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 antimicrobrial 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.
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
ABSTRACT

ESBL-producing bacteria have become a major concern in both human and animal medicine due to their increasing resistance to antibiotics. In this study, we investigated the antibacterial effect of silver nanoparticles (AgNPs) on different strains of Escherichia coli (E. coli) and Klebsiella spp. in vitro as well as their effect on the expression of antibiotic resistance genes. Different strains of E. coli and Klebsiella spp. were isolated from the gastrointestinal tract of healthy pigeons in Riazuddin Bazar, a live bird market in Chattogram city, Bangladesh. Phenotypic and molecular identification, antibiotic susceptibility testing, and double-disk synergy test were carried out for the identification of ESBL-producing bacteria. The minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) were measured for E. coli and Klebsiella spp. The MIC of AgNPs against E. coli and Klebsiella spp. was 0.15 mg/ml and 0.3 mg/ml, respectively. Consequently, the expression of beta lactamases (blaTEM, blaSHV, and blaCTX) in E. coli and Klebsiella spp. was downregulated in both bacteria species and there was a significant increase in the number of susceptible bacterial strains.

Keywords: Salmonella, Klebsiella, Antibiotic resistance, Silver nanoparticles, ESBL-producing bacteria, Antimicrobial activity, Antimicrobial resistance.
ABSTRACT

This study aimed to identify Sarcocystis species derived from macroscopic sarcocysts isolated from domestic sheep and goats in Soran City, Erbil, Iraq. 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 ultrastructural and molecular characterization were performed. The morphology of the sarcocysts was investigated by both scanning and transmission electron microscopy. The macroscopic sarcocysts were detected in 9.1% (91/1000) of the esophagi. The results of electron microscopy indicated the characteristic features of the macroscopic sarcocyst in one of the apices, numerous micronemes, two rhoptries, as well as a long, convoluted conoid in one of the apices, numerous micronemes, two rhoptries, as well as a long, convoluted

Ultrastructural and Molecular Characterization of Sarcocystis Species Derived from Macroscopic Sarcocysts of Domestic Sheep and Goats in Soran City, Erbil, Iraq.

Keywords:

Sarcocystis, molecular, molecular characterization, electron microscopy.
122 dogs suffering from vomiting and diarrhea were screened by antigen rapid CPV/Canine Parvovirus in Egypt. The study was conducted by Sayed-Ahmed MZ, Elbaz E, Younis E and Khodier M. of World Vet. J. to investigate the prevalence of Canine Parvovirus Infection in Dogs: Prevalence and Associated Risk Factors in Egypt.

Abdou AM, Hedia RH, Omara ST, Kandil MM, Bakry MA and Effat MM. Microbiological Studies on Naturally Present Bacteria in Camel and Buffalo Milk. World Vet. J. reported that LP Lactobacilli was more prominent in buffalo milk, and camel milk had a higher diversity of bacteria. Probiotics such as Lactobacilli were used to investigate their susceptibility to antibiotics and antibacterial activity against pathogenic bacteria.

Elmadawy MA, Abdo W, Omar AA and Mahfouz NB. S-Methyl Cysteine Protective Effects in Oreochromis Niloticus Fish Contaminated by Thiobencarb Herbicide. World Vet. J. found that S-Methyl Cysteine (SMC) reduced oxidative damage in fish exposed to thiobencarb. The study aimed to investigate the genotoxic effect of thiobencarb and SMC in fish tissues.

Sayed-Ahmed MZ, Elbaz E, Younis E and Khodier M. Canine Parvovirus Infection in Dogs: Prevalence and Associated Risk Factors in Egypt. World Vet. J. investigated the prevalence and risk factors of parvovirus infection in dogs residing in Egypt. 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 with 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%) and Doberman Pinschers (23.07%). These findings emphasize the importance of preventive measures to control CPV infection.

The study also highlighted young, unvaccinated puppies and exotic breeds were more prone to CPV infection. Regarding geographical distribution, autumn (25%) and winter (16.6%) were the most affected seasons. The study suggested that CPV is an infectious and highly contagious viral disease which can cause severe disease and death in young, unvaccinated puppies. The results indicate the need for improved preventive measures, such as vaccination programs, to control CPV infection in dogs.
respectively. Therefore, 3.8%, 13%, and 0.5% were reported as CBPP prevalence, case fatality
in the Central Zone,10 reported the disease in the past five years. Moreover, 56, 426, and 11147 cases
were reported as deaths, and the cattle at risk lower compared to the situation on-site.

