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.
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.
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 arachnodermaparasites in birds.

**Key words:** Chickens, Ectoparasites, Ivermectin.
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


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 prevention 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.*
Bromelain, Chitosan, Efficacy, Goats, Nanoencapsulation, Proteolytic activity.

Mean exocrine activity of encapsulated bromelain in digestive organs of goat at different time points

<table>
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<th>Organ</th>
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<th>2 hr</th>
<th>24 hr</th>
<th>p-value</th>
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<tr>
<td>Rumen</td>
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<td>Duodenum</td>
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<tr>
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</tbody>
</table>

p-value: 0.001, 0.001, 0.001.
ABSTRACT

The African four-toed hedgehog is a small nocturnal mammal, characterized by a short-grooved 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 spermatogenic cells, Sertoli and Leydig cells, peritubular myoid cells, the testicular capsule, straight tubules as well as rete testis and vascular endothelium all additional role in the structural formation and maintenance of the blood-testis barrier during the process of spermatogenesis in the animal. It is concluded that α-SMA and S-100 proteins has high acaricidal effect in control of chicken D. gallinae.

Keywords: African four-toed hedgehog, Immunoreactivities, Spermatogenic cells, Sertoli cells, Leydig cells, Peritubular myoid cells, Testicular capsule, Straight tubules, Rete testis, Vascular endothelium.


During the storage period, 2% chitosan nanoparticles as a natural preservative can be utilized for the conservation of quality properties and expanding the shelf life of fish products. This is supported by the results showing 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. The use of natural preservatives, such as chitosan, is beneficial as it offers a higher antimicrobial activity, strong ability in preventing protein degradation, retarding lipid oxidation, accepted pH values, and delay in declining of sensory score compared to the control group. However, using 2% chitosan nanoparticles showed a better effect for bacteriological parameters (Total bacterial count, Proteolytic bacterial count, Lipolytic bacterial count, and Staphylococcus aureus count), quality parameters (pH, total volatile basic nitrogen (TVB-N), and thiobarbituric acid reactive substances (TBARS)) and sensory features.

The pharmacokinetic characteristics of moxidectin were investigated in the blood serum of dogs and cats. The study found that moxidectin was well absorbed into the systemic circulation and reached maximum concentration in the blood serum of dogs and cats after 4-10 days. After treatment with the drug, moxidectin was determined in the blood serum of animals after 12 hours, indicating its therapeutic effect for at least one month after the application of the drug. The pharmacokinetic study of moxidectin provided valuable information for its effective use as a treatment for arachnoses, entomoses, and intestinal nematodes in kittens, puppies, and small breed dogs and cats.

The anatomical location, histological features, and histochemical characteristics of the labial and zygomatic salivary glands were described in the present study. The glands were minor, compound, mixed tubuloalveolar glands. They were composed of both mucous and serous acini. The secretion of the glands (chiefly mucous) consisted of neutral mucins, acid carboxylated mucins, acid sulphated mucins, and proteolytic enzymes. The duct system of the glands was intralobular (intercalated and striated ducts) and interlobular ducts. The anatomical location as well as histological and histochemical characteristics were important for understanding the function of the glands and recognizing normal and pathological conditions. The glands were dissected and examined grossly. Samples of the glands were taken, processed, and stained using hematoxylin and eosin and Masson's Trichrome for their secretion as well as to give veterinarians knowledge during clinical examination of the oral structures of the labial and zygomatic salivary glands.
Abd-El Rahman Ahmed D, Ghanem N, Dessouki ShM, Faheem MS, Gad AY and Barkawi AH.

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

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.

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

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.