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Editorial Board

Message from the Vice Chancellor, University of Peradeniya

It is with great pleasure that I pen this message to mark the fourth Undergraduate Research Symposium organized by the Faculty of Veterinary Medicine and Animal Science, University of Peradeniya. The Faculty of Veterinary Medicine and Animal Science (FVMAS) has a unique and special place within the University system of Sri Lanka as it is the only institute in Sri Lanka that offers the Bachelor of Veterinary Science (BVSc.) degree. It continues to play a vital role in producing professionals in the field of Veterinary Medicine and Animal Science and has been instrumental in the recent developments in the Livestock and Animal Health sectors.

From its inception in 1948 and after its shift to Peradeniya from Colombo in 1952, the FVMAS has created a diverse set of professionals that play critical roles in companion animal, livestock, poultry, aquatic, zoo and wild animal sectors. Veterinarians are responsible for not only animal healthcare, welfare and economic production but also public health by having direct roles in controlling zoonotic diseases, food safety and farm animal production. Furthermore, veterinarians engage in a broad scope of research activities that are highly beneficial to the entire animal health and livestock sectors.

In preparation for this mammoth task that lies ahead of them, it is very important that undergraduates are exposed to this wide array of research enabling them to broaden their understanding of the real-world challenges that lie before them. It is imperative that these blossoming veterinarians are exposed to the field of research early in their careers. This forum provides the perfect platform for these students to present their findings in front of a distinguished scientific community and will hopefully act as a foundation for engaging in productive research and academic activities in time to come. It will also provide them with a space to interact with various distinguished personalities of the veterinary profession and allied sectors. I take this opportunity to congratulate the Dean, the staff of the FVMAS and the members of the organizing committee for organizing the fourth undergraduate research symposium of the FVMAS.

Prof. Terrence Madhujith
Vice Chancellor
University of Peradeniya

Message from the Dean, Faculty of Veterinary Medicine and Animal Science

I take great pleasure in writing this message for the Proceedings of the Undergraduate Research Symposium (UGRS) 2024. The Animal Production & Health Research Projects was introduced as a mandatory component in the former 4 year BVSc curriculum in the year 2000. This addition was brought about with the hope of introducing the students to the world of research and its multidimensional aspects at a basic level. We believe that such a pedagogic intervention would grant them the opportunity to learn how to design and carry out research at a basic level which would then provide a strong base for them to pursue their postgraduate research and future academic work. Likewise, it also has to be stated that engaging in research is imperative to ensure and promote the health and management of companion, wild and production animals.

It also must be stated that conducting a research study alone is not enough, but we must provide the students a platform to disseminate their work into the public domain as well. Therefore, the UGRS provides the students such a space where they can do so and engage in a critical scholarly debate about the work they had completed over the given time period despite the various constraints.

Due to being understaffed, supervising students' projects has become a serious problem at the Faculty. Hence, my sincere gratitude goes out to our dedicated academic staff members for supervising and guiding these students' projects and bringing them up to this standard despite their extremely busy schedules. Likewise, I would like to extend my gratitude to the organizing committee of the UGRS 2024 for their commitment to organizing this activity.

Finally, I would like to congratulate all our students for their hard work and hope this will motivate you to move forward in your careers.

Dr. A.W. Kalupahana
Dean
Faculty of Veterinary Medicine and Animal Science
University of Peradeniya

Message from the Keynote Speaker

Developing a Multidisciplinary Research Culture

S.H.P. Parakrama Karunaratne

Research is a methodical approach to inquiry aimed at describing, explaining, predicting, and controlling observed phenomena. Its primary goal is to advance knowledge and reach new conclusions. In the context of the Fourth Industrial Revolution, which is largely shaped by digital technologies, robotics, and artificial intelligence, it is crucial to foster a dynamic research culture. This culture must be driven by innovative ideas to address the socio-economic challenges that arise from this technological transformation. While Sri Lanka's research and development (R&D) activities once flourished, resulting in numerous innovations, our current attitudes toward research are insufficient to meet society's evolving needs. Curiosity has long been a powerful motivator for research. Curiosity-driven basic research is essential for developing applied research, innovations, and fostering economic growth. While some scientific breakthroughs emerge from painstaking, goal-oriented laboratory work, many are the result of serendipitous discoveries.

Solving complex scientific problems or creating new technologies often requires collaboration among diverse teams of researchers. These teams bring together individuals from different backgrounds, each contributing unique perspectives. This multidisciplinary approach is vital as it encourages researchers to step beyond their own fields and engage in interdisciplinary projects, drawing upon a variety of theories, methods, and expertise.

The outcome of high-quality research brings recognition to both individuals and institutions. Performance indicators such as the Hirsch Index (or 'h' index) and journal impact factors are widely used to assess the significance of research contributions. Publishing groundbreaking findings in high-impact journals and engaging in discussions through national and international research symposia are critical for advancing scientific knowledge and ensuring its application. Through these forums, research is disseminated and its impact is amplified, fostering further innovation and collaboration.

