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-N7) 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
In Vitro Investigation of the Antibacterial Effect of Silver Nanoparticles on Escherichia coli and Klebsiella spp. Crossref Metadata

Samples (i.e., wound swabs, fecal swabs, and urine samples) were collected from dogs and ESBL-producing E. coli antibacterial effect where the minimum inhibitory concentration of AgNPs for ESBL producing [Full text-] was assessed as well as their effect on the structural integrity of the bacterial cells using synergy test were carried out for the identification of ESBL producing Scanning Electron Microscope (SEM). Results revealed that 23 isolates (19.16%) (control of ESBL producing bacteria. Silver nanoparticles were tested for their in vitro antibacterial potential and there were [Full text-] as well as their effect on the expression of antibiotic resistance genes. Different E. coli and Nanoparticles have been extensively used as an applicable and safe alternative to antibiotics. Klebsiella Spectrum Beta lactamase (ESBL) producing threatening problem due to the enormous increase in multi-drug-resistant bacteria and World Vet. J. Multidrug-Resistant Salmonella spp. isolated from apparently healthy pigeons in a live bird market in Chattogram, Bangladesh. Different bacteriological and biochemical tests were used for the isolation and specific primers was used for antibiotic resistance genes detection. The results indicated that the prevalence of Salmonella spp. was 29% in sampled birds. The highest antibiotic resistance rate was found to be ampicillin (93.1%), followed by both sulfamethoxazole-trimethoprim and tetracycline (86.2%). In contrast, 65.5% of isolates were [Full text-] of their minimum inhibitory concentration and minimum bactericidal concentration. In conclusion, pigeons as carriers of antibiotic-resistant E. coli and Salmonella spp. was reported as 0.15 mg/ml and 0.3 mg/ml, respectively. Consequently, the expression of antibiotic resistance genes was downregulated in both bacteria species and there was a noticeable toxic effect of AgNPs on ABSTRACT and Research Paper World Vet. J. Rabbits are considered an important and healthy source of animal protein all over the world. They are susceptible to important diseases that can reduce their productivity, causing severe clinical symptoms. Coccidiosis in rabbits indicated promising results. Vaccine production trials are still under investigation. Accordingly, this review article aims to shed light on coccidiosis in rabbits considering pathology, diagnosis, and control. Rabbits are highly susceptible to coccidiosis, especially after weaning time. Coccidiosis infection in rabbits is caused by different species of coccidia. Eimeria, Intestine, Liver, Rabbits, Treatment

Keywords: Silver nanoparticles, AgNPs, antibacterial activity, ESBL, structural integrity, antibiotic resistance genes, SEM, clinical symptoms, vaccine production, pathology, diagnosis, control.
Ultrastructural and Molecular Characterization of Sarcocystis Species Derived from Naturally Infected Domestic Sheep and Goats Using the Molecular Method, as Well as Isolated Species. A Total of 1000 Esophagi Were Collected From Sheep and Goats and Examined for the Presence of Sarcocysts. Macroscopic Sarcocysts Were Isolated From the Infected Esophagi, and Ultrastructure of the Sarcocysts Was Investigated by Both Scanning and Transmission Electron Microscopy. The Macroscopic Species Were Identified Molecularly by 18S rRNA Gene Sequence Analysis. Moreover, the Ultrastructural and Molecular Specificity of These Species Is Questionable.
Canine parvovirus (CPV) infection is a global infectious and contagious viral disease of canine. 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 which was 53.3%. The lowest prevalence of CPV was reported in dogs above 6 months of age (20%). The maximum prevalence was noticed in non-descript dogs (48.5%) followed by German shepherds (26.7%), Doberman (23.07%), and Griffon (16.6%). Among different risk factors, young, unvaccinated puppies and exotic breeds were more prone to CPV infection. Regarding age and seasonal variations, the higher prevalence was noticed in summer (77.1%) followed by spring (55.5%), 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 infection. Identification of the potential risk factors associated with the disease may be helpful to construct the ideal preventive measures.

