Surgical Treatment of Canine Femoral Fractures – a Review.

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ABSTRACT
Femoral fractures in dogs and cats account for 20-25% of all fractures for which surgical treatment is a method of choice. Surgical treatment is based upon biological principle of open anatomic reduction and osteosynthesis. Arbeitsgemeinschaft für Osteosynthesefragen (AO) classification of fractures has a widespread use in general. Present study discusses different methods of osteosynthesis and healing process based on special cases managed in a certain small animal clinic in Hollabrunn, Austria, in 2016. The level of femoral fracture and the chosen method of osteosynthesis are shown respectively. According to available literature and author’s personal observations during externship period, the best results have been achieved using minimally invasive surgery. The surgical method choice depends on type, level and complexity of fracture, surgical skills and equipment of the team providing care respectively.

Key words: Dog, Femur, Fracture, Osteosynthesis.

Effects of Curcumin Supplementation on Viability and Antioxidant Capacity of Buffalo Granulosa Cells under In Vitro Culture Conditions.
ABSTRACT

The current study was conducted to investigate the possible protective effect of curcumin supplementation on buffalo granulosa cells (GCs) under in vitro culture condition. Buffalo ovaries were collected from local abattoir in physiological saline solution and transported directly to laboratory. Follicular fluid containing GCs and cumulus-oocyte-complexes were aspirated from antral follicles with diameter 2-8 mm. The collected GCs were seeded (Approximately 375,000 viable cells) in an 8-well culture plate containing tissue culture medium-199 (TCM-199) and kept at 37 °C in a humidified atmosphere of 5% CO₂. The curcumin was supplemented to TCM media at levels of 1, 2.5, 5 and 10 µM for 24 and 48 h at 37 °C or kept without treatment as control group. The viability of cells was determined using the trypan blue test. Intracellular reactive oxygen species (ROS) level was assessed by measuring the fluorescent intensity of 6-carboxy-2',7'-dichlorodihydro fluorescein diacetate (H₂DCFDA). In addition, mitochondrial activity of GCs was determined. The results of the present study indicated that the viability of GCs under culture conditions was significantly decreased in groups treated with 1, 2.5, 5 and 10 µM curcumin (86.0%, 86.26%, 83.0% and 74.0%, respectively) compared to control group (93.60 %). The two groups of granulosa cells cultured with 2.5 and 5 µM curcumin recorded greater level of mitochondrial activity than the groups cultured with 1 µM and 10 µM curcumin. Moreover, there was a significant increase in ROS level in group cultured with 10 µM curcumin, compared to control and other experimental groups. The enzyme activity of catalase (CAT), superoxide dismutase (SOD), glutathione (GSH) and 1, 1-diphenyl-2-picrylhydrazyl (DPPH) was increased after treating
in vitro cultured granulosa cells with 5 µM of curcumin. However, the enzymatic activity of CAT, SOD, GSH and DPPH was declined significantly 48 h post-curcumin treatment. In conclusion, supplementation of curcumin at low concentration (2.5 µM) for 24 h to in vitro cultured GCs improved intracellular metabolic activity and antioxidant protective system, whereas it could not sustain this action for 48 h. Moreover, supplementation of curcumin at high concentration and for long duration may negatively affect viability of GCs under in vitro culture condition via induction of oxidative stress.

**Key words:** Antioxidant, Buffalo, Granulosa cells, Oxidative stress, Viability.

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**Research Paper**

**Efficacy of Ivermectin-Based Drugs against Ectoparasites in Broiler Chickens.**

Arisova GB.
ABSTRACT

This research aimed to study the efficacy of two different ivermectin-based drugs against ectoparasites of chickens. In total 1200 Highsex brown chickens aged 1-1.5 years were examined to determine the prevalence of ectoparasites among chickens. The diagnosis of ectoparasites in chickens was established using clinical and entomological methods. For studying drug efficacy, 20 chickens were selected and divided into two groups (experimental and control) of 10 birds each according to the principle of analogs. A prepared ivermectin-based drug consisting of active substance ivermectin and the auxiliary substances including jojoba Resplanta, diethylene glycol monoethyl ether, Tween-80, benzyl alcohol, and purified water, was administered to the experimental group at a dose of 0.4 ml/L of drinking water (400 μg ivermectin per 1 kg of body weight) twice with a 24-hour interval. The treatment was repeated after 14 days. The control group was administered another drug based on ivermectin in the same dose and manner as the drug given in the experimental group. The efficacy of the drugs was determined by counting the number of ectoparasites per chicken before and after treatment. The clinical condition of the birds was monitored from day 1 to day 28 of the experiment. To evaluate the physiological state of chickens, blood and biochemical tests were performed on day 28 of the experiment. The results revealed that the prevalence of infection with Menacanthus stramineus, Menopon gallinae, and Dermanyssus gallinae in chickens was 34.5%, 21.5%, and 12%, respectively. The number of parasites/chicken after treatment between the experimental and the control group was significantly different. The efficacy of the drugs against ectoparasites in the experimental and control group was 95.6-99.0% and 85.1-91.1%, respectively. The blood tests showed that hematological and biochemical parameters were within physiological norms for both groups. Also, a pharmacokinetic study was performed on 18 ISA cross, 40-day-old chickens administered orally with the test drug at the same dose. The results revealed that ivermectin reached maximum concentration at 30-60 minutes after administration to the bird. After 1 hour, the concentration of the active substance of the drug in the blood serum of chickens decreased sharply and reached the limit of quantification by 12-24 hours. In conclusion, this drug can be recommended for use in poultry as an effective and safe drug for the treatment of arachnoidontosis in birds.