For veterinary graduates, there are abundant research opportunities available, whether they aspire to become academics or field practitioners. There is an increasing need for novel interventions to better understand the root causes of diseases, as well as to design and test new therapies. Research in the veterinary field is essential not only for improving the health of animals but also for safeguarding human health and preserving the environment. This interdisciplinary approach will continue to shape the future of veterinary science and its contributions to global well-being.

Prof. S.H.P. Parakrama Karunaratne
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Identification of Artifacts in Leishman-Stained Canine Blood Smears

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Examination of blood smears is an important laboratory aid frequently used to diagnose diseases in veterinary medicine. Different ways of blood collection, smear preparation and staining techniques are used in veterinary haematology. An artifact in a blood smear refers to any unexpected feature or irregularity that is generated during the preparation storage, staining or examination of the blood smear that may have the potential to misinterpretation of the blood smear. Standard laboratory procedures recommended for blood collection, smear preparation and staining help adequately preserve blood cells and reduce artifacts facilitating accurate disease diagnosis. The purpose of this study was to identify and classify various types of artifacts present in Leishman-stained canine blood smears prepared in the students' haematology laboratory of the Veterinary Teaching Hospital, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, to determine possible causes for these artifacts. For this purpose, artifacts present in 50 Leishman-stained blood smears were identified and classified and the possible causes for the presence of these identified artifacts were suggested. The most common type of artifacts found were background artifacts which were identified to seriously interfere with the interpretation of blood cell morphology sometimes mimicking haemoparasites. In addition, several red blood cell and white blood cell artifacts identified in the smears mimicked pathological changes. Examination artifacts were identified infrequently. The possible causes identified to produce the artifacts reported in this project include improper smear preparation techniques, improper staining techniques, and improper laboratory maintenance practices. Most of these artifacts were found to be avoided or reduced by following standard blood smear preparation, staining and handling techniques and proper laboratory management procedures. Also, this study has important limitations due to the small sample size and the absence of category-specific comparative analysis. To enhance the validity and reproducibility of outcomes in the field of veterinary hematology, these issues must be addressed in future research.

Keywords: Artifacts, Canine Blood Smears, Diagnostic Accuracy, Examination Artifacts, Leishman Stain

Ectoparasites in Wild Animals: A Potential Vector for Spotted Fever Rickettsia Transmission

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Ectoparasites are a significant concern in veterinary medicine because they cause discomfort, blood loss, allergic reactions, and transmit various diseases. Understanding external parasites in wild animals is crucial for studying ecological dynamics, biodiversity, and the transmission of zoonotic diseases, especially as human-wildlife interactions increase. This study aimed to address the lack of research on ectoparasites and their zoonotic potential in wildlife in Sri Lanka by morphologically identifying the genera of ectoparasites and screening selected ticks (n=5) for the presence of spotted fever rickettsia, a zoonotic pathogen. A total of 35 ectoparasites were collected from 30 wild animals that were presented to the Wildlife Unit of the Veterinary Teaching Hospital, University of Peradeniya. These animals included monkeys, deer, wild boar, mongoose, eagles, and golden palm civets. Only four (13.0%) of the wild animals had mixed ectoparasitic infestation. The ectoparasites identified included 14 ticks (40.0%), 14 lice (40.0%), 3 flies (8.57%), 2 fleas (5.71%), and 1 mite (2.86%). Morphological identification revealed different hard tick genera, which included *Haemophysalis* (50.0%), *Dermacentor* (14.28%), and *Ambylomma* (14.28%). Additionally, different lice genera were identified, including *Columbicola* (21.43%), *Linoganthus* (21.43%), *Ricinidae* (21.43%), *Pedicinus* (14.28%), *Menopen* (14.28%), and *Felicola* (7.14%). The flies, fleas, and mites belonged to the genera *Pseudolychia*, *Hippoboscidae*, *Psilopsylla*, and *Dermanyssus* accordingly. Three out of five ticks (60%) tested positive for spotted fever rickettsia nested PCR targeted the 17-kDa gene. These positive samples came from a barking deer, a mouse deer, and a mongoose. While the small sample size limits definitive conclusions, the study suggests that wild animals may serve as reservoirs for vector-borne bacteria. Increased wildlife-human interactions could elevate the risk of zoonotic disease transmission. The study recommends larger-scale research across diverse geographic locations in Sri Lanka to better understand the role of ectoparasites in the transmission of zoonotic pathogens.