**Keywords:** Antibacterial, Antibiotics, Carbamate, Fish, Genotoxic damage, Histopathology.
Experimental ducklings were randomly divided into the 5 equal treatments with 90 ducklings (45 experimental treatments were as follows: the first treatment was the control with basal diets, supplementation on the productive performance of Pekin and Sudani duckling breeds. A total number of 450 both unsexed Pekin and Sudani ducklings (225 per each breed) one-day-old randomly divided into 3 equal replicates of 30 ducklings (15 ducklings in each breed). The five treatments 2 and 3 received basal diets supplemented with 300 and 450 mg/kg diet L-carnitine fed diets supplemented with LC and Cr were significantly improved in live body weight, body weight gain, feed intake, and feed conversion ratio. The relative weight of carcass quality and weight of lymphoid organs without any adverse effect on carcass quality as well as economic efficiency.

The present study aimed to evaluate the effect of L-carnitine and Yeast chromium supplementation on productive performance in Pekin and Sudani duckling breeds. Experimental ducklings were randomly divided into the five equal treatments with 90 ducklings (45 experimental treatments were as follows: the first treatment was the control with basal diets, supplementation on the productive performance of Pekin and Sudani duckling breeds. A total number of 450 both unsexed Pekin and Sudani ducklings (225 per each breed) one-day-old randomly divided into 3 equal replicates of 30 ducklings (15 ducklings in each breed). The five treatments 2 and 3 received basal diets supplemented with 300 and 450 mg/kg diet L-carnitine fed diets supplemented with LC and Cr were significantly improved in live body weight, body weight gain, feed intake, and feed conversion ratio. The relative weight of carcass quality and weight of lymphoid organs without any adverse effect on carcass quality as well as economic efficiency. The present study aimed to evaluate the effect of L-carnitine and Yeast chromium supplementation on productive performance in Pekin and Sudani duckling breeds. Experimental ducklings were randomly divided into the five equal treatments with 90 ducklings (45 experimental treatments were as follows: the first treatment was the control with basal diets, supplementation on the productive performance of Pekin and Sudani duckling breeds. A total number of 450 both unsexed Pekin and Sudani ducklings (225 per each breed) one-day-old randomly divided into 3 equal replicates of 30 ducklings (15 ducklings in each breed). The five treatments 2 and 3 received basal diets supplemented with 300 and 450 mg/kg diet L-carnitine fed diets supplemented with LC and Cr were significantly improved in live body weight, body weight gain, feed intake, and feed conversion ratio. The relative weight of carcass quality and weight of lymphoid organs without any adverse effect on carcass quality as well as economic efficiency. The present study aimed to evaluate the effect of L-carnitine and Yeast chromium supplementation on productive performance in Pekin and Sudani duckling breeds. Experimental ducklings were randomly divided into the five equal treatments with 90 ducklings (45 experimental treatments were as follows: the first treatment was the control with basal diets, supplementation on the productive performance of Pekin and Sudani duckling breeds. A total number of 450 both unsexed Pekin and Sudani ducklings (225 per each breed) one-day-old randomly divided into 3 equal replicates of 30 ducklings (15 ducklings in each breed). The five treatments 2 and 3 received basal diets supplemented with 300 and 450 mg/kg diet L-carnitine fed diets supplemented with LC and Cr were significantly improved in live body weight, body weight gain, feed intake, and feed conversion ratio. The relative weight of carcass quality and weight of lymphoid organs without any adverse effect on carcass quality as well as economic efficiency.
### Clostridium perfringens

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

**ABSTRACT**

Clostridium perfringens is a gram-positive anaerobic bacterium that is the causative agent of several human and animal diseases, including enterotoxemia and necrotic enteritis. The objective of this study was to identify the virulent factors of Clostridium perfringens locally isolated from different animal species in Egypt. Samples were subjected to isolation and identification (morphologically and biochemically) for obtaining highly recommended to be used in the preparation of enterotoxemia and necrotic enteritis vaccines as they are more virulent strains.


<table>
<thead>
<tr>
<th>Vaccine Type</th>
<th>CPA Gene</th>
<th>Net B Gene</th>
<th>CPE Gene</th>
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<tbody>
<tr>
<td>CPA</td>
<td>No</td>
<td>No</td>
<td>No</td>
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<tr>
<td>CPA + Net B</td>
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<td>Yes</td>
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<tr>
<td>CPA + CPE</td>
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<td>Yes</td>
</tr>
<tr>
<td>CPA + Net B + CPE</td>
<td>Yes</td>
<td>Yes</td>
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The factors influencing the risk of C. perfringens virulence in horses were evaluated using the ELISA test.

