Review

Surgical Treatment of Canine Femoral Fractures – a Review.

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DOI: [https://dx.doi.org/10.36380/scil.2020.wvj18](https://dx.doi.org/10.36380/scil.2020.wvj18)

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.

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**Research Paper**

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

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 arachnoentomosis 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.


DOI: https://dx.doi.org/10.36380/scil.20209.wvj21

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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Yudhana A, Praja RN, Yunita MN and Wardhana DK.


DOI: https://dx.doi.org/10.36380/scil.2020.wvj22

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*.
Entamoeba muris

Crossref Metadata

untreated goats 28 days post-treatment. The administration of encapsulated bromelain was not determine the proteolytic activity of nanoencapsulated bromelain within the GIT, another set of twelve goats was used and administered 270 mg/kg of encapsulated bromelain. Every four hours, three goats were sacrificed and the proteolytic activity of the drug was determined in the chitosan-encapsulated bromelain (270 mg/kg); G3, positive control (albendazole 7.5 mg/kg); doses of encapsulated bromelain for controlling GIT nematodes. Bromelain within the Gastrointestinal Tract of Small East African Goats. hematological and serum biochemical parameters were determined using standard methods. methods for controlling intestinal nematodes in ruminants. This study aimed to evaluate the anthelmintic efficacy, proteolytic activity, and toxicity of bromelain encapsulated in chitosan indigenous male goats were divided into four groups contained three goats in each groups. Treatment groups included: G1, chitosan-encapsulated bromelain (90 mg/kg); G2, nematodes when given as a single dose. Future studies should evaluate higher and repeated goats treated with 270 mg/kg encapsulated bromelain and non-treated goats on days 21 and 28 post-treatment. The mean aspartate aminotransferase, urea, and creatinine levels of treated and control goats did not significantly differ during the experiment period. Also, no significant reduction in fecal egg count in G1 and G2 at 28 days post-treatment was 9.5% and 22.6%, respectively. The encapsulated bromelain associated with any clinical sign and mortality. The strongyle fecal egg count was evaluated weekly using a modified McMaster technique. To determine the parasitic infection (clean). The higher rate of infection 58% was reported for Hymenolepis diminuta which found in 22%, 15.3% respectively. In the other hand the infection with Giardia muris parasites also was used by prepared manufactured culture media to develop parasites. The infection was diagnosed in 136 (90.66%) mice while the rest 14 (9.33%) mice did not record any parasitic infection (clean). The strongyle fecal egg count was evaluated weekly using a modified McMaster technique. To detect eggs of worms and cysts of protozoa parasites, the culture of Giardia muris and Trichomonas muris was prepared and used to infect laboratory mice. Two experiments were performed to evaluate Panicum maximum (Pm) and its effect on rabbits’ growth performance. In the first experiment, six adult V-line male rabbits were used to assess the effect of Pm on rabbits’ growth performance. In the second experiment, rabbits were fed ad libitum with the same feed as in the first experiment, divided into 4 groups, each in 4 replicates (4 rabbits/replicate), the first fed basic diet; control (T1), the 3 groups 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 period between October 2019 to the end of February 2020 at the Research and Graduate Growing Rabbits. World Vet. J. 10(2): 190-198, 2020; pii:S23224568200002510

Al-Juwari RSA, Refaie AM, Salama WA, Shams El-deen AE, Beshara MM, Khalil FS, and Alazab AM. DOI:

Refaie AM, Salama WA, Shams El-deen AE, Beshara MM, Khalil FS, and Alazab AM. DOI:
The African four-toed hedgehog is a small nocturnal mammal, characterized by a short-grooved brown or grey spine covering the dorsum of the body with a band of whitish fur running across their forehead, little is known about the reproductive biology of this animal. The present study aimed to evaluating the validity of immunohistochemistry in the differential labelling of the Hedgehog (Atelerix albiventris) testis. Paraffin-embedded sections were used to stain for S-100 protein, alpha smooth muscle actin (α-SMA), and S-100. The peritubular myoid cells, the testicular capsule, and vascular endothelium expressed strong immunostaining for S-100. α-SMA and S-100 proteins play active roles in the cytoskeletal structure of testis and physiology of the African four-toed hedgehogs. The present study concluded that α-SMA and S-100 proteins have additional roles in the structural formation and maintenance of the blood-testis barrier during spermatogenesis in the animal.

Keywords: African four-toed hedgehog, Immunoreactivities, Spermatogenic cells, Sertoli cells, Testis.

ABSTRACT

The important aspect of the high quality new pharmaceuticals is safety assessment in animals. Toxicity Assessment of a Multicomponent Antiparasitic Drug in Animals. A new antiparasitic multicomponent drug, composed of lufenuron, praziquantel, and moxidectin in the form of tablets for cats and dogs, was carried out. The parameters of acute oral toxicity were determined after administration to rats. Embryotoxicity and teratogenicity of the drug were also evaluated. As a result of toxicological studies, median lethal doses (LD₅₀) of the drug during oral administration were found that the drug did not possess embryotoxic and teratogenic properties in pregnant female rats. Experimental results have confirmed the low toxicity of a new antiparasitic multicomponent drug.

DOI: World Vet. J.

In vivo skin health, and feather condition scores were improved at 4 days after treatment with completely stretched legs and white bead-like spots of oils accumulation on legs. The present study showed that sprayed mites completely stopped movements at both 1- and 2- h after treatment. Drinking water treated birds showed good results than spray treated group. Therefore, it is recommended to use combined plant essential oils in control strategies in poultry.

Key words: Plant essential oils, Red mite, D. gallinae, Acaricides, Chickens mite, Gallinae, World Vet. J.

ABSTRACT

The present study was carried out to evaluate the effect of plant essential oils on the control of chicken D. gallinae. Essential oils (Alisal) in rate of 0.25% on mites. activity and changes under stereomicroscope. Total lesion score at 12 DPT was improved. The present study concluded that in vitro combined plant essential oils have rapid and strong acaricide effect in contact sprays. In vivo skin health, and feather condition scores were improved at 4 days after treatment with completely stretched legs and white bead-like spots of oils accumulation on legs. Drinking water treated birds showed good results than spray treated group. Therefore, it is recommended to use combined plant essential oils in control strategies in poultry.

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refrigerated storage. In the present investigation solutions of chitosan (1 and 2%) and chitosan nanoparticles were applied for the casing of tilapia fish slices thereafter stored at 4°C for 15 days. Uncoated (control) and coated fish fillets pieces were examined intermittently for bacteriological parameters (Total bacterial count, Proteolytic bacterial count, Lipolytic bacterial count), quality parameters (pH, total volatile basic nitrogen (TVB-N), and thiobarbituric acid reactive substances, TBARS) and sensory features. 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.

ABSTRACT
Using natural preservatives has a probability to improve the quality and integrity of fish products. Such research investigated the antimicrobial and antioxidant effects of chitosan and chitosan nanoparticles. Nanochitosan (1 and 2%) were applied for the casing of tilapia fish slices thereafter stored at 4°C for 15 days. Uncoated (control) and coated fish fillets pieces were examined intermittently for bacteriological parameters (Total bacterial count, Proteolytic bacterial count, Lipolytic bacterial count), quality parameters (pH, total volatile basic nitrogen (TVB-N), and thiobarbituric acid reactive substances, TBARS) and sensory features. 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.


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.


DOI: https://dx.doi.org/10.36380/scil.2020.wvj32

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.


DOI: https://dx.doi.org/10.36380/scil.2020.wvj33

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 (IC50) 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.