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 $^\text{527}$ -N $^\text{7}$)-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
E. coli

In Vitro Investigation of the Antibacterial Effect of Silver Nanoparticles on E. coli

blaTEM, blaSHV, spp., while the minimum bactericidal concentration of ESBL-producing E. coli synergy test were carried out for the identification of ESBL producing Klebsiella reports of their minimum inhibitory concentration and minimum bactericidal concentration.

Klebsiella Spectrum Beta lactamase (ESBL) producing spp. in vitro as well as their effect on the expression of antibiotic resistance genes. Different and threatening problem due to the enormous increase in multi-drug-resistant bacteria antibacterial effect where the minimum inhibitory concentration of AgNPs for ESBL producing spp. Silver nanoparticles were tested for their in vitro antibacterial potential and there were and was measured as 0.31 mg/ml, and 0.62 mg/ml for ESBL-producing and was assessed as well as their effect on the structural integrity of the bacterial cells using E. coli noticeable toxic effect of AgNPs on E. coli Moreover, the effect of silver nanoparticles on the expression of antibiotic resistance genes (i.e., Klebsiella and antibiotic resistance genes was downregulated in both bacteria species and there was a promising antibacterial activity and could be considered an applicable alternative for the Klebsiella control of ESBL producing bacteria.

Keywords: E. coli

Aim: To investigate the prevalence of antibiotic resistance and some antibiotic-resistant genes in Bangladesh. Different bacteriological and biochemical tests were used for the isolation and test of specific primers was used for antibiotic resistance genes detection. The results indicated that Salmonella the prevalence of spp. was 29% in sampled birds. The highest antibiotic resistance rate was found to be ampicillin (93.1%), followed by both ciprofloxacin, followed by colistin (62.1%), kanamycin (55.2%), and gentamicin (48.3%). 96.6% of Multidrug-Resistant Salmonella spp. Isolated from Apparently Healthy Pigeons in a Live Bird Market in Chattogram, Bangladesh. Abd El-Ghany WA (2020). Coccidiosis: A Parasitic Disease of Significant Importance in Rabbits. World Vet J., 10(4): 495-507.

ABSTRACT

Species. Rabbits are highly susceptible to coccidiosis, especially after weaning time. Coccidiosis symptoms of diarrhea, reduced appetite, dehydration, and weight loss as well as liver and economic losses. Coccidiosis is one of the important protozoon diseases caused by Eimeria considering pathology, diagnosis, and control.

Abd El-Ghany WA. The obtained results indicated that the addition of copper nanopowder to the diet of heifers. From the first month of each heifer in the experimental group, a suspension of copper nanoparticles was administered to the animal's diet at intervals. The weight of the mineral metabolism indicators of Holstein cattle during the growth process of the animal. There was an increase in sodium, calcium, and phosphorus. According to the blood serum and mineral analysis of blood samples in the treatment group presented an increase in the mineral composition of animal hair was also examined. The findings indicated a positive dynamics in the increase of body weight in the treatment group, compared to copper nanoparticles compared to these parameters in these animals at the beginning of the experiment. There were two experimental groups (control and treatment) and each one included seven Holstein heifers. As a result of clinical blood tests, it was noted that the number of red blood cells, hemoglobin, and hematocrit in the treatment group were higher than those in the control group. The obtained results indicated that the addition of copper nanopowder to the diet of rabbits was effective in reducing the incidence of coccidiosis in rabbits. Coccidiosis vaccine production trials are still under consideration. Vitamin production trials are still under consideration. Vaccine production trials are still under consideration.

