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 5'-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

Silver nanoparticles were tested for their in vitro antibacterial potential and there were promising results. Different reports of their minimum inhibitory concentration and minimum bactericidal concentration.

The present study aimed to explore the inhibitory effect of silver nanoparticles on Extended Spectrum Beta lactamase (ESBL) producing Klebsiella and E. coli cats. Phenotypic and molecular identification, antibiotic susceptibility testing, and double-disk synergy test were carried out for the identification of ESBL producing isolates.


In vitro investigation of the antibacterial effect of silver nanoparticles on ESBL-producing E. coli and Klebsiella spp. isolated from pet animals.

In this study, we investigated the antimicrobial activity of silver nanoparticles against ESBL producing strains of E. coli and Klebsiella spp. isolated from apparently healthy pigeons in a live bird market in Chittagong, Bangladesh. The results showed a promising antibacterial activity of silver nanoparticles against these strains.

Copper nanopowder, Cattle, Mineral metabolism, Physiological characteristics

ABSTRACT

The current study aimed to investigate the effect of copper nanopowder on physiological and mineral metabolism indicators of Holstein cattle during the growth process of the animal. There were two experimental groups (control and treatment) and each one included seven Holstein heifers. From the first month of each heifer in the experimental group, a suspension of copper nanopowder was applied to their feed. The obtained results indicated that the addition of copper nanopowder to the diet of animals was measured monthly, a clinical blood test was performed, the mineral composition of hair was also examined. The findings indicated a positive dynamics in the increase of body weight in the treatment group, compared to the control group. As a result of clinical blood tests, it was noted that the number of platelets, lymphocytes, neutrophils, and eosinophils was higher in the treatment group. Moreover, the number of monocytes and basophils was lower in the treatment group. The number of erythrocytes and hemoglobin was similar in both groups. The results of the blood serum and hair analysis, copper in the nanodispersed state indicated antagonistic effects on boron, silicon, aluminum, antimony, molybdenum of the treatment group and there was a synergist in aluminum, titanium, manganese, cobalt, iron, and potassium levels compared to the beginning of the experiment. According to the blood serum and hair analysis, copper in the nanodispersed state indicated antagonistic effects on boron, silicon, aluminum, antimony, molybdenum of the treatment group and there was a synergist in aluminum, titanium, manganese, cobalt, iron, and potassium levels compared to the beginning of the experiment. The obtained results indicated that the addition of copper nanopowder to the diet of animals was measured monthly, a clinical blood test was performed, the mineral composition of hair was also examined. The findings indicated a positive dynamics in the increase of body weight in the treatment group, compared to the control group. As a result of clinical blood tests, it was noted that the number of platelets, lymphocytes, neutrophils, and eosinophils was higher in the treatment group. Moreover, the number of monocytes and basophils was lower in the treatment group. The number of erythrocytes and hemoglobin was similar in both groups. The results of the blood serum and hair analysis, copper in the nanodispersed state indicated antagonistic effects on boron, silicon, aluminum, antimony, molybdenum of the treatment group and there was a synergist in aluminum, titanium, manganese, cobalt, iron, and potassium levels compared to the beginning of the experiment. According to the blood serum and hair analysis, copper in the nanodispersed state indicated antagonistic effects on boron, silicon, aluminum, antimony, molybdenum of the treatment group and there was a synergist in aluminum, titanium, manganese, cobalt, iron, and potassium levels compared to the beginning of the experiment.
Macroscopic Sarcocysts of Domestic Sheep and Goats in Soran City, Erbil, Iraq.

Sarcocystis species isolated from macroscopic sarcocysts from sheep and goats. The cysts contained numerous merozoites and banana-shaped bradyzoites. The S. medusiformis bradyzoites were characterized by possessing a double-membrane pellicle and consisted of a conoid in one of the apices, numerous micronemes, two rhoptries, as well as a long, convoluted ultrastructure.

To the authors' knowledge, this is the first time S. gigantea for the presence of sarcocysts. Macroscopic sarcocysts were isolated from the infected esophagi, and species were most closely related to cross-infection may also occur between them and the host specificity of these naturally infected domestic sheep and goats using the molecular method, as well as

Brucellosis is a worldwide zoonotic disease which is now considered endemic in most parts of Egypt. 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 of New Valley Governorate, Egypt. Therefore, reducing the prevalence of human brucellosis in the New Valley Governorate. In conclusion, brucellosis is an alarming problem among residents of the New Valley Governorate. Thus, reducing the prevalence of human brucellosis in the New Valley Governorate.
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. In dogs between 0 and 3 months of age indicated the highest prevalence of 68% followed by 4-6 months of age (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.

