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 144 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.
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
Silver nanoparticles were tested for their in vitro antibacterial potential and there were reports of their minimum inhibitory concentration and minimum bactericidal concentration. Despite the presence of modern antibacterial drugs, bacterial infections are still a major threat due to the enormous increase in multi-drug-resistant bacteria. ESBL-producing organisms can pose a severe public health threat. The current study identified ESBL-producing bacteria in samples (i.e., wound swabs, fecal swabs, and urine samples) collected from dogs and cats. Phenotypic and molecular identification, antibiotic susceptibility testing, and double-disc synergy test were carried out for the identification of ESBL producing bacteria.

Nanoparticles have been extensively used as an applicable and safe alternative to antibiotics. E. coli and Klebsiella were confirmed as ESBL producing. Silver nanoparticles indicated a promising effect on the control of ESBL producing bacteria. Moreover, the effect of silver nanoparticles on the expression of antibiotic resistance genes (i.e., blaTEM, blaSHV, etc.) was investigated.

Klebsiella and E. coli spp. isolated from pigeons in a live bird market, namely Riazuddin Bazar in Chattogram city, Bangladesh. A total of 100 cloacal swab samples were collected aseptically from apparently healthy pigeons in the live bird market, namely Riazuddin Bazar in Chattogram city, Bangladesh. Different bacteriological and biochemical tests were used for the isolation and identification of Salmonella spp., E. coli spp., and Klebsiella spp. Isolated from Pet Animals. "Multidrug-resistant Salmonella spp. isolated from pigeons in a live bird market, Chattogram, Bangladesh". Abd El-Ghany WA (2020). Coccidiosis: A Parasitic Disease of Significant Importance in Rabbits. World Vet., 10(4): 499-507.


Ultrastructural and Molecular Characterization of Sarcocystis Species Derived from Sheep, Cross-infection, and Host Specificity

ABSTRACT

This study aimed to identify and characterize the macroscopic and microscopic features of Sarcocystis species isolated from sheep and goats in Soran City, Erbil, Iraq. A total of 1000 esophagi were collected from sheep and goats and examined under different techniques to detect macroscopic sarcocysts. The esophagi were further subjected to electron microscopy for the investigation of morphological and ultrastructural features of bradyzoites. The molecular characterization of isolated species was carried out by 18S rRNA gene sequence analysis. Moreover, the phylogenetic analysis revealed the relationship between the identified species and their closest relatives.

RESULTS

A total of 91 macroscopic sarcocysts were detected in esophagi from sheep and goats. The macroscopic sarcocysts were identified as Sarcocystis species by electron microscopy, which showed the presence of a double-membrane pellicle, bradyzoites, and characteristic features such as conoid in one of the apices, numerous micronemes, two rhoptries, and a long, convoluted mitochondrion. The subterminal nucleus and several amylopectin granules were also observed.

The molecular analysis of the 18S rRNA gene sequence showed that all isolates produced bands of expected sizes on gel electrophoresis. The phylogenetic analysis revealed that the identified species were most closely related to Sarcocystis species isolated from macroscopic sarcocysts from sheep and goats in other regions. The species isolated from goats showed a high similarity to Sarcocystis moulei, while the species isolated from sheep were closely related to Sarcocystis medusiformis. The cross-infection between sheep and goats was also observed, indicating that these species can infect both species and have a broad host range.

DISCUSSION

The results of this study showed that Sarcocystis species isolated from sheep and goats in Soran City, Erbil, Iraq, are highly similar to those previously reported in other regions. The cross-infection between sheep and goats suggests that these species have a broad host range and can infect both species. The phylogenetic analysis confirmed the close relationship between these species and other Sarcocystis species isolated from sheep and goats in other regions.

Keywords: Sarcocystis, sheep, goats, macroscopic sarcocysts, molecular characterization, 18S rRNA gene.
Canine Parvovirus Infection in Dogs: Prevalence and Associated Risk Factors in Egypt. Sayed-Ahmed MZ, Elbaz E, Younis E and Khodier M. (20%) The maximum prevalence was noticed in non-descript dogs (48.5%) followed by German infection. Identification of the potential risk factors associated with the disease may be helpful to construct the ideal preventive measures. 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 disease of dogs. Age and seasonal variations are risk factors in the prevalence of CPV 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.

**ABSTRACT**

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

Thiobencarb which is a carbamate herbicide is used for managing undesirable weeds during rice cultivation in Egypt. This study was designed to investigate the adverse effects of a field herbicide Thiobencarb on the gills, and brain was also carried out. The results indicated that fish exposed to thiobencarb were subjected to oxidative stress as indicated by a significant difference in antioxidant biomarkers as well as nuclear abnormalities and comet parameters. Thiobencarb resulted in DNA damage, oxidative stress and histopathological changes.