Keywords: Anticoccidial Alternatives, Prevention & Treatment, Anticoccidial, Vaccines.
Phylogeny, 18S rRNA gene, molecular, 18S rRNA gene sequence analysis, S. gigantea, S. medusiformis, cross-infection, host specificity, Sarcocystis, Bradyzoites, double-membrane pellicle, esophagi, S. gigantea, S. moulei, mitochondrion, subterminal nucleus, several amylopectin granules, 18S rRNA gene, bands, expected sizes, gel electrophoresis, phylogenetic analysis, identified isolates, species, study area, New Valley Governorate, Egypt, cross-sectional study, December 2018 to February 2020, prevalence of human brucellosis, New Valley Governorate, Egypt, occupational groups, age range, housewives, farmers, animal keepers, marketing raw milk, public health awareness, Day-Old chick, Chelex 5% method, Pituitary Positive Transcription Factor-1 gene, bodyweight, first backcross hybrid chicken, Pelung chicken, BC1 hybrid chicken (Gallus gallus gallus Linnaeus, 1758), Day Old chick, PCR, Pearson correlation test, bodyweight, first backcross hybrid chicken, Pituitary Positive Transcription Factor-1 gene, bodyweight, associated risk factors, Brucellosis, livestock, residents, Egypt, cross-sectional study, December 2018 to February 2020, prevalence of human brucellosis, New Valley Governorate, Egypt, occupational groups, age range, housewives, farmers, animal keepers, marketing raw milk, public health awareness, Day-Old chick, Chelex 5% method, Pituitary Positive Transcription Factor-1 gene, bodyweight, first backcross hybrid chicken, Pelung chicken, BC1 hybrid chicken (Gallus gallus gallus Linnaeus, 1758), Day Old chick, PCR, Pearson correlation test, bodyweight, first backcross hybrid chicken, pituitary positive transcription factor-1 gene, SNP, bodyweight, polylmorphism, association, Pituitary Positive Transcription Factor-1 gene, bodyweight, polylmorphism, association, Pituitary Positive Transcription Factor-1 gene, bodyweight, polylmorphism, association, Pituitary Positive Transcription Factor-1 gene, bodyweight, Polymorphism Association of Pituitary Positive Transcription Factor-1 Gene with Body Weight Traits in BC1 Hybrid Chicken (Gallus gallus gallus Linnaeus, 1758) from Cross Breeding between Female F1 Broiler and Male Pelung.
Canine parvovirus (CPV) infection is a global infectious and contagious viral disease of canine, especially in dogs infected by three variants of CPV type. This study aimed to investigate the prevalence 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. 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 3 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, age and seasonal variations are risk factors in the prevalence of CPV. 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. The aim of current study was to isolate and identify naturally occurring probiotic Lactobacilli species in buffalo milk, camel milk, and also camel urine to investigate their susceptibility to antibiotics and to understand the mechanisms of their activity. Hopefully, they can be used as natural alternatives instead of synthetic antibiotics.
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 archived information of Central Zone Veterinary Centre (CZVC) for the past five years in the Central Zone,10 reported the disease in the past five years. Government Authorities (LGAs) in the Central Zone,

respectively. Therefore, 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 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.

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


Keywords: enterotoxin (CPE gene), whereas 23% of isolates of chicken and cattle intestinal samples contained CPA, Net B, and CPE genes as virulence factors. Consequently, those isolates are:

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<th>CPA</th>
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The factors influencing the risk of C. perfringens seropositivity in horses:

- Contact with animals
- Environmental characteristics (i.e., presence of water source)

An overall seroprevalence of 9.9% (p=0.036) and in El-Bayadh district (p=0.005). The multivariate logistic regression analysis of 182 horses were analyzed via enzyme-linked immunosorbent assay (ELISA). The seroprevalence demonstrated higher seropositivity in horses that had contact with small ruminants (p=0.004) and dromedaries (p=0.002) as well as in those living near a water source (p=0.004).

Coxiella Burnetii, Incriminated in many diseases among different species of animals due to its transmission to animals and humans. The Q fever is a worldwide zoonotic disease caused by Coxiella Burnetii, which is endemic for Q fever in horses and prophylactic measures must be taken to reduce its transmission to animals and humans.