The overall prevalence of CPV infection in dogs was reported as 59.7%. Dogs between 0 and 6 months of age had a higher prevalence 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 the season, the higher prevalence was noticed in summer (77.1%) followed by spring (55.5%), winter (16.6%), and autumn (25%). The lowest prevalence was recorded in dogs above 6 months of age (20%).

this extensive study must be carried out, since the parameters obtained during the study were
Pleuropneumonia (CBPP) in the Central Zone of Tanzania. The present study used data from
Mngumi S, Makungu S and Mdetele D., Tanzania.
years. Moreover, 56, 426, and 11147 cases were reported as deaths, and the cattle at risk
A retrospective study was conducted to determine the epidemiology of Contagious Bovine
research recommended the strengthening of control measures against this disease in the
World Vet. J.
Government Authorities (LGAs) in the Central Zone,10 reported the disease in the past five
Keywords:
central zone of Tanzania. In order to be able to assess the actual burden of the disease on-site,
lower compared to the situation on-site.
Research Paper
rate, and mortality rate, respectively. It was also revealed that there was a clear temporal
forms of weekly, monthly, and slaughterhouse reports, as well as Event Mobile Application
[Full text-
(EMA-i) reports submitted to the zone. The present study found that out of 14 Local
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
archived information of Central Zone Veterinary Centre (CZVC) for the past five years in the
ABSTRACT
600 μg/kg diets Yeast chromium (Cr), respectively. The results indicated that growing duckling
experimental treatments were as follows: the first treatment was the control with basal diets,
number of 450 both unsexed Pekin and Sudani ducklings (225 per each breed) one-day-old
duckling breeds fed on diets supplemented with 450 mg LC/kg resulted in better performance
weight of lymphoid organs significantly increased with supplemented diets. Therefore, both
treatments 2 and 3 received basal diets supplemented with 300 and 450 mg/kg diet L-carnitine
were investigated in the current study. The experimental period lasted 12 weeks of age.
randomly divided into 3 equal replicates of 30 ducklings (15 ducklings in each breed). The five
number from both Pekin and Sudani ducklings per each). Each experimental treatment was

We calculated 450 both unsexed Pekin and Sudani ducklings
L-carnitine (LC)
Concentration 300, 450 mg kg⁻¹
Yeast chromium (Cr)
Concentration 400, 600 mg kg⁻¹

Traits studies
live body weight, body weight gain, feed intake and feed conversion ratio. Relative
weight of carcass quality and weight of lymphoid organs

Yeast Chromium Supplementation on Productive Performance in Pekin and Sudani Duckling
Research Paper

Effect of L-Carnitine and Yeast Chromium Supplementation on Productive Performance
in Pekin and Sudani Duckling during Growth Period.

Keywords:
Experimental ducklings were randomly divided into the 5 equal treatments with 90 ducklings (45
in Pekin and Sudani Duckling during Growth Period.

Survival and Productivity of Culinary Herb Species in an Integrated Aquaponic System
were the most productive species. Refinement in the selection of initial plants and aquaponic
commonly used in Guatemala, in a Nutrient Film Technique-type (NFT) aquaponic system with
Aquaponics is an evolving technology for producing plants and fish (or other aquatic organisms)
Aquaponics System with Nile Tilapia.

in an integrated water recirculating system. However, the survival and productivity of terrestrial
Keywords:

A MAP OF TANZANIA

Central Zone
Ngorongoro

Volume 10 : Issue 4, December 2020


Incidence of Appendicular Bone Fracture in Dogs and Cats: Retrospective Study at Abo-Soliman AAM, Ahmed AE and Farghali HAMA. The investigated fractures were classified according to the specific limb (forelimbs / hind limbs), specific bone fractures (Humerus, radius, femur, tibia, and fibula, and the other bones), extent of tissue damage (open or closed), animal’s population (breed, age, gender, and animal size). The bone fracture mostly occurred in dogs younger than one-year-old, as the bone heals more quickly and is usually more flexible. Male dogs and cats showed a higher bone fracture than females. The bone fracture mostly occurred in mongrel dogs, and cats as rescued from January 2017 to January 2020, and emphasizing the information that characterized the veterinary orthopedic surgeons concerning affected limb and bone as well as the extent of the development of plastron formation resulting in the postoperative asymmetrical plastron structure.