Keywords: Ectoparasites, Rickettsiosis, Spotted Fever, Wildlife, Zoonoses

Acknowledgement: University Research Grant URG/2022/67/V

Evaluation of the Effectiveness of Ethanol as a Disinfectant against Mycobacteria Isolated from Diseased Freshwater Ornamental Fish

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Piscine mycobacteriosis is a chronic disease affecting a wide range of cultured freshwater and marine fish. As treating infected fish is not recommended, use of disinfectants is mandatory after depopulation of the affected stock. This study was conducted to evaluate the effectiveness of two different concentrations of ethanol against *Mycobacterium* spp. isolated from diseased ornamental fish from aquaria located in Kandy. Ornamental fish showing clinical signs suggestive of Mycobacteriosis were collected from six aquaria. Mycobacteria were isolated from internal organs and identified based on the acid-fast stain morphology, colony morphology on Ogawa egg medium and PCR amplification of the *rpoB* gene. Susceptibility of four selected isolates against 70% and 50% ethanol with one minute contact time was evaluated using standard disinfectant testing procedure with enumeration of viable counts. The effectiveness was evaluated based on the reduction of the bacterial viability after exposure to the disinfectant treatment. Even with a contact time of 1 min, both 70% and 50% ethanol showed effectiveness in inhibiting mycobacterial growth. Further, 70% ethanol was more effective than 50% Ethanol in terms of reducing *Mycobacterium* counts, achieving almost 100% disinfection. Further studies should be conducted to understand the effectiveness of ethanol against multiple pathogenic mycobacterial species *in-vitro* which will be important in disinfectant product formulation and preparation of them at effective concentrations for aquaculture.

Keywords: Disinfectants, Ethanol, Mycobacteria, Ornamental Fish

The Role of Darkling Beetles in Causing Chicken Anemia Virus Infection and Inclusion Body Hepatitis in Broilers**

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Poultry industry is an important, growing subsector in the livestock industry of Sri Lanka. Inclusion Body hepatitis (IBH) and underlying Chicken Anaemia virus (CAV) infection are two important diseases that have significant impact on the poultry industry in the country. This study was conducted to identify the role of the Darkling beetle and its larvae, found commonly in the farms with the above disease outbreaks as a carrier of these diseases. For the study, Darkling beetles and their larvae were collected from 6 commercial poultry farms in Kurunegala and Galle Districts where these diseases were reported. For the analysis, total DNA was extracted from homogenized beetles and larvae using the DNeasy® Blood & Tissue kit according to the manufacturer's instructions. Extracted DNA samples were subjected to conventional PCR for IBH and CAV separately and the PCR products were visualized in agarose gels. Commercial IBH and CAV vaccines were used as the positive controls and nuclease free water was used as negative controls. Out of the six samples tested, four samples were positive for CAV. However, all sixsamples were negative for IBH. According to these results, the Darkling beetle and its larvae were identified as a potential source of CAV transmission in poultry farms tested. In conclusion, findings highlight the potential for Darkling beetles to serve as reservoirs of infection, posing a continuous risk to flock health and underscoring the critical need for integrated pest management and biosecurity protocols to curb disease transmission in poultry farms. Thus, in addition to the current practice of vaccination against infectious diseases such as CAV, control of Darkling beetles can also be an important approach in controlling the disease.

Keywords: Chicken Anaemia Virus, Inclusion Body Hepatitis, Darkling Beetles, Disease Transmission

Development of an Immunodiagnostic Assay for *Toxocara canis* Visceral Larva Migrans

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The family *Toxocaridae* includes nematodes that commonly infect domestic animals, especially young ones. *Toxocara canis* infects dogs, while *Toxocara cati* infects cats. Both species are zoonotic, causing toxocariasis, which can manifest as visceral larva migrans (VLM) or ocular larva migrans (OLM). Diagnosis in humans is often done using immunodiagnostic kits, with detection of antibodies against excretory-secretory (ES) proteins of *Toxocara* being a reliable method. However, such diagnostic assays are not readily available in Sri Lanka and are expensive. Thus, the aim of this study was to develop a cheaper, yet reliable, dot-blot ELISA using ES proteins of *Toxocara* as the antigen. Faecal examination using salt flotation was performed on 15 dogs (both stray and owned) around the University of Peradeniya. Only 4 stray dogs under 6 months old (27%) were found to have toxocariasis. Eggs were harvested from faecal samples with high egg counts per gram (EPG), with a maximum egg recovery rate of 31.6%. The eggs were cleaned, embryonated, and hatched. Under optimal conditions, the hatching rate was 1.33%, but only 25% of larvae remained viable after seven days. Excretory-secretory antigens were collected over 14 days and freeze-dried for concentration. Due to the small volume of ES antigen, accurate concentration measurement was not possible. However, both dot-blot ELISA and immunofluorescence antibody assays (IFA) were developed. Serum samples from a child diagnosed with toxocariasis (positive control) and a neonate (negative control) were used to test the developed assays. Neither immunodiagnostic kit yielded positive results, likely due to insufficient ES protein or low antibody titers in the positive control. This study highlights the need for further optimization to improve the recovery of egg, larvae, and ES antigens. The development of cost-effective immunodiagnostic assays for toxocariasis in Sri Lanka is crucial and timely.