Key words: Chickens, Ectoparasites, Ivermectin.
Research Paper

Sensitivity of Lateral Flow technique for Evaluation of Inactivated Rift Valley Fever Virus Vaccine in Comparison with Serum Neutralization Test.

Abousenna MS, Sayed RH, Darwish DM and Saad MA.


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ABSTRACT
Rift Valley Fever (RVF) is a zoonotic mosquito-borne bunyaviral disease associated with high abortion rate, neonatal death, fetal malformations in ruminants, and mild to severe disease in human. The vaccination has significantly reduced the abortion of ewes and mortality of newborn lambs during an outbreak, and induced immunity in cattle. The evaluation of inactivated RVF vaccine required in vivo and in vitro techniques. The present research aimed to evaluate the sensitivity of the Lateral Flow Device (LFD) in comparison with Serum Neutralization Test (SNT) by reference sera to determine the humoral immune response of the sheep vaccinated with an inactivated RVF vaccine. Three batches of inactivated RVF vaccine were inoculated in three sheep groups. Then samples of their sera were collected weekly, and tested by SNT and LFD. It was found that the sensitivity of LFD at a serum dilution of 1:128 was 95%, while SNT carried out at the fourth week after the vaccination showed that antibody titers was 32, 64 and 32. On the other hand, LFD had positive results at dilutions of 1:32, 1:128 and 1:64 for the vaccine batches 1, 2 and 3 respectively. These findings suggest the possibility of using LFD for detection of the immune response of vaccinated sheep to the inactivated Rift Valley Fever Virus vaccine, and it could be improved to be more quantitative in future.

**Key words:** Lateral flow device, Rift valley fever virus, RVFV inactivated vaccine, Vaccine evaluation

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**Research Paper**

Molecular Evidence of *Spirometra erinaceieuropaei* in Asian Wild Frogs (*Rana rugulosa*) from Banyuwangi City, Indonesia.
Yudhana A, Praja RN, Yunita MN and Wardhana DK.


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ABSTRACT

The tapeworm *Spirometra erinaceieuropaei* is the most frequently species which found in wild frog and causing a serious parasitic zoonosis known as sparganosis. This study aimed to provide molecular evidences of spargana collected from wild frogs which used as food and contribute to provide important implication for preven-tion and control of sparganosis. A total of 185 Asian wild frog (*Rana rugulosa*) samples were selected from food markets in Banyuwangi City, Indonesia. Molecular identification based on spargana that were collected and coding gene of mitochondrial cytochrome c oxidase 1 (*cox1*) using Polymerase Chain Reaction (PCR) method. Spargana were found in 9.1% (17/185) of the frogs and PCR analysis results identified all specimens belonging to the species *S. erinaceieuropaei*, therefore indicated that *S. erinaceieuropaei* is the major causative agent of sparganosis from frogs which sold as food in markets. These findings can be useful to the molecular diagnosis and control of *Spirometra* infections in humans and animals.

**Key words:** Asian wild frog, *Rana rugulosa*, Sparganosis, *Spirometra erinaceieuropaei*.
ABSTRACT

The development of resistance to anthelmintic drugs has prompted researches into alternative methods for controlling intestinal nematodes in ruminants. This study aimed to evaluate the anthelmintic efficacy, proteolytic activity, and toxicity of bromelain encapsulated in chitosan.

Treatment groups included: G1, chitosan-encapsulated bromelain (90 mg/kg); G2, chitosan-encapsulated bromelain (270 mg/kg); G3, positive control (albendazole 7.5 mg/kg); G4, negative control. The animals were orally treated with the drugs in a single dose. The doses of encapsulated bromelain for controlling GIT nematodes were given as a single dose. Future studies should evaluate higher and repeated doses to determine the proteolytic activity of nanoencapsulated bromelain within the GIT, another set of studies should be performed in order to determine the digestive activity of bromelain in the GIT.

