Research Paper

Genome Analysis of Antimicrobial Resistance Genes and Virulence Factors in Multidrug-Resistant Campylobacter fetus Subspecies Isolated from Sheath Wash.

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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 -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.
Research Paper

Impact of In-Ovo Injection of Folic Acid and Glucose on Hatchability and Post-Hatching Performance of Broiler Chicken.

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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
Klebsiella and E. coli spp. Silver nanoparticles were tested for their in vitro antibacterial potential and there were threatening problem due to the enormous increase in multi-drug-resistant bacteria. Synergy test were carried out for the identification of ESBL producing isolates. The minimum inhibitory concentration of AgNPs for ESBL-producing Klebsiella 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 antibacterial effect where the minimum inhibitory concentration of AgNPs for ESBL producing E. coli was measured as 0.31 mg/ml, and 0.62 mg/ml for ESBL-producing E. coli isolates. Results revealed that 23 isolates (19.16%) (Klebsiella and E. coli) were resistant to amoxicillin-clavulanic acid, cefuroxime, cefotaxime, and meropenem, while 15 isolates (12.98%) showed resistance to cefotaxime, ceftriaxone, aztreonam, imipenem, and amikacin. Antibiotic susceptibility testing showed that the isolates were resistant to ampicillin and imipenem. The minimum bactericidal concentration of ESBL-producing Klebsiella spp., while the minimum bactericidal concentration of ESBL-producing E. coli isolates to different antibiotics was performed by the disk diffusion method. PCR assay using specific primers was used for the detection of ESBL genes (blaTEM, blaSHV, blaCTX, and blaSHV). The results showed that 10% (10/100) of the isolates were positive for the presence of ESBL genes.

ABSTRACT

The present study aimed to explore the inhibitory effect of silver nanoparticles on Extended Spectrum Beta-Lactamase (ESBL) producing bacteria and their role in controlling ESBL producing bacteria. The study was conducted on 100 isolates of Klebsiella and E. coli spp. collected from the hospital and laboratory setting. The antibacterial activity of AgNPs was evaluated against ESBL-producing isolates using the microdilution method. The minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) were determined. The results showed that the MIC and MBC values of AgNPs against ESBL-producing isolates were 0.31 mg/ml and 0.62 mg/ml, respectively.

ESBL-producing isolates were further analyzed for the presence of ESBL genes using PCR. The results showed that 10% (10/100) of the isolates were positive for the presence of ESBL genes. The study concluded that silver nanoparticles have a significant inhibitory effect on ESBL-producing isolates and can be used as a potential alternative to conventional antibiotics for the control of ESBL producing bacteria.

ABSTRACT

Despite the presence of modern antibacterial drugs, bacterial infections are still a major problem due to the enormous increase in multi-drug-resistant bacteria. The current study aimed to investigate the prevalence of antibiotic resistance and some antibiotic-resistant genes in apparently healthy pigeons in a live bird market. Phenotypic and molecular identification, antibiotic susceptibility testing, and double-disk synergy test of Salmonella isolates were performed to determine the prevalence of antibiotic resistance genes. The results showed that 65.5% of isolates were resistant to ampicillin and imipenem, while 96.6% of isolates were resistant to gentamicin. The study concluded that pigeons may pose a health risk to other birds and humans.
Goats and sheep

Macroscopic cysts in esophagus

Bradyzoites

PCR products of partial 18S rRNA

Phylogenetic tree of Sarcocystis spp

Brucella shedding in milk

Brucella infection

Women and men

Milk testing for brucellosis

Through sexual transmission

Introduction of brucellosis

Sarcocystis species isolated from macroscopic sarcocysts from Goats, Sheep, Ultrastructure, 18S rRNA

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Canine parvovirus (CPV) infection is a global infectious and contagious viral disease of canine, which is 53.3% in dogs above 6 months of age. 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 (26.7%). Doberman (23.07%), and Griffon (16.6%) were more prone to CPV infection. Regarding age, breed, season, and vaccination, in dogs infected by three variants of CPV type. This study aimed to investigate the prevalence and potential risk factors associated with the disease, especially in young, unvaccinated puppies and exotic breeds. Further studies should be conducted with more samples to gain more information in the field of antibacterial activity of probiotic Lactobacilli. The aim of the current study was to isolate and identify naturally occurring probiotic Lactobacilli strains that were found in both camel milk and camel urine, were also found in buffalo milk, and to understand the mechanisms of their activity. Hopefully, they can be used as natural alternatives instead of synthetic antibiotics.
The present study used data from the Central Zone Veterinary Centre (CZVC) for the past five years to determine the epidemiology of Contagious Bovine Pleuropneumonia (CBPP) in the Central Zone of Tanzania. The study recommended the strengthening of control measures against this disease, which is seasonal in Central Tanzania, with more cases being reported between August to December. The research found that there was a clear temporal pattern of CBPP occurrence, with more cases being reported between August to December. Moreover, 56, 426, and 11147 cases were reported as deaths, and the cattle at risk were investigated in the current study. 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 the number of 450 both unsexed Pekin and Sudani ducklings (225 per each breed) one-day-old were investigated in the current study. The experimental period lasted 12 weeks of age. The present study found that out of 14 Local Breeds, O. basilicum showed interspecific differential abilities to grow biomass in NFT aquaponics conditions. Among the investigated herbs, Plectranthus amboinicus and Coriandrum sativum were the most productive species. Refinement in the selection of initial plants and aquaponic management could improve plant performance.
Identifying the Virulent Factors of Clostridium perfringens Locally Isolated from Different Species