Keywords: *Toxocara*, Zoonoses, Excretory-Secretory-Proteins, ELISA, Immunoflourecence

Acknowledgement: University Research Grant URG/ 2022/67/V

Evaluating the Compliance Level of Selected Backyard Poultry Farms with National Organic Standards and the Occurrence of *Salmonella* in the Same Farms

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In the global market, organic poultry products are in higher demand than conventional poultry products due to their health benefits and sustainability. In Sri Lanka, SLS 1324: 2018 standard provides the directions as the national standard for organic production. Considering the criterion given in the standard, backyard poultry management systems appeared to be easily converted to organically managed farms. Backyard poultry production plays a significant role in Sri Lanka by providing an income, women's empowerment, enhancing nutrition, food security, and conserving the genetics of indigenous chicken. Hence, this study aimed to evaluate the level of compliance of backyard poultry farms, having 20 or more chickens, with the requirements stated in the national organic standard. An interviewer-guided questionnaire survey was conducted in randomly selected thirty backyard poultry farms linked to government veterinary offices in Colombo and Kalutara Districts. Additionally, a pooled fecal sample was collected to detect *Salmonella* because it is a critically important pathogen in determining the safety of poultry products. For the isolation and identification of *Salmonella*, One Health Poultry Hub protocol (protocol 1) and ISO standard protocol (protocol 2) were utilized to detect motile *Salmonella* species and any *Salmonella* species respectively. *Salmonella* isolates were confirmed by biochemical tests and colony Polymerase Chain Reaction (PCR). Results of this study indicated that all the studied backyard poultry farms achieved more than 70% compliance with SLS 1324:2018 in the context of management, biosecurity, housing, feed, health, and animal welfare requirements. Accordingly, the study implicated a strong potential for backyard farms to transition to organic poultry production with proper guidance to farmers. However, the study revealed that biosecurity and health factors negatively affect the transformation process. In the present study, the prevalence of *Salmonella* in backyard farms was 20%. Further, 10% of the farms were colonized with Motile-*Salmonella* indicating a zoonotic disease risk. Antimicrobial Resistance (AMR) profile using the disk diffusion method showed 100% susceptibility to Azithromycin, Cefotaxime, Gentamicin, and Trimethoprim/Sulfamethoxazole. Few isolates showed resistance to Ampicillin, Tetracycline, Ciprofloxacin and Chloramphenicol.

Keywords: Antimicrobial Resistance, Backyard Poultry Production, Organic Poultry Production, Food safety, *Salmonella*

Acknowledgement: UKRI GCFR One Health Poultry Hub (OHPH) Sri Lanka

Evaluation of Knowledge, Attitudes, and Practices of Farmers Towards Implementation of Biosecurity in Family Poultry Farming in Killinochchi District

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One of Sri Lanka's livestock subsectors with the quickest rate of growth is poultry. Meanwhile, family chickens and free-range hens are raised in villages, and government initiatives encourage these low-income communities. At the same time family and village chicken populations carry poultry diseases because of inadequate biosecurity and disease prevention efforts. This study aimed to explore the knowledge, attitudes, and practices (KAP) of family poultry farmers regarding poultry diseases, biosecurity, and vaccinations. The study, which surveyed 67 farmers in chosen regions of the Kilinochi district of Sri Lanka, revealed important knowledge gaps, especially concerning the causes, pathways of transmission, and possible effects of chicken diseases on people. The family poultry farmers (n=67) participated in the questionnaire-based study. The printed questionnaire consists of inquiries about KAP in their family poultry. Data were statistically analyzed. The findings unveiled that 55% of farmers are from the age range of 18-40. Most respondents were unfamiliar with biosecurity procedures. Out of the total responses, only 32.8% could define "biosecurity". Furthermore, just 44.7% of respondents agreed that family poultry might be dangerous to the health of the general public. Further, 53.7% of respondents had never vaccinated their birds. These results demonstrated the difficulties family poultry producers experience because of their inadequate knowledge of critical poultry management issues. To raise farmer awareness training and education initiatives are crucial. The workshop held on poultry nutrition, health, and biosecurity organized by the Sri Lankan Veterinary Association and One Health Poultry Hub has improved the KAP of farmers. The same questionnaire was given to the farmers who participated in the workshop got improve their KAP of family poultry. Also, the same questionnaire was given one year after the workshop to a few farmers (n=30) who participated in the workshop through a random sampling method to identify the effectiveness of the workshop. It showed that almost all farmers who have participated in the workshop got to know about biosecurity practices and, they are gradually implementing the biosecurity practices in their family poultry. The workshop offered valuable insights into the KAP of family poultry farmers regarding poultry biosecurity in the Kilinochchi District.

