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 reproduction 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

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)-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 β-Lactamase (ESBL) producing Enterobacteriaceae spp. (E. coli spp. and Klebsiella spp.) isolated from samples (i.e., wound swabs, fecal swabs, and urine samples) collected from dogs and cats in Bangladesh. Different bacteriological and biochemical tests were used for the isolation and identification of the bacterial isolates. The susceptibility of the ESBL-producing bacterial isolates was determined by the disk diffusion method. The antibacterial activity of silver nanoparticles was assessed using the agar well-diffusion technique.

The minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) of silver nanoparticles were determined against the ESBL-producing bacterial isolates. The results revealed that 23 isolates (19.16%) were ESBL producers. Silver nanoparticles indicated a promising antibacterial activity and could be considered an applicable alternative for the control of ESBL-producing bacteria.

In conclusion, the present study highlights the potential of silver nanoparticles as a promising antibacterial agent for the treatment of ESBL-producing Enterobacteriaceae spp. The findings suggest that silver nanoparticles could be a promising alternative for the control of antibiotic-resistant bacteria, particularly in regions where ESBL-producing bacteria are prevalent.
**ABSTRACT**

Macroscopic Sarcocysts of Domestic Sheep and Goats in Soran City, Erbil, Iraq. Sarcocystis has been recorded in goats. Goats and sheep can be proposed as alternative intermediate hosts for S. gigantea and S. moulei, respectively, cross-infection may also occur between them and the host specificity of these species is questionable.

**Keywords:** Brucellosis, Cattle, Complement fixation test, ELISA, Human, Rose Bengal test.
ABSTRACT

Canine parvovirus (CPV) infection is a global infectious and contagious viral disease of canine, and 3 months of age indicated the highest prevalence of 68% followed by 4-6 months of age and 20% prevalence in dogs younger than 3 months old. 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, breed, season, and vaccination of each dog were recorded to study the prevalence of CPV infection. Identification of the potential risk factors associated with the disease may be helpful to construct the ideal preventive measures.

Keywords: especially in dogs infected by three variants of CPV type. This study aimed to investigate the prevalence and associated risk factors in Egypt.

Canine Parvovirus Infection in Dogs: Prevalence and Associated Risk Factors in Egypt.


Elmadawy MA, Abdo W, Omar AA and Mahfouz NB (2020). Thiobencarb which is a carbamate herbicide is used for managing undesirable weeds during rice cultivation in Egypt. This study was designed to investigate the adverse effects of a field dose of thiobencarb on Nile tilapia and ameliorating the role of the low dose of S-methyl isothiocyanate (SMC) ameliorated the adverse effects which were effective in the improvement of DNA and oxidative damage in thiobencarb intoxicated fish. Genotoxic effect of thiobencarb and SMC on treated fish was investigated in erythrocytes, gills, and brain was also carried out. The results indicated that fish exposed to thiobencarb (36 µg/L); the third group was fed on a commercial 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 (GST), and liver tissues using micronucleus and comet assay. Histopathological examination of livers, gills, and brain was also carried out. The results indicated that fish exposed to thiobencarb resulted in DNA damage, oxidative stress and histopathological changes.

Keywords: Carboxim, Nile tilapia, Thiobencarb, Oxidative stress, Genotoxic damage, Histopathology.


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., 10 (4): 582-592

Microbiological Studies on Naturally Present Bacteria in Camel and Buffalo Milk. Abdou AM, Hedia RH, Omara ST, Kandil MM, Bakry MA and Effat MM.

Lactobacilli species in buffalo milk, camel milk, and camel urine to investigate their susceptibility to antibiotics. A total number of seven samples and to understand the mechanisms of their activity. Hopefully, they can be used as natural alternatives instead of synthetic antibiotics.

The aim of current study was to isolate and identify naturally occurring probiotic strains in camel milk and urine. The samples were cultured, and 18 Lactobacillaceae isolated strains were identified by using 16S rRNA multiplex Polymerase Chain Reaction analysis, which was performed following DNA extraction from the isolated bacteria. Buffalo and camel milk were different in their content. All isolated strains were Gram-positive rods, and some of them were CatalasePositive. All isolated strains were observed with antibacterial activity against pathogenic bacteria. Further studies should be conducted with more samples to gain more information in the field of antibacterial activity of probiotic Lactobacilli.
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 the archived information of Central Zone Veterinary Centre (CZVC) for the past five years in the Government Authorities (LGAs) 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 were 12, 84, and 2456, 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. Therefore, the present study concluded that CBPP was a seasonal problem in Central Tanzania. Therefore, this extensive study must be carried out, since the parameters obtained during the study were lower compared to the situation on-site.


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


The Effect of Dietary Supplementation of Cod Liver Oil on Ratio of Saturated and Unsaturated Fatty Acids in Giant Prawn (Macrobrachium rosenbergii) Meats


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Research Paper

Marzuki L, Agustono and Rahardja BS.

Abattoir ovaries

Bad quality COCs

Recovery of COCs

Control at 38.5 °C

Heat shock at 41 °C

Heat shock at 42 °C

Good quality COCs

Cleavage rate

Embryonic development

Extrusion of polar body (%)

Camelus expansion (%)

Supplementation of Cod Liver Oil for Giant Prawn


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.