**Keywords:** CPA gene, CPE gene, Net B gene

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### Application of Natural Antimicrobial Additives and Protective Culture to Control Aerobic Spore-Forming Bacteria in Low-Salt Soft Cheese.

**ABSTRACT**

There is an increasing interest in the application of natural antimicrobials instead of chemical preservatives, especially in low-salt soft cheeses, to retard microbial spoilage. The objective of this study was to assess the effect of some natural antibacterial additives and protective culture on the growth pattern of aerobic spore-forming bacteria in low-salt soft cheese during the storage period (30 days).


**Keywords:** Aerobic spore-forming bacteria, Lysozyme, Nisin, Natamycin, Protective culture

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### Q fever in Horses of Algeria: Seroprevalence and Associated Risk Factors.

**ABSTRACT**

The Q fever is a worldwide zoonotic disease caused by *Coxiella Burnetii*, an intracellular bacterium. This pathogen affects humans, ruminants, equines, carnivores, rodents, and birds. A cross-sectional study was carried out from March 2017 to May 2018 to assess the seroprevalence and identify the risk factors of *C. burnetii* infection in horses. Serum samples were collected from 182 horses were analyzed via enzyme-linked immunosorbent assay (ELISA). An overall seroprevalence of 9.9% (18/182) was obtained. The univariate analysis of risk factors for *C. burnetii* infection in horses was performed, and the results indicated that the risk of *C. burnetii* infection was significantly higher in horses that were in contact with small ruminants (RR: 15.6). The multivariate logistic regression analysis confirmed that contact with animals and environmental characteristics (i.e., presence of water source) were significantly associated with the *C. burnetii* seroprevalence.


**Keywords:** *Coxiella Burnetii*, Q fever, Seroprevalence
Incidence of Appendicular Bone Fracture in Dogs and Cats: Retrospective Study at Veterinary Hospital of Cairo University and some Private Clinics in Egypt.

ABSTRACT

The objective of this research was to determine the prevalence of appendicular fractures arising from trauma in dogs and cats treated at referral veterinary teaching hospital, faculty of veterinary medicine, Cairo University and some private clinics in Egypt from January 2017 to January 2020, and emphasizing the information that characterized the fracture cases.

Methods

A fracture in the hindlimbs was more significant than the forelimbs with the highest incidence in femoral bone among both dogs and cats. The highest records of fracture were in mongrel dogs, and cats as rescued. The highest records of fracture in male dogs and cats were in anterior appendicular bone fractures, while in females, fractures were recorded more frequently in dogs than cats. In dogs, the most common fractures in the femur, tibia/fibula, humerus, and radius/ulna were complete comminuted diaphyseal femoral, complete spiral diaphyseal humoral, and incomplete or complete, and the direction of the fracture line (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, compared to cats. The highest records of fracture were in mongrel dogs, and cats as rescued.

Keywords: Incidence of Appendicular Bone Fracture in Dogs and Cats, Retrospective study, Veterinary Hospital of Cairo University, Private Clinics in Egypt.
The Effect of Dietary Supplementation of Cod Liver Oil on Ratio of Saturated and Unsaturated Fatty Acids in Giant Prawn

Marzuki L, Agustono and Rahardja BS.

ABSTRACT

The existence of feed plays an important role in aquaculture activities. This is due to the 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. 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. Therefore, it is concluded that the provision of nutrients for feed related to fatty acids. On the other hand, the results also showed that the best ratio was found in treatment 4 at a dose of 12%. Therefore, it is concluded that the provision of nutrients for feed related to 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 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. 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. Therefore, it is concluded that the provision of nutrients for feed related to fatty acids.

Supplementation of Cod Liver Oil for Giant Prawn

On the other hand, in the data analysis stage, the researchers used ANOVA and continued with Duncan’s test. Based on the results, the study notes that the administration of cod liver oil in the pole has not reduced the content of saturated fatty acids. As well as, the best ratio was found in treatment 4 at a dose of cod liver oil 0% (control), and treatments 1-4 use 3% dose addition to each treatment. 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. Therefore, it is concluded that the provision of nutrients for feed related to fatty acids.

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