Keywords: Biosecurity, Family Poultry, Poultry Diseases, Poultry Farm Management, One Health

Survey on Veterinary Faculty Academic Staff Perspectives on Animal Euthanasia and its Integration in Veterinary Education

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Veterinarians need ethical, emotional, and technical readiness for animal euthanasia. This is often shaped by their undergraduate training. This study aimed to assess the perspectives of veterinary academic staff at the University of Peradeniya regarding animal euthanasia and its incorporation into the undergraduate curriculum. A structured questionnaire with close-ended questions was sent to 41 academic staff members, yielding 36 responses (87.8% response rate). The findings showed strong support for euthanasia as an ethical and humane option for animals in irreversible pain, with 97.2% of respondents agreeing. Binary logistic regression modelling revealed academic staff in clinical departments were more likely to perform euthanasia compared to those in non-clinical departments (7.88 odds, P = 0.011). Additionally, those with prior undergraduate euthanasia experience were more likely to perform euthanasia as academic staff (7.14 odds, P = 0.039), highlighting the critical role of practical training. Most respondents (62.9%) support providing hands-on euthanasia experience before clinical practice. Most of the staff (55.8%) believed euthanasia education should start in the first year and continue till the final year. Additionally, 96.9% support standardized euthanasia guidelines, underscoring the need for consistent decision-making practices. The study also revealed broad agreement (97.0%) on the need for training in compassionate communication with animal owners and 94% on addressing the emotional and ethical aspects of animal euthanasia. Furthermore, 88.0% supported incorporating cultural and societal attitudes toward euthanasia into the curriculum. In conclusion, the consensus among staff on euthanasia as an ethical and humane option, along with the value of undergraduate training, underscores the need to integrate its practical and theoretical aspects into the veterinary curriculum. This highlights the importance of preparing students to address euthanasia confidently and competently in their careers.

Keywords: Euthanasia, Curriculum, Sri Lanka, Undergraduate, Veterinary

Histopathological Grading of Cutaneous Squamous Cell Carcinoma of Domestic Cats

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Squamous cell carcinoma (SCC) is a common malignant tumor that arises from the squamous epithelium in the skin and is frequently reported among cats. In addition, cancer grading is vital for establishing the prognosis and directing patient treatment plans. SCC is not an uncommon finding among Sri Lankan cats with their higher population. However, there is limited published research available on feline cutaneous SCC tumor grading in the country. Therefore, the current study was aimed at developing a grading system to categorize the severity of reported SCC among cats. Accordingly, 18 SCC samples were subjected to histopathological evaluation based on the criteria such as number of mitotic figures, vascular invasion, cytoplasmic keratinization, and inflammatory response. Our results revealed no sex predisposition for SCC. Affected young cats showed a higher grade of tumor than the older cats. All sampled tumors exhibited at least moderate levels of histopathological aggression. Further, 88.8% of tumor samples were graded as Grade II while 11% of them were categorized as Grade III. Our data also showed a negative correlation between age and grade while a weak positive correlation between sex and the grade. Thus, our grading system could be a useful tool for predicting the clinical behavior of SCC in cats, aiding in treatment decisions and prognosis.

Keywords: Cat, Squamous Cell Carcinoma, Tumor, Tumor grading, SCC

Molecular Detection and Prevalence of *Mycoplasma synoviae* (Ms) in Selected Live Bird Markets in Western, Central and North Western Provinces in Sri Lanka

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Chronic respiratory disease (CRD) in the poultry industry is identified as one of the most important diseases leading to substantial economic losses. The current study is on avian Mycoplasmosis, one of the causative factors for CRD. Two major primary causative agents of Mycoplasmosis are *M. gallisepticum* (MG) and *M. syanoviae* (MS). Many countries deploy resources to detect and control Mycoplasmosis in poultry. This study aims to determine the prevalence of MS in selected live bird markets in Western, Central and North Western provinces using previously optimized and validated SYBR Green-based quantitative PCR in Sri Lanka. Previously published primers targeting the 16S rRNA gene were utilized to detect the presence of Mycoplasma spp. Furthermore, species-specific primers targeting the V1HA gene were used to detect MS. Melt curve analysis was deployed to assess the specificity and accuracy of the SYBR Green-based quantitative PCR. In total, 60 tracheal swab samples were collected from live birds in randomly selected live bird markets and farms in Western, North Western and Central provinces. Each swab sample was taken from 5 randomly selected birds in each location. Based on our study, the prevalence of Mycoplasmosis was (110/300), 36.66% and the prevalence of MS was (20/300), 6.66% in the studied locations. This study highlights the prevalence of Mycoplasmosis in poultry and warrants wider studies to assess the disease burden and control measures to prevent economic losses in the poultry industry.

Keywords: Molecular Detection, *Mycoplasma synoviae* (MS), Poultry Respiratory Diseases, Prevalence, Quantitative PCR

Impact of Administering Polyphenol-Rich Sugarcane Extract Through Drinking Water on the Egg Quality of Laying Hens**

