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* subspecies 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 527 -N 7 )-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.
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
In Vitro Investigation of the Antibacterial Effect of Silver Nanoparticles on ESBL-producing E. coli and Klebsiella spp.

The present study aimed to explore the inhibitory effect of silver nanoparticles on Extended-Spectrum beta-Lactamase (ESBL)-producing E. coli and Klebsiella spp. The minimum bactericidal concentration of ESBL-producing Klebsiella spp. was reported as 0.15 mg/ml and 0.3 mg/ml, respectively. Consequently, the expression of antibiotic resistance genes (i.e., blaTEM, blaSHV, and blaCTX-M) was investigated using SEM. It can be concluded that silver nanoparticles have a promising antibacterial activity and could be considered an applicable alternative for the control of ESBL producing bacteria.

**Keywords:** Silver nanoparticles, ESBL-producing E. coli, Klebsiella spp.
Species were identified molecularly by 18S rRNA gene sequence analysis. Moreover, the esophagi, and Ultrastructural and Molecular Characterization of Sarcocystis species derived from Macroscopic Sarcocysts of Domestic Sheep and Goats in Soran City, Erbil, Iraq. The findings from the phylogenetic analysis revealed that the identified results of electron microscopy indicated the characteristic features of the macroscopic S. moulei, S. gigantea for the presence of sarcocysts. Macroscopic sarcocysts were isolated from the infected the 18S rRNA gene presented that all isolates produced bands of expected sizes on gel. [Full text-] Sarcosystis isolated species. A total of 1000 esophagi were collected from sheep and goats and examined investigating the morphological and the ultrastructural characteristics of the conoid in one of the apices, numerous micronemes, two rhoptries, as well as a long, convoluted microscopy. The macroscopic sarcocysts were detected in 9.1% (91/1000) of the esophagi. The S. gigantea, S. moulei, S. medusiformis respectively, cross-infection may also occur between them and the host specificity of these mitochondrion, subterminal nucleus, and several amylopectin granules. The partial analysis of S. medusiformis indicated that the bodyweight of the first backcross hybrid chicken was higher than the Pelung chicken but lower than the first filial broiler chicken. Single Nucleotide Polymorphism was not Day-Old chick measured every seven days, DNA was isolated by Chelex 5% method, Pituitary Positive Transcription Factor-1 gene is closely related to chicken growth and indicated that the bodyweight of the first backcross hybrid chicken was higher than the Pelung chicken body weights of 49-days-old chickens with the polymorphism points. The conclusion exon 6 Pituitary Positive Transcription Factor-1 gene and its association with the bodyweight productivity. This research was conducted to detect Single Nucleotide Polymorphism in the chicken. Chicken, Day Old chick hatched were maintained during 49 days, the bodyweight on the growth in the first backcross hybrid chicken. Procedures of the research included crossbreeding PCR products of partial 18S rRNA Phylogenetic tree of Sarcocystis spp.

ABSTRACT

To the authors' knowledge, this is the first time Brucellosis is a worldwide zoonotic disease which is now considered endemic in most parts of marketing the raw milk and enhancing public health awareness. A cross-sectional study was carried out from December 2018 to February 2020 to investigate the seroprevalence of brucellosis in humans and livestock residing in two regions above 40 years (28.57%). Furthermore, men (26.11%) were more inclined to be inflicted, using RBT. Concerning humans, there was a higher percentage of infection in EL Kharga farmers (31.25%) and animal keepers (20.6%) while the lowest prevalence was demonstrated in abattoir workers were the most predominant group of people at risk (33.3%), followed by Sheep and goats.

ABSTRACT

The prevalence of human brucellosis in the New Valley Governorate. In conclusion, brucellosis is World Vet. J.

Keywords: Brucellosis, Cattle, Complement fixation test, ELISA, Human, Rose Bengal test, Goats, 2020; pii: S232245682000063-10; DOI: 10.29252/scil.2020.wvj64 2/scil.2020.wvj63 2/scil.2020.wvj65
Canine parvovirus (CPV) infection is a global infectious and contagious viral disease of canine, young, unvaccinated puppies and exotic breeds were more prone to CPV infection. Regarding age and seasonal variations are risk factors in the prevalence of CPV infection. Identification of the potential risk factors associated with the disease may be helpful to construct the ideal preventive measures.


A retrospective study was conducted to determine the epidemiology of Contagious Bovine Pleuropneumonia (CBPP) in the Central Zone of Tanzania. The present study used data from various sources including reports submitted to the zone. The study found that out of 14 Local Government Authorities (LGAs) in the Central Zone, 10 reported the disease in the past five years. This extensive study must be carried out, since the parameters obtained during the study were lower compared to the situation on-site. The pattern of CBPP occurrence was seasonal, with more cases being reported between August to December. It was recommended that control measures against this disease in the forms of weekly, monthly, and slaughterhouse reports, as well as Event Mobile Application (EMA-i) reports submitted to the zone. The present study found that out of 14 Local Government Authorities (LGAs) in the Central Zone, 10 reported the disease in the past five years in the archived information of Central Zone Veterinary Centre (CZVC) for the past five years. It was also revealed that there was a clear temporal relationship between the occurrence of CBPP and the cattle at risk, with a peak in the months of August to December. The study recommended the strengthening of control measures against this disease in the forms of weekly, monthly, and slaughterhouse reports, as well as Event Mobile Application (EMA-i) reports submitted to the zone.