The strongyle fecal egg count was evaluated weekly using a modified McMaster technique. To evaluate anthelmintic activity, the liver, heart, and lungs were removed from the treated goats 28 days post-treatment. The administration of encapsulated bromelain was not toxic to the test animals; the mean PCV and RBC of treated animals remained close to the mean of control animals.

Key words: anthelmintic efficacy, proteolytic activity, bromelain, chitosan, goats.


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Detecting intestinal parasitic infections in laboratory mice.

A total of 150 Laboratory mice divided into four age groups consisted of 4, 6, 8 and 10 weeks old were used in this study by placing each animal individually in a special cage within the Studies Laboratory University of Mosul, Iraq. This study aimed to investigate intestinal parasitic infections in laboratory mice, stool samples were collected for 150 laboratory mice and concentration method to detect eggs of worms and cysts of protozoa parasites, the culture of parasites also was used by prepared manufactured culture media to develop parasites. The infection with Giardia muris was diagnosed in 33% of infected cases by identifying the cysts of this worm in stool samples, the infection with Hymenolepis diminuta was diagnosed in 16% from infected cases by identifying the eggs of this worm in stool samples, the infection with Trichomonas muris was diagnosed in 22% of infected cases by identifying the cysts of this worm in stool samples, and the infection with Entamoeba muris was diagnosed in 136 (90.66%) mice while the rest 14 (9.33%) mice did not record any protozoa cysts. The infections in laboratory mice were amplified by the high rate of infection (58%) in the laboratory mice, this rate was attributed to poor hygiene environment in the studies laboratory.

Key words: parasitic infection (clean), laboratory mice, Giardia muris, Hymenolepis diminuta, Trichomonas muris, Entamoeba muris.

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Growing Rabbits.

In the first experiment, six adult V-line male rabbits were used to determine the digestible energy in Panicum maximum by continuously feeding these 120 gram (g) Panicum maximum and 120 gram (g) clover hay for 3 days, and then the digestible energy was recorded 1959 kcal /kg. In second experiment, three groups were fed on the diet contained Pm to replace clover hay as a percentage of 15%, 30% and 45%, which corresponds to 4.5%, 9% and 13.5% of the total diet; which represent T2, T3, and T4, respectively. Rabbits were fed ad libitum with pellet feed until the end of growth attempt (14 weeks). The results indicated that the proximate analysis of Panicum maximum was 11.65% crude protein, 2.67% crude fat, and 30.66% crude fiber. Rabbits in T4 group significantly had the best growth performance. In the first experiment, six adult V-line male rabbits were used to determine the digestible energy in Panicum maximum by continuously feeding these 120 gram (g) Panicum maximum and 120 gram (g) clover hay for 3 days, and then the digestible energy was recorded 1959 kcal /kg. In second experiment, three groups were fed on the diet contained Pm to replace clover hay as a percentage of 15%, 30% and 45%, which corresponds to 4.5%, 9% and 13.5% of the total diet; which represent T2, T3, and T4, respectively. Rabbits were fed ad libitum with pellet feed until the end of growth attempt (14 weeks). The results indicated that the proximate analysis of Panicum maximum was 11.65% crude protein, 2.67% crude fat, and 30.66% crude fiber. Rabbits in T4 group significantly had the best growth performance and lower cecum coliform bacteria.

Key words: growth performance, Panicum maximum, Rabbits
The African four-toed hedgehog is a small nocturnal mammal, characterized by a short-grooved testicular capsule, a band of whitish fur running across the body, and a brown or grey spine covering the dorsum of the body. Little is known about the reproductive biology of this animal. The present study aims to investigate the cytoskeletal physiology of the testis of the African four-toed hedgehog, with a focus on the expression of S-100 protein, α-SMA, and S-100 proteins. Paraffin-embedded testicular sections were stained using conventional histological techniques, and immunostaining for α-SMA and S-100 was applied on paraffin sections. The spermatogenic cells, Sertoli and Leydig cells, peritubular myoid cells, the testicular capsule, and vascular endothelium all expressed strong immunostaining for α-SMA. The study concludes that α-SMA and S-100 proteins play active roles in the structural formation and maintenance of the blood-testis barrier during the process of spermatogenesis in the African four-toed hedgehog.
ABSTRACT

Such research investigated the antimicrobial and antioxidant effects of chitosan and chitosan nanoparticles casing on the quality of tilapia (Oreochromis niloticus) fish fillets through chilled storage. Using natural preservatives has a probability to improve the quality and integrity of fish products. Results showed that 2% chitosan and 2% chitosan nanoparticle solutions were the optimal concentrations for improving the quality of tilapia fish fillets until 10 days of refrigerated storage. However, using 2% chitosan nanoparticles showed a higher antimicrobial activity, strong ability in preventing protein degradation, retarding lipid oxidation, accepted pH values and delay in declining of sensory score more than 2% chitosan and chitosan nanoparticles. DOI:

Keywords: Bacteriological and quality parameters, Chitosan, Nanochitosan, Tilapia fish fillets


ABSTRACT

Pharmacokinetic Characteristics of the Drug Based on Moxidectin for Young Stock and Small Breed of Domestic Animals.