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Polyphenols are a diverse group of naturally occurring compounds present in plants, recognized for their ability to protect living cells. Their potential to boost the health and productivity of laying hens has attracted growing interest in the poultry industry. This study aimed to assess the impact of supplementing drinking water with a polyphenol-rich sugarcane extract (PRSE) on the egg quality of Shaver Brown laying hens. A total of 120 hens, aged 43 weeks, were randomly assigned to 12 litter-floor pens across open-sided poultry houses. The hens received either 0% or 0.05% PRSE in their drinking water, with feed and water provided ad-libitum and standard commercial feed offered throughout the six-week trial. Egg quality parameters, including yolk colour, yolk height, albumen height, haugh units, and antioxidant properties (assessed using DPPH and FRAP assays), were measured at weeks 45, 47 and 49. The results indicated that PRSE supplementation led to a significant reduction in yolk colour during week 45 ($P = 0.001$), although no differences were observed in subsequent weeks. Yolk height, thick albumen height, and haugh units were unaffected by the treatment, while thin albumen height showed a trend towards reduction in the PRSE group at weeks 47 and 49 ($P = 0.05$). The DPPH assay revealed a significant increase in antioxidant capacity in the PRSE group at week 45 ($P = 0.02$), but no significant differences were found in the FRAP assay. Overall, the study suggests that PRSE in drinking water has a limited impact on egg quality, with only temporary effects on antioxidant capacity, indicating the need for further research to explore its long-term effects and potential benefits in poultry production.

Keywords: Polyphenols, Sugarcane, Antioxidant Capacity, Layer Hens, Egg Quality

Comparison of Microplastics in Faeces of Toque Macaques from Residential and Non-residential Locations**

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Microplastic pollution is a global environmental issue, affecting both aquatic and terrestrial ecosystems, particularly in areas with high human activity. This study quantifies and characterizes microplastics in the faeces of the endemic toque macaque (*Macaca sinica*), in residential and non-residential areas within the University of Peradeniya, in Peradeniya, Sri Lanka. A total of thirty faecal samples were collected, with fifteen each from residential and non-residential locations. Wet peroxide oxidation using 0.05 M Fe(II) solution and 30% H_2O_2 was performed to digest organic material in the samples. Density separation using a saturated NaCl solution followed by filtration of the supernatant using a membrane filter was used to isolate microplastics. These were quantified using a stereomicroscope and Fourier Transform Infrared Spectroscopy (FTIR) was used to identify the types of plastics. Findings revealed a significantly higher concentration of microplastics in the faeces of macaques from residential areas (generalized linear model, $P = 0.006$), with a mean of 4.1 ± 1 microplastics per gram (dry weight, dw) of faeces. This was approximately four times greater than the mean number in faeces of macaques from non-residential locations (1.0 ± 0.5 per gram dw). All detected microplastics were microfibers, and all were classified as polystyrenes by FTIR. Microplastics in faeces from macaques in residential areas exhibited a wider variety of colours, but the predominant colour was black in both locations (54% in residential; 78% in non-residential areas). There was no significant difference in microplastic numbers in faeces among male and female macaques (GLM, $P = 0.35$). These results show the impact of human-modified environments on local wildlife, emphasizing the urgent need for improved waste management practices to address plastic pollution. This study contributes to the literature on microplastic pollution in terrestrial environments and highlights the necessity of urgent action to protect wildlife from the harmful effects of microplastics, particularly in regions where human and wildlife habitats overlap.

Keywords: Fourier Transform Infrared Spectroscopy, *Macaca sinica*, Plastic Pollution, Polystyrenes, Sri Lanka

Evaluation of Management and Health-Related Factors of Backyard Chicken Farming in Selected Veterinary Ranges in Kandy District

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Backyard chicken farming plays a vital role in improving food security and nutrition in rural Sri Lanka. This study examines the management and health-related factors related to village chicken farming in the selected veterinary ranges in Kandy district. A questionnaire-based survey was conducted across six veterinary ranges: Gampola, Gangawatakoralaya, Galaha, Udunuwara, Thalathuoya, and Doluwa, covering 24 farms. Descriptive statistics revealed that 66.66% of farmers employed semi-intensive rearing systems, 75% used tap water, and 62.5% experienced predation issues. Calcium and vitamin supplements were provided by 12.50% and 25% of farmers, respectively, with 20.83% using both. A majority (62.5%) sought veterinary consultation, and 54.17% of farmers were female. Most farmers (66.67%) had primary education, and 62.5% had access to markets. The male-to-female ratio was higher than 1:6 in 62.55% of farms. reasons for chicken rearing included family consumption (41.67%), income generation (16.67%), and hobby (4.17%). Chi-square analysis identified significant associations between veterinary consultation and deworming practices ($p = 0.019$) and between education level and calcium supplementation ($p = 0.032$). No significant associations were found for other practices. These findings highlight the need for improved veterinary services and targeted education to enhance poultry management and support food security in the region.