Research Paper


Identifying the Virulent Factors of Clostridium perfringens Locally Isolated from Different Species

Aerobic spore-forming bacteria, Lysozyme, Nisin, Natamycin, Protective culture


Coxiella Burnetii, Equus Caballus, Horses, Q fever, Seroprevalence

Algeria is endemic for Q fever in horses and prophylactic measures must be taken to reduce its incidence. The objective of this study was to identify the seroprevalence of Q fever in horses and to examine the potential risk factors associated with seropositivity. Serum samples were collected from 182 horses from three districts of Algeria. Enzyme-linked immunosorbent assay (ELISA) was performed to detect antibodies against Coxiella burnetii. The overall seroprevalence was 9.9%. The univariate analysis of risk factors indicated that the risk of Q fever infection was significantly higher in horses that were in contact with small ruminants (RR: 15.6). Contact with animals, housing, presence of ticks, geographical localization, and environmental characteristics (i.e., presence of water source) were associated with seropositivity.

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The factors influencing the risk of C. burnetii seropositivity in horses

G. L. G. S. test

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The factors influencing the risk of C. burnetii seropositivity in horses


Aerobic spore-forming bacteria, Lysozyme, Nisin, Natamycin, Protective culture

The antimicrobial agents (Lactobacillus rhamnosus, Lactobacillus acidophilus, Lactobacillus plantarum), combination of nisin and lysozyme (25 mg kg⁻¹), combination of protective culture and natamycin (40 mg kg⁻¹), and lysozyme (100 mg kg⁻¹) were studied on the activity of 28 isolates of spore-forming bacteria. Inhibitory effect of these treatments and control was studied on the activity of 28 isolates of spore-forming bacteria. Inhibitory effect of these treatments and control. The growth pattern of aerobic spore-forming bacteria gradually decreased in all treatments along the storage period with variable reduction percentages in comparison with control cheese which was in continuous increment. The application of a combination of nisin and lysozyme had the most significant reduction of aerobic spore-forming bacteria, compared to control and other treatments.

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Incidence of Appendicular Bone Fracture in Dogs and Cats: Retrospective Study at Veterinary Hospital of Cairo University and some Private Clinics in Egypt.

Abo-Soliman AAM, Ahmed AE and Farghali HAMA.

Objectives: To determine the prevalence of appendicular fractures arising from trauma in dogs and cats treated and evaluated for their antimicrobial activity.

Materials and Methods: A total of 200 appendicular bone fracture cases were included in this study and the fracture cases were classified according to the specific limb (forelimbs / hind limbs), specific bone fractures (Humerus, radius and ulna, femur, tibia and fibula, and the other bones), extent of tissue damage (open or closed fracture cases and this incidence correlated with some predisposing factors (including breeds, weight, age, and gender) and causative agents that resulted in different types of appendicular fractures.

Results: The highest records of fracture were in mongrel dogs, and cats as rescued and emphasized the information that characterized the bones concerning the different bone fractures with significantly higher records in dogs, compared to cats. The highest incidence of fracture-cases in dogs was recorded more frequently in dogs than cats. In dogs, the most common fractures in the femur, percentage of open fractures were more common in cats than dogs. Incomplete fractures were considered more common in cats than dogs.

Conclusion: Appendicular bone fracture in small animal practice constitute a major challenge facing the veterinary practice. Excluding mongrel dogs and cats, the highest incidence of fracture-cases in dogs was recorded in the femoral, complete oblique diaphyseal tibial/fibular, complete spiral diaphyseal humoral, and complete transverse distal radial/ulnar fractures. In conclusion, appendicular bone fracture incidence than females. The bone fracture mostly occurred in dogs younger than one-year-old, and incomplete or complete), site (proximal, diaphyseal or distal zones), number (single or multiple fractures), and the direction of the fracture line (transverse, oblique or spiral). From the above results, it can be concluded that appendicular fractures in small animal practice constitute a major challenge facing the veterinary practice.

Keywords: Cat, Dog, Femur, Fracture, Orthopedic.
ABSTRACT

The effect of dietary supplementation of cod liver oil on the ratio of saturated and unsaturated fatty acids in giant prawn (Macrobrachium rosenbergii) was investigated.

Cod liver oil, Feed, Giant prawn, Saturated fatty acids

On the other hand, the results also showed that the best ratio was found in treatment 4 at the dose of cod liver oil 0% (control), and treatments 1-4 use 3% dose addition to each treatment. The existence of feed plays an important role in aquaculture activities. This is due to the dominant influence on fish feed growth. Feeding with the right nutritional components can produce healthy and high-quality fish products. One of the nutrients needed by fish is fatty acids. In fact, the provision of fatty acids, one of which is not in the meat, has an important influence. So, this study aims to determine the effect of adding cod liver oil to commercial feed does not affect the decreasing content of saturated fatty acids in giant prawn meat. On the other hand, the results also showed that the best ratio was found in treatment 4 at the dose of cod liver oil 0% (control), and treatments 1-4 use 3% dose addition to each treatment.

**Keywords:**
Cod liver oil, Feed, Giant prawn, Saturated fatty acids

**REFERENCES**


**Graphical Abstract**

- **Bad quality COCs**
- **Good quality COCs**
- **Control at 38.5 C**
- **Heat shock at 41 C**
- **Heat shock at 42 C**

- Camelus expansion (%)
- Extraction of polar body (%)
- Embryonic development
- Cleavage rate
- Blocked embryos rate

**Supplementation of Cod Liver Oil for Giant Prawn**

**Contents of Pangasius Fish.**

Research Paper

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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.