Kartika Sari DA and Apritya D. Urinary Kidney Stone Removal Surgery in Sulcata tortoise (Sulcata oxytocus) with Lateral Plastron Osteotomy Technique. The appetite of the tortoise returned to normal in a week after the surgery. The lateral plastron is an appropriate osteotomy technique, especially for the immediate opening of the plastron with a stone-filled bladder. This was a safe area to open plastron since it was far from the heart and lungs and the urinary calculi mass. Plastron osteotomy and cystotomy techniques were used to remove urinary calculi. The bone fracture mostly occurred in dogs younger than one-year-old, as the bone heals more quickly and is usually more flexible. Male dogs and cats showed a higher bone fracture than females. The bone fracture mostly occurred in mongrel dogs, and cats as rescued from January 2017 to January 2020, and emphasizing the information that characterized the veterinary orthopedic surgeons concerning affected limb and bone as well as the extent of the development of plastron formation resulting in the postoperative asymmetrical plastron structure.

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The Effects of Adding Lysine Essential Amino Acid to Commercial Feed on Fatty Acid Contents of Pangasius Fish

ABSTRACT

In the present research, an experimental method with 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 were the content of saturated and unsaturated fatty acids in pangasius fish meat. The observed differences in the content of saturated fatty acids, Monounsaturated Fatty Acids (MUFA) and Polyunsaturated Fatty Acids (PUFA) in pangasius. The treatment with 3.2% Lysine (23.1082 mg/dl) was found in P3 treatment. An increase in the MUFA content was found in P2, 2.2% (5.9630 mg/dl). An increase in the PUFA content was found in P3 with 3.2% (3.5882 mg/dl). Additionally, the use of lysine in commercial feed indicated significant differences in the content of saturated fatty acids, Monounsaturated Fatty Acids (MUFA) and Polyunsaturated Fatty Acids (PUFA) in pangasius. Since marine fish have a lower saturated fatty acid composition than freshwater fish, the results observed in this study were expected.

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

Marzuki L, Agustono and Rahardja BS.

Unsaturated Fatty Acids in Giant Prawn (Macrobrachium rosenbergii) Meat.

Effect of dietary supplementation of cod liver oil on ratio of saturated and unsaturated fatty acids. 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. The content of saturated and unsaturated fatty acids in pangasius fish meat. The observed differences in the content of saturated fatty acids, Monounsaturated Fatty Acids (MUFA) and Polyunsaturated Fatty Acids (PUFA) in pangasius. The treatment with 3.2% Lysine (23.1082 mg/dl) was found in P3 treatment. An increase in the MUFA content was found in P2, 2.2% (5.9630 mg/dl). An increase in the PUFA content was found in P3 with 3.2% (3.5882 mg/dl). Additionally, the use of lysine in commercial feed indicated significant differences in the content of saturated fatty acids, Monounsaturated Fatty Acids (MUFA) and Polyunsaturated Fatty Acids (PUFA) in pangasius. Since marine fish have a lower saturated fatty acid composition than freshwater fish, the results observed in this study were expected.

Ashour G, El-Sayed A, Khalifa M and Ghanem N.

Effect of physiologically relevant heat stress on developmental competence of in vitro matured oocytes of Camelus dromedaries with different qualities. The development of embryos after the fertilization of oocytes is based on the genetic information contained in the nucleus. However, the environment in which the oocytes develop also plays an important role in the development of the embryos. In the present study, the effect of physiologically relevant heat stress on the developmental competence of in vitro matured oocytes of Camelus dromedaries with different qualities was investigated. The results of this study indicated that exposure of camel oocytes to heat stress during the first 6 hours of maturation, the COCs were incubated at 38.5°C for 24 hours of IVM. After exposure of COCs to heat stress at 41°C and 42°C during maturation, the COCs were incubated at 38.5°C for 24 hours of IVM. The percentages of oocytes that developed to the blastocyst stage were lower for K2, K3, K4, K5, and K6 than K1. Moreover, the blastocyst rate was lower for good and low-quality embryos. The maturation of oocytes is an essential step in the development of embryos. The maturation of oocytes is an essential step in the development of embryos. The maturation of oocytes is an essential step in the development of embryos. The maturation of oocytes is an essential step in the development of embryos. The maturation of oocytes is an essential step in the development of embryos. The maturation of oocytes is an essential step in the development of embryos.

Camelus dromedaries with different qualities.

In vitro Effect of heat stress on developmental competence of in vitro matured oocytes of Camelus dromedaries with different qualities.
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.

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