Keywords: Village Chicken, Indigenous Poultry, Poultry Management Practices, Poultry Production, Poultry Farmers

Antibiotic Resistance in Enteric Bacteria Isolated from Feacal Droppings of House Geckos *(Hemidactylus frenatus)***

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Common House gecko, *Hemidactylus frenatus* carries many bacteria that can cause infections in humans. Further, there is the concern about the existence of antibiotics resistant bacteria in *H. frenatus* as they feed insects who have scavenging behaviour in contaminated environments. This study investigated the antibiotic resistance (ABR) profiles of enteric bacteria, particularly *Escherichia coli*, isolated from the fecal droppings of *H. frenatus* in selected geographic locations across Sri Lanka. Fresh fecal samples were collected from households in Kandy (n=27), Negombo (n=17), Galle (n=7), Habaraduwa (n=8), Tangalle (n=7), Katuwana (n=7), Bentota (n=10), and Aluthgama (n=8), as well as from community buildings, including a student accommodation facility and a Veterinary Teaching Hospital in Peradeniya (n=20). Samples were collected between April to May 2024, and processed within 24 hours of collection. Faecal samples were pooled, incubated in nutrient broth, and cultured on *E. coli* chromogenic medium. Antimicrobial susceptibility testing was performed using the Kirby-Bauer disk diffusion method according to availability of antibiotics, following EUCAST guidelines. A total of 21 enterobacterial isolates were obtained, including 12 tentatively identified as *E. coli*. Among these, 13 isolates (61.9%) demonstrated resistance to Cefuroxime, a second-generation cephalosporin. Notably, four isolates (19%) showed resistance to third-generation cephalosporins, including Ceftazidime, Cefotaxime, and Ceftriaxone, with one isolate resistant to all three. Resistance to Clavulanate-amoxicillin and Ampicillin was observed in 28.5% and 19% of isolates, respectively. All tested isolates were susceptible to Cefepime, Ciprofloxacin, and Sulfamethoxazole-trimethoprim. The findings indicated the potential role of house geckos as vectors for antibiotic-resistant bacteria to humans and pets, as they live in close proximity. Further studies with larger sample sizes and geographic diversity are necessary to fully assess the risk of transmission of ABR through house geckos and to inform public health strategies.

Keywords: Antibiotic Resistance, Antimicrobial Susceptibility Testing, *Hemidactylus frenatus*

Detection of CTX-M-15 Genotype among *Escherichia coli* Isolated from Chicken Meat and Edible Poultry Organs Collected from Retail Shops and Supermarkets in the North-Western Province of Sri Lanka

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Extended-spectrum beta-lactamase (ESBL) is an enzymatic agent, produced by gram-negative antibiotic-resistant bacteria strains such as *Escherichia coli*, or *Klebsiella pneumoniae*, which poses a significant threat to both public health and veterinary medicine. In Sri Lanka, chicken is the most consumed meat, while the North-Western Province has the highest poultry production. ESBL-producing bacteria are often transmitted through undercooked meat, complicate treatment, and contribute to economic losses in livestock production. Setting up surveillance systems is important for controlling AMR concerns. Several variations of the ESBL genes, like CTX-M-15, TEM-52, and SHV-12, are found in commercial poultry in different parts of the world. This study aimed to detect the CTX-M-15 gene, the most common ESBL gene in poultry and humans, using an optimized conventional PCR protocol. The total extracted DNA sample number was 250; out of which, 31 samples were phenotypically positive while others were phenotypically negative for ESBL. In previous research, phenotypical detection was identified through the double disc synergy test (DDST) and phenotypic confirmatory disc diffusion test (PCDDT). These methods enabled the phenotypical detection of ESBL production in *E. coli* isolates by observing the enhancement of inhibition zones due to the synergy between beta-lactam antibiotics and clavulanic acid. There were 6 (19.35%) isolates positive for the CTX-M-15 gene from 31 phenotypically positive samples. Phenotypically positive, but CTX-M-15 negative isolates probably must have other ESBL genes such as other CTX-M, SHV, or TEM genes. The findings of this study highlight the importance of routine diagnostic antimicrobial susceptibility testing for the appropriate choice of antimicrobial therapy.

Keywords: Extended-spectrum Beta-lactamase, *Escherichia coli*, CTX-M-15 ESBL Gene, Optimized Conventional PCR Protocol, Beta-lactam Antibiotics

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Analysis of Veterinary Drug Prices and Their Affordability for the Client

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Veterinary drug prices and their affordability for clients are important determinants of providing healthcare for animals in Sri Lanka. Therefore, this study collected data of the prices of some selected veterinary drugs in Sri Lankan market and in three other South Asian countries through online pharmacies to find out the lowest price of each generic preparation. The lowest price among these countries was used as the international reference price (IRP). Drug affordability was assessed using a questionnaire targeting 80 clients who visited a private veterinary clinic in Thalahena. The questionnaire consisted of 20 questions regarding general information of the client's background and drug affordability. The overall drug affordability in the questionnaire was asked to mark in a Likert scale in between "very affordable" and "very expensive". SPSS software was used for data analysis. A descriptive analysis was carried out to investigate the affordability of drugs. The price of a majority (78.57%) of the selected 14 generic preparations in Sri Lanka was higher than their IRPs. When considering the monthly income frequency distribution, most of the people who visited the clinic were having the wages between Rs. 100,000-299,999 (46%). A majority (31%) of the clients were spending Rs. 1,000-4,999 monthly for their pet's food and Rs. 1,000-4,999 for their pets' regular nutritional supplements. For many (65%) the expenses for medical treatment of their pets were with in Rs. 1,000-4,999 range at a single visit. Spending for pet food, regular supplements, veterinary services were higher in the clients with a higher income. Clients with an income of less than Rs. 50,000 had a limited ability to spend money on their pets' care. These results highlight how crucial it is to take income disparities into account when recommending policy for the cost of drugs and veterinary services. In order to ensure the effectiveness of veterinary services and to promote the health and welfare of pets, it is necessary that veterinary drugs and nutritional supplements are affordable for everyone.

