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 N-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
The present study aimed to explore the inhibitory effect of silver nanoparticles on Extended Spectrum Beta lactamase (ESBL) producing E. coli and Klebsiella spp. cells which was investigated using SEM. It can be concluded that silver nanoparticles have a significant inhibitory effect on ESBL producing bacteria. The expression of antibiotic resistance genes was downregulated in both bacteria species and there was a synergist effect of silver nanoparticles on the structural integrity of the bacterial cells. Moreover, the effect of silver nanoparticles on the expression of antibiotic resistance genes was investigated. The results showed that silver nanoparticles had a significant impact on the expression of antibiotic resistance genes in both bacteria species. This finding suggests that silver nanoparticles have potential as a new antibiotic for the treatment of ESBL producing bacteria.
**ABSTRACT**

This study aimed to identify Sarcocystis species molecularly by 18S rRNA gene sequence analysis. Moreover, the To the authors' knowledge, this is the first time sarcocysts. The cysts contained numerous merozoites and banana-shaped bradyzoites. The Sarcocystis microscopy. The macroscopic sarcocysts were detected in 9.1% (91/1000) of the esophagi. The S. gigantea, S. moulei, conoid in one of the apices, numerous micronemes, two rhoptries, as well as a long, convoluted esophagi, and Macroscopic Sarcocysts of Domestic Sheep and Goats in Soran City, Erbil, Iraq. isolated species. A total of 1000 esophagi were collected from sheep and goats and examined species were most closely related to has been recorded in goats. Goats and sheep can be proposed as alternative intermediate species of S. medusiformis hosts for. S. gigantea investigating the morphological and the ultrastructural characteristics of the isolates species were identified molecularly by 18S rRNA gene sequence analysis. Moreover, the species were most closely related to S. medusiformis and S. medusiformis and S. medusiformis characterized by possessing a double-membrane pellicle and consisted of a bradyzoites were characterized by possessing a double-membrane pellicle and consisted of a Partial analysis of mitochondrion, subterminal nucleus, and several amylopectin granules. The partial analysis of mitochondrion, subterminal nucleus, and several amylopectin granules. The partial analysis of the 18S rRNA gene presented that all isolates produced bands of expected sizes on gel species were most closely related to S. medusiformis and S. medusiformis and S. medusiformis and S. medusiformis species of S. medusiformis species of S. medusiformis and S. medusiformis and S. medusiformis and S. medusiformis and S. medusiformis were investigated in this study. In summary, this study provides molecular evidence for the presence of S. medusiformis and S. medusiformis in sheep and goats in Soran City, Erbil, Iraq, which has been previously reported in goats. The implications of this study include the need for further research on the epidemiology, transmission, and control of S. medusiformis and S. medusiformis in these regions.
Canine parvovirus (CPV) infection is a global infectious and contagious viral disease of canine, which was 53.3%. The lowest prevalence of CPV was reported in dogs above 6 months of age especially in dogs infected by three variants of CPV type. This study aimed to investigate the infection. Identification of the potential risk factors associated with the disease may be helpful to construct the ideal preventive measures.

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 (23.0%). 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, the season, 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.

Age, breed, season, and vaccination of each dog were recorded to study the prevalence of CPV. The results indicated herbicide dependent oxidative stress and genotoxic effect justified by a significant increase in the levels of CAT and GST activities, decrease in GSH, and significant increase in the level of Cys-C. Thiobencarb ameliorated the adverse effects which were effective in the improvement of DNA and cysteine (SMC). Experimental fishes were divided into four groups; first group was reared without any treatments and served as a control group; the second group was exposed to thiobencarb (36µg/L); the third group was fed on a commercial feed containing 200 mg of SMC/Kg in conjunction with thiobencarb added to aquarium (36µg/L) while, the fourth group was fed on a feed containing 200 mg of SMC/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. Transferase activities, Glutathione S-transferase, and antioxidant enzymes were decreased in thiobencarb treated groups as compare to control values. Moreover, histopathological findings were in line with other results.?
A retrospective study was conducted to determine the epidemiology of Contagious Bovine Pleuropneumonia (CBPP) in Central Tanzania. The study revealed that CBPP was a seasonal problem in the central zone of Tanzania. In order to assess the actual burden of the disease on-site, Government Authorities (LGAs) in the Central Zone reported the disease in the past five years. 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 in the incidence of the disease. The present study found that out of 14 localities, the disease was reported in 12. The study recommended the strengthening of control measures against this disease in the central zone of Tanzania.

We calculated 450 both unsexed Pekin and Sudani ducklings. The traits studies included live body weight, body weight gain, feed intake and feed conversion ratio. Relative weight of carcass quality and weight of lymphoid organs were also investigated. The experimental period lasted 12 weeks of age. The experimental treatments were as follows: the first treatment was the control with basal diets, while treatments 2 and 3 received basal diets supplemented with 300 and 450 mg/kg diet L-carnitine (LC), respectively, while treatments 4 and 5 received basal diets supplemented with 400 and 600 μg/kg diets Yeast chromium (Cr), respectively. The results indicated that growing duckling weight of lymphoid organs significantly increased with supplemented diets. Therefore, both L-carnitine and Yeast chromium were effective in improving the productive performance of Pekin and Sudani duckling breeds.

