeasts in raw goat milk, the present study aimed to determine the prevalence of yeasts and isolate Candida albicans from raw goat milk samples. Also, this study determined the distribution of virulence genes and the antifungal susceptibility profile of Candida albicans isolates. A total of 30 goat milk samples (collected from free-grazing goats) were mycologically examined. The confirmed Candida albicans isolates were subjected to PCR assay to detect the virulence genes (SAP4, RAS1, ALS1, HWP1, and PLB1). Also, antifungal sensitivity testing was performed against the commercially available antifungal agents and probiotics (Lactobacillus acidophilus and Lactobacillus plantarum). The mycological examination revealed that 14 out of 30 (46.7%) goat milk samples were positive for yeasts and only 4 (13.3%) isolates were confirmed as Candida albicans. The results from the PCR assay showed that RAS1 and ALS1 were found in 4 (100%) isolates, HWP1 and SAP4 were found in 2 (50%) isolates, while PLB1 was not detected in tested Candida albicans isolates (0%). Antifungal sensitivity testing results showed that ketoconazole gave the best activity against Candida albicans isolates, followed by fluconazole, nystatin, and itraconazole. All isolates were resistant to terbinafine. Moreover, both Lactobacillus acidophilus and Lactobacillus plantarum showed antifungal effects against Candida albicans, but Lactobacillus plantarum was more effective than Lactobacillus acidophilus. Antifungal resistance is a major problem that can lead to failure of candidiasis treatment. Regular antifungal sensitivity testing and searching for an alternative bio-eco-friendly approach for proper control and treatment of candidiasis are strongly needed to prevent treatment failure and emergence of resistant isolates.

Keywords: Antifungal sensitivity testing, Candida albicans, Goat milk, Virulence genes, Probiotics.