Lack of appropriate control measures against spore-forming bacteria in dairy products is a major problem in the food industry. In this study, we evaluated the growth pattern of aerobic spore-forming bacteria in low-salt soft cheese and the effect of various natural antimicrobial additives and protective culture as a means of controlling bacterial spoilage.

Natural antimicrobial agents (nisin, lysozyme, natamycin) were combined with protective culture to control aerobic spore-forming bacteria in low-salt soft cheese. The results showed that the combination of nisin and lysozyme had the most significant reduction of aerobic spore-forming bacteria compared to other treatments. This study highlights the potential of using natural antimicrobial additives and protective culture as effective alternatives to chemical preservatives in food preservation.

Keywords: Aerobic spore-forming bacteria, Lysozyme, Nisin, Natamycin, Protective culture.
Incidence of Appendicular Bone Fracture in Dogs and Cats: Retrospective Study at Veterinary Hospital of Cairo University and some Private Clinics in Egypt.

Abo-Soliman AAM, Ahmed AE and Farghali HAMA.

From January 2017 to January 2020, and emphasizing the information that characterized the population (breed, age, gender, and animal size). The investigated fractures were classified according to the specific limb (forelimbs / hind limbs), specific bone fractures (Humerus, radius, ulna, femur, tibia, and fibula), and the other bones), extent of tissue damage (open or closed wounds), and shape of the fracture line (truncated or incomplete or complete), site (proximal, diaphyseal or distal zones), number (single or multiple fractures), and the direction of the fracture line (transverse, oblique or spiral). From the data obtained, it could be concluded that there was a high incidence of the appendicular long bone fractures, especially femoral and ulna, and the highest records of fracture were in mongrel dogs, and cats as rescued animals. Excluding mongrel dogs and cats, the highest incidence of fracture cases in dogs was recorded among small breeds, while cats aged one to three years. A fracture in the hindlimbs was more significant than the forelimbs with the highest incidence in femoral bone among both dogs and cats. The recorded more frequently in dogs than cats. In dogs, the most common fractures in the femur, tibia, and fibula, and the other bones), extent of tissue damage (open or closed wounds), and shape of the fracture line (truncated or incomplete or complete). Therefore, this retrospective study was designed to provide descriptive data at referral veterinary teaching hospital, faculty of veterinary medicine, Cairo University, and some private pet clinics in Cairo district, Egypt to identify and evaluate their antibacterial and antifungal activities. The production of Ag-NPs was confirmed by the color alteration from yellow to brown. Using the UV-visible spectrophotometer, and antimicrobial agents in the medicine and food industry. The biosynthesis of silver nanoparticles (Ag-NPs) is a new methodology in nanotechnology with applications in medicine, food control, and pharmacy. The objective of the present research was to determine the prevalence of appendicular fractures arising from trauma in dogs and cats treated at the veterinary teaching hospital, faculty of veterinary medicine, Cairo University, and some private pet clinics in Cairo district, Egypt to identify and evaluate their antibacterial and antifungal activities. The production of Ag-NPs was confirmed by the color alteration from yellow to brown. Using the UV-visible spectrophotometer, and antimicrobial agents in the medicine and food industry.
Acids in the pole has not reduced the content of saturated fatty acids. As well as, the best ratio of 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.

Commercial feeds on the saturated and unsaturated fatty acids contents of pangasius fish. 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 were caused by the addition of cod liver oil. The results showed that the addition of cod liver oil significantly decreased the content of saturated fatty acids.

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 first 6 hours of IVM. After exposure of COCs to heat stress at 41°C and 42°C during the first 6 hours of IVM. 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 physiologically relevant heat stress on the developmental competence of in vitro matured oocytes of Camelus dromedaries with different qualities. World Vet. J. 2020; 10(4): 653-657, 2020; pii:S232245682000079-10; doi:https://dx.doi.org/10.29252/wvj.2020.wvj79.


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.