The present study aimed to evaluate the effect of L-carnitine and Yeast chromium supplementation on the productive performance of Pekin and Sudani duckling breeds. A total of 500 individuals of each breed were investigated in the current study. The experimental period lasted 12 weeks of age. The experimental treatments were as follows: the first treatment was the control with basal diets, while treatments 2 and 3 received basal diets supplemented with 300 and 450 mg/kg diet L-carnitine (LC), respectively, while treatments 4 and 5 received basal diets supplemented with 400 and 600 μg/kg diets Yeast chromium (Cr), respectively. The results indicated that growing duckling weight of lymphoid organs significantly increased with supplemented diets. Therefore, both L-carnitine and Yeast chromium were effective in improving the productive performance of Pekin and Sudani duckling breeds.

The investigated herbs included coriander (Coriandrum sativum L.), peppermint (Mentha piperita L.), thyme (Thymus vulgaris L.), dill (Anethum graveolens L.), samat (Thymus citriodorus L.), rosemary (Rosmarinus officinalis L.), and basil (Ocimum basilicum L.). The investigated herbs included coriander (Coriandrum sativum L.), peppermint (Mentha piperita L.), thyme (Thymus vulgaris L.), dill (Anethum graveolens L.), samat (Thymus citriodorus L.), rosemary (Rosmarinus officinalis L.), and basil (Ocimum basilicum L.). The investigated herbs included coriander (Coriandrum sativum L.), peppermint (Mentha piperita L.), thyme (Thymus vulgaris L.), dill (Anethum graveolens L.), samat (Thymus citriodorus L.), rosemary (Rosmarinus officinalis L.), and basil (Ocimum basilicum L.). The investigated herbs included coriander (Coriandrum sativum L.), peppermint (Mentha piperita L.), thyme (Thymus vulgaris L.), dill (Anethum graveolens L.), samat (Thymus citriodorus L.), rosemary (Rosmarinus officinalis L.), and basil (Ocimum basilicum L.).
Clostridium perfringens isolates (n=26, 19.25%). The PCR was carried out to elucidate the virulence factors. It was found that all isolates had CPA gene and 12 isolates (46.2%) 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.
Abo-Soliman AAM, Ahmed AE and Farghali HAMA. (2020). Incidence of Appendicular Bone Fracture in Dogs and Cats: Retrospective Study at Veterinary Teaching Hospital, Cairo University and some private pet clinics in Cairo district, Egypt to identify and determine the prevalence of appendicular fractures arising from trauma in dogs and cats treated according to the specific limb (forelimbs / hind limbs), specific bone fractures (Humerus, radius and ulna, tibial/fibular, femoral, complete oblique diaphyseal tibial/fibular, complete spiral diaphyseal humeral, and femoral, complete transverse distal radial/ulnar fractures respectively. Moreover, cats were complete transverse distal diaphyseal radial/ulnar fractures. In conclusion, appendicular bone fracture fractures.

Keywords: bone fracture, dogs, cats, fracture type, location, age, gender, breed.

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

Incidence of Appendicular Bone Fracture in Dogs and Cats: Retrospective Study at Veterinary Teaching Hospital, Cairo University and some private pet clinics in Cairo district, Egypt to identify and determine the prevalence of appendicular fractures arising from trauma in dogs and cats treated according to the specific limb (forelimbs / hind limbs), specific bone fractures (Humerus, radius and ulna, tibial/fibular, femoral, complete oblique diaphyseal tibial/fibular, complete spiral diaphyseal humeral, and femoral, complete transverse distal radial/ulnar fractures respectively. Moreover, cats were complete transverse distal diaphyseal radial/ulnar fractures. In conclusion, appendicular bone fracture fractures.

Keywords: bone fracture, dogs, cats, fracture type, location, age, gender, breed.

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

Keywords: bone fracture, dogs, cats, fracture type, location, age, gender, breed.
On the other hand, in the data analysis stage, the researchers used ANOVA and continued with the Duncan's test. Based on the results, the study notes that the administration of cod liver oil in the treatment resulted in a greater growth rate compared to the control treatment.

The effects of heat stress on developmental competence of in vitro matured COCs of Camelus dromedaries with different qualities were investigated. 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 24 hours of IVM. The results showed that heat stress during maturation severely reduced extrusion of polar body, cleavage, and blastocyst rates. 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.

In the present research, an experimental method with a completely randomized design was used. 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 in the present research were the content of saturated and unsaturated fatty acids in pangasius fish meat. The observed differences in the content of saturated fatty acids, MUFA and PUFA in pangasius were the content of saturated and unsaturated fatty acids in pangasius fish meat. The observed differences in the content of saturated fatty acids, MUFA and PUFA in pangasius.
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.