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
Epidemiological Assessment of Contagious Bovine Pleuropneumonia in Central
Tanzania. In order to be able to assess the actual burden of the disease on-site,
randomly divided into 3 equal replicates of 30 ducklings (15 ducklings in each breed). The five
experimental treatments were as follows: the first treatment was the control with basal diets,
(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
were the most productive species. Refinement in the selection of initial plants and aquaponic
management could improve plant performance.

The present study targeted to analyze the survival rate, growth, and biomass production of eight culinary
herbs, and tilapias. All the herb species survived against the NFT aquaponic conditions. The
findings indicated that the herb survival was species-dependent and ranged 42-98%. There was
a significant effect of the herb species both on height and biomass gains. Post hoc comparison
for the investigated herbs,

EFSA...
ABSTRACT
Clostridium perfringens isolates had CPA gene and its ability to produce many virulence factors. In the current study, 135 intestinal samples were collected from different animal species of different localities in Egypt. Samples were subjected to isolation and identification (morphologically and biochemically) for obtaining Clostridium perfringens. CPA, Net B, and CPE genes as virulence factors. Consequently, those isolates are highly recommended to be used in the preparation of vaccines as they are more virulent strains.

Keywords: Clostridium perfringens, enterotoxin, CPA, Net B, CPE.
Appendicular bone fractures in small animal practice constitute a major challenge facing veterinary orthopedic surgeons concerning affected limb and bone as well as the extent of tissue damage, site, and shape of the fracture line. Therefore, this retrospective study was among dogs and cats referred to the 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 recorded in Miniature breeds and svelte breeds for cats. Male dogs and cats showed a higher weight, age, and gender) and causative agents that resulted in different types of appendicular 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 recorded more frequently in dogs than cats. In dogs, the most common fractures in the femur, forelimbs with the highest incidence in femoral bone among both dogs and cats. The fracture cases and this incidence correlated with some predisposing factors (including breeds, and incomplete or complete), site (proximal, diaphyseal or distal zones), number (single or diaphyseal radial/ulnar fractures respectively. Moreover, cats were complete transverse distal from January 2017 to January 2020, and emphasizing the information that characterized the percentage of open fractures were more common in cats than dogs. Incomplete fractures were complete comminuted diaphyseal femoral, complete spiral diaphyseal humoral, and tibia/fibula, complete transverse distal radial/ulnar fractures. In conclusion, appendicular bone fracture incidence of Appendicular Bone Fracture in Dogs and Cats: Retrospective Study at private clinics in Egypt showed high incidence (87% in dogs and 71.8% in cats) out of total population (breed, age, gender, and animal size). The investigated fractures were classified from trauma in dogs and cats treated recorded in Miniature breeds and svelte breeds for cats. Male dogs and cats showed a higher weight, age, and gender) and causative agents that resulted in different types of appendicular 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 recorded more frequently in dogs than cats. In dogs, the most common fractures in the femur, forelimbs with the highest incidence in femoral bone among both dogs and cats. The fracture cases and this incidence correlated with some predisposing factors (including breeds, and incomplete or complete), site (proximal, diaphyseal or distal zones), number (single or diaphyseal radial/ulnar fractures respectively. Moreover, cats were complete transverse distal from January 2017 to January 2020, and emphasizing the information that characterized the percentage of open fractures were more common in cats than dogs. Incomplete fractures were complete comminuted diaphyseal femoral, complete spiral diaphyseal humoral, and tibia/fibula, complete transverse distal radial/ulnar fractures. In conclusion, appendicular bone fracture...
The Effect of Dietary Supplementation of Cod Liver Oil on Ratio of Saturated and Unsaturated Fatty Acids in Giant Prawn (Macrobrachium rosenbergii)

ABSTRACT

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

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. The observed differences in the content of saturated fatty acids, Monounsaturated Fatty Acids (MUFA) and Polyunsaturated Fatty Acids (PUFA) in pangasius meat; a decrease in the content of saturated fatty acids was found in P3 treatment with 3.2% (23.1082 mg/dl). P1, P2 and P3 indicated lower results than the control group (P0). The present results indicated the use of lysine in commercial feed caused significant differences in the content of saturated fatty acids, Monounsaturated Fatty Acids (MUFA) and Polyunsaturated Fatty Acids (PUFA) in pangasius fish meat. In the present research, an experimental method with completely randomized design was used. 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 ovaries of Camelus dromedaries with different qualities. World Vet. J. 10(4): 653-657, 2020; pii:S232245682000078-10; DOI: 10.29252/wvj.2020.653-657.


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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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