Association of seropositivity with potential risk factors related to animals (e.g., age, gender, breed, housing, and presence of ticks), breeding characteristics (e.g., geographical localization, origin, and control), and environmental characteristics (i.e., presence of water source) was analyzed by univariate and multivariate logistic regression. An overall seroprevalence of 9.9% (p=0.036) and in El-Bayadh district (p=0.005). The multivariate logistic regression analysis of 182 horses were analyzed via enzyme-linked immunosorbent assay (ELISA). The seroprevalence demonstrated higher seropositivity in horses that had contact with small ruminants (p=0.004) and dromedaries (p=0.002) as well as in those living near a water source (p=0.004).

The objective of this study was to identify the virulent factors of Clostridium perfringens locally isolated from different species.
Appendicular bone fractures in small animal practice constitute a major challenge facing veterinarians.

Abo-Soliman AAM, Ahmed AE and Farghali HAMA.

ABSTRACT

Veterinary Hospital of Cairo University and some Private Clinics in Egypt showed high incidence (87% in dogs and 71.8% in cats) out of total 1969 appendicular bone fracture cases. The incidence of fracture among dogs was higher compared to cats. The highest records of fracture were in mongrel dogs, and cats as rescued. The occurred fractures 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 fractures), and causative agents that resulted in different types of appendicular fractures. Excluding mongrel dogs and cats, the highest incidence of fracture-cases in dogs was recorded in the hindlimbs with the highest incidence in femoral bone among both dogs and cats. The incidence of fracture-cases in cats was recorded in the forelimbs with the highest incidence in femoral bone among both dogs and cats. The investigated fractures 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 fractures), and causative agents that resulted in different types of appendicular fractures. A fracture in the hindlimbs was more significant than forelimbs. Moreover, fractures in the forelimbs with the highest incidence in femoral bone among both dogs and cats. The other bone fractures, such as tibia/fibula, humerus, and radius/ulna were complete comminuted diaphyseal femoral, complete spiral diaphyseal humoral, and complete transverse distal radial/ulnar fractures respectively. Moreover, cats were complete transverse distal femoral, complete oblique diaphyseal tibial/fibular, complete spiral diaphyseal humoral, and complete transverse distal radial/ulnar fractures. In conclusion, appendicular bone fracture among dogs and cats referred to the veterinary teaching hospital, Cairo University and some Private Clinics in Egypt.
**ABSTRACT**

Commercial feeds on the saturated and unsaturated fatty acids contents of pangasius fish. In this study, the fatty acids contents of pangasius meat were determined. The treatment was done by adding lysine with different doses including P0 (0%), P1 (1.2%), P2 (2.2%), 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 contents of Monounsaturated Fatty Acids (MUFA) and Polyunsaturated Fatty Acids (PUFA) in pangasius meat; a decrease in the MUFA content of 2.2% (5.9630 mg/dl) was found. An increase in the PUFA content was observed in P2 with a dose of 2.2% (3.5882 mg/dl) and P3 with a dose of 3.2% (23.1082 mg/dl). P1, P2 and P3 indicated lower results with high economic value. The content of pangasius fatty acids is higher than in marine fish, caused 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 MUFA content of 2.2% (5.9630 mg/dl) was found. An increase in the PUFA content was observed in P2 with a dose of 2.2% (3.5882 mg/dl) and P3 with a dose of 3.2% (23.1082 mg/dl). P1, P2 and P3 indicated lower results with high economic value. The content of pangasius fatty acids is higher than in marine fish, caused 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 MUFA content of 2.2% (5.9630 mg/dl) was found. An increase in the PUFA content was observed in P2 with a dose of 2.2% (3.5882 mg/dl) and P3 with a dose of 3.2% (23.1082 mg/dl). P1, P2 and P3 indicated lower results with high economic value.

**Keywords:** Content of pangasius fatty acids, MUFA, PUFA, pangasius fish, saturated fatty acids.

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

**Cod liver oil**

Based on the results, the study notes that the administration of cod liver oil in 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 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 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.

**Unsaturated Fatty Acids in Giant Prawn**

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 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.

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

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 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.
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.