ABSTRACT

The Labial and Zygomatic Salivary Glands in Mixed Breed Dogs in Trinidad: Anatomical Location, Histological Features and Histochemical Characteristics.


ABSTRACT

DOI:

Keywords:

Pharmacokinetic Characteristics of the Drug Based on Moxidectin for Young Stock and Small Breed of Domestic Animals.

Blood Serum, Cats, Dogs, Moxidectin, Pharmacokinetics

The Labial and Zygomatic Salivary Glands in Mixed Breed Dogs in Trinidad: Anatomical Location, Histological Features and Histochemical Characteristics.

Anatomy, Dog, Labial, Salivary glands, Zygomatic

Bacteriological and quality parameters, Chitosan, Nanochitosan, Tilapia fish fillets

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Developmental Competence of Buffalo Oocytes Cultured Under Different Oxygen Tensions after Selection with Brilliant Cresyl Blue.

Abd-El Rahman Ahmed D, Ghanem N, Dessouki ShM, Faheem MS, Gad AY and Barkawi AH.


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ABSTRACT

The aim of this investigation was to follow up in vitro preimplantation development of buffalo cumulus-oocyte complexes (COCs) after BCB test and followed by in vitro maturation under two different levels of oxygen tension. Cumulus-oocyte complexes (n=1045) were selected with BCB staining (oocytes with any degree of blue color in cytoplasm was defined as BCB+, oocytes without any degree of blue color in cytoplasm was defined as BCB-) in addition to a third control group. The previous experimental groups (BCB+, BCB-, control) were matured in vitro under low (5%) and high oxygen tension (20%), followed by in vitro fertilization and in vitro culture of presumptive zygotes. There were no differences (P ≤ 0.05) in cleavage, morula and transferable embryos rates among BCB+, BCB- and control group. However, blastocyst rate was greater significantly in control group (14.4 ± 2.0) than BCB- COCs (8.4 ± 1.9). According to the oxygen tension effect, the rate of morula and transferable embryos was increased (P ≤ 0.05) in buffalo COCs developed under low oxygen tension (11.6 ± 1.4 and 23.8 ± 1.9) compared to high oxygen tension group (7.4 ± 1.4 and 17.9 ± 2.1). In addition, cleavage, morula, blastocyst and transferable embryos rates were greater in BCB+ under low (43.6 ± 3.9, 14.9 ± 2.5, 14.1 ± 2.9 and 28.4 ± 3.6) than high oxygen tension group (33.5 ± 3.9, 7.1 ± 2.5, 11.6 ± 2.9 and 18.8 ± 3.6) which may reflect enhanced biological processes controlling early development. Moreover, blastocyst rate was significantly higher in control group cultured under high (12.0 ± 2.9) and low (16.9 ± 2.8) oxygen level than their counterparts of BCB- group (9.3 ± 2.9 and 7.6 ± 2.6, respectively). In conclusion, there was no differences in embryo development between BCB+ and BCB- COCs; therefore, oocyte selection based on BCB staining is not an effective tool to select developmental competent buffalo COCs. Buffalo morula and transferable embryos prefer low oxygen tension for early development, which should be applied during in vitro embryo production of this species.

Keywords: Brilliant cresyl-blue staining, Cumulus-oocyte complex, Morula, Preimplantation.

Butanol Fraction of Kelussia odoratissima Mozaff Inhibits the Growth of Leishmania major Promastigote and Amastigote.


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ABSTRACT

Naturally derived compounds have been used to treat several infectious diseases including leishmaniasis. The study aimed to investigate the in vitro effects of Kelussia odoratissima Mozaf extract on Leishmania major promastigote and amastigote. Dried leaves of K. odoratissima were fractionated by 3 solvents including aqueous, butanol, and ethyl acetate. The results showed that the butanol fraction of K. odoratissima showed the highest anti-Leishmania effects against L. major promastigotes. Ninety four percent growth inhibition of the promastigote was observed when cells were treated with the 1,280 µg/mL butanol fractions. Moreover, 100% inhibition of amastigotes was detected after treatment with the butanol fraction. Half maximal inhibitory concentration (IC\textsubscript{50}) of the butanol fraction in promastigotes and amastigotes was 264.1 and 154.1 µg/mL, respectively. The obtained results suggested the potential medicinal benefits of K. odoratissima butanol fraction as an alternative treatment for leishmaniasis caused by L. major infections.

Key words: Amastigotes, Butanol fraction, Leishmania major, Kelussia odoratissima Mozaff, Promastigotes.