**ABSTRACT**


**ABSTRACT**


Microbiological analysis, which was performed following DNA extraction from the isolated bacteria. Buffalo and camel milk, camel urine presented variable degrees of isolated strains that were found in both camel milk and camel urine, were also found in buffalo milk, and their antibacterial activity against pathogenic bacteria. A total number of seven samples more samples to gain more information in the field of antibacterial activity of probiotic Lactobacilli.
Epidemiological Assessment of Contagious Bovine Pleuropneumonia in Central Tanzania. An epidemiological study was conducted to determine the prevalence and distribution of Contagious Bovine Pleuropneumonia (CBPP) in the Central Zone of Tanzania. The study included data from the Central Zone Veterinary Centre (CZVC) for the past five years.

**Methods:** A retrospective study was conducted using archived information from the CZVC. The data included reports from slaughterhouses and other events, as well as data from the Event Mobile Application (EMA-i).

**Results:** The study found that CBPP was a seasonal problem, with more cases reported between August and December. Furthermore, the study revealed a clear temporal pattern of CBPP occurrence. The rate of CBPP cases was 3.8%, with case fatality rates of 13% and mortality rates of 0.5%. A total of 56, 426, and 11,147 cases were reported as deaths.

**Keywords:** CBPP, Epidemiology, Central Tanzania.
Identifying the Virulent Factors of Clostridium perfringens Locally Isolated from Different Species.


<table>
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<th>Species</th>
<th>CPA Gene</th>
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</table>

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

- Contact with animals (e.g., age, gender, breed, housing, presence of ticks)
- Environmental characteristics (i.e., presence of water source)
- Breeding characteristics (e.g., geographical localization, breed, housing, presence of ticks)

An overall seroprevalence of 9.9% was obtained. The univariate analysis of risk factors for infection was significantly higher in horses that were in contact with small ruminants (RR: 15.6).


The objective of this study was to identify the virulent factors of Clostridium perfringens locally isolated from different species. World Vet. J. 10(4): 617-624. DOI: 10.2925/2020.wvj74

C. burnetii, an obligate intracellular bacterium, affects humans, ruminants, equines, carnivores, rodents, and birds. A cross-sectional study was carried out from March 2017 to May 2018 to assess the Q fever seroprevalence and identify the risk factors of infection in horses (Equus caballus). The Q fever is a worldwide zoonotic disease caused by Coxiella burnetii.
Appendicular bone fractures in small animal practice constitute a major challenge facing veterinary medicine. Cairo University, and some private pet clinics in Cairo district, Egypt to identify and record the bone fracture mostly occurred in dogs younger than one-year-old, according to the specific limb (forelimbs / hind limbs), specific bone fractures (Humerus, radius, ulna, femur, tibia and fibula, and the other bones), extent of tissue damage (open or closed), mechanism of fracture occurrence (direct injury or indirect trauma), type (complete or incomplete), site (proximal, diaphyseal or distal zones), number (single or multiple fractures), and pattern of bone fracture (transverse, oblique or spiral). From the obtained data, it could be concluded that there was a high incidence of the appendicular long bones concerning the different bone fractures with significantly higher records in dogs, male dogs and cats showed a higher incidence than females. The bone fracture mostly occurred in dogs younger than one-year-old, among dogs and cats referred to the veterinary teaching hospital, Cairo University and some private pet clinics, Excluding mongrel dogs and 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, and cats aged one to three years. A fracture in the hindlimbs was more significant than forelimbs fractures. The bone fracture mostly occurred in dogs younger than one-year-old, recorded in Miniature breeds and svelte breeds for cats. Male dogs and cats showed a higher incidence than females. The bone fracture mostly occurred in dogs younger than one-year-old, according to the specific limb (forelimbs / hind limbs), specific bone fractures (Humerus, radius, ulna, femur, tibia and fibula, and the other bones), extent of tissue damage (open or closed), mechanism of fracture occurrence (direct injury or indirect trauma), type (complete or incomplete), site (proximal, diaphyseal or distal zones), number (single or multiple fractures), and pattern of bone fracture (transverse, oblique or spiral). From the obtained data, it could be concluded that there was a high incidence of the appendicular long bones concerning the different bone fractures with significantly higher records in dogs, male dogs and cats showed a higher incidence than females. The bone fracture mostly occurred in dogs younger than one-year-old, among dogs and cats referred to the veterinary teaching hospital, Cairo University and some private pet clinics.
**ABSTRACT**

Unsaturated Fatty Acids in Giant Prawn (*Macrobrachium rosenbergii*)

The existence of feed plays an important role in aquaculture activities. This is due to 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 on the ratio of saturated and unsaturated fatty acids to the meat of giant prawn. This research was conducted experimentally with a completely randomized design. The treatment is given a dose of cod liver oil 0% (control), and treatments 1-4 use 3% dose addition to each treatment. In the doses tested, 3% cod liver oil has the best effect on the relationship of saturated and unsaturated fatty acids, with the highest ratio of saturated fatty acids and unsaturated fatty acids was 1.21:1 with cholesterol content of 88.34 mg/dl.

**Keywords:** Fatty acids, Cod liver oil, Giant prawn.

Soliman MMH, Kandil MM, Elnemr SA and Abuelnaga ASM.


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.