Keywords: Sri Lanka, International Reference Price, Affordability, Drug Price, Income

Laboratory Confirmation of Infectious Bronchitis in Poultry Using N Gene Targeting Conventional One-Step RT-PCR

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Infectious Bronchitis (IB) is caused by the Infectious Bronchitis Virus (IBV), a member of the Genus *Gammacoronavirus* in the Coronaviridae family known for its high mutation rate and diverse genotypes. Infectious bronchitis remains a significant threat to poultry health and production worldwide, necessitating accurate and efficient diagnostic methodologies for its rapid detection. The prevalence of IB varies globally due to factors such as geographic location, poultry production systems, biosecurity practices, and vaccination strategies. That often results in sporadic outbreaks and continuous circulation of the virus, posing ongoing challenges for disease management. This research focused on utilizing the IBV N gene targeting conventional RT-PCR to identify the presence of IBV. For the study, deceased birds with history, clinical signs, and gross lesions indicative of IB were chosen from routine diagnostic samples submitted to the Veterinary Investigation Centre, Wariyapola. In this study, 12 birds were sampled within two months (April and May) in the year 2024. Infectious bronchitis viral RNA was detected in three of the twelve suspected cases (25%). The findings indicated that IB remains a prevalent issue among chicken populations in Sri Lanka, resulting in considerable financial setbacks for both broiler and layer sectors of the poultry industry. The implementation of extensive and effective surveillance programs for monitoring IBV prevalence in Sri Lanka is crucial for understanding disease trends, early outbreak detection, and implementing suitable control measures.

Keywords: Avian Infectious Bronchitis, Coronaviridae, N gene, Polymerase Chain Reaction, Reverse Transcription

Determination of the Effect of Body Condition Score (1-5 Method) on Density of *Malassezia Spp.* in the External Ear Canal of Medium to Large Breed Dogs

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Canine otitis externa is a common inflammatory condition affecting the external ear canal of dogs. It can significantly impact the quality of life in dogs, inducing discomfort, itching, and pain evidenced by clinical signs such as erythema, pruritus, malodour and ceruminous discharge. Obese dogs are at increased risk of developing chronic diseases. Body condition score (BCS) is a simple and easy method to determine the body fat and lean muscle mass in dogs. Recent research findings suggest that obese dogs are more prone to develop otitis externa than dogs with ideal body conditions. The current project was designed to determine whether there is an association between the BCS of dogs determined by a 5-point BCS scale and the density of *Malassezia spp* in the external ear canal of medium to large breed dogs presented to the Veterinary Teaching Hospital, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya for conditions other than otitis externa. For this purpose, the *Malassezia spp.* density of external ear canals of 59 medium or large breed dogs was tested. A statistically significant association between BCS and the density of *Malassezia spp* in the external ear canal was identified (left ear: $\chi^2 = 6.77$ $p = 0.001$, right ear: $\chi^2 = 8.5$, $p = 0.003$). Accordingly, overweight or obese (BCS 4/5) dogs had a higher density of *Malassezia spp.* in the external ear canal compared to dogs with ideal or lesser BCS (BCS1/2/3). In addition to BCS, age, shape of the ear pinna and breed were also identified to have statistically significant associations with density of *Malassezia spp.* density in the external ear canal. The findings were further confirmed by a hierarchical multivariate analysis. Overall, current findings suggest that higher BCS may predispose dogs to *Malassezia* otitis externa, but further studies are necessary for confirmation.

Keywords: Body Condition Scoring, Dogs, Obese, Otitis Externa, *Malassezia spp.*

Analysis of Knowledge, Attitudes and Practices (KAP) on Meat Safety among Slaughterhouse Workers, Meat Sellers and Meat Consumers in the Areas under Colombo Municipal Council

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Meat and meat products are major dietary components of an average Sri Lankan consumer. Yet, they are also the major cause of food borne illnesses. In Sri Lanka, poultry processing is done in fully or semi- automated facilities. But beef and mutton are mostly processed at small to medium scale meat processing plants with less automation and hygiene. This study assessed the knowledge, attitudes, and practices of abattoir workers, meat sellers, and consumers on meat safety in the Colombo Municipal Council area using separate questionnaires for each group. Abattoir workers, meat sellers, and consumers were assessed separately using distinct questionnaires. Responses were summarized with a 5-point scale, and means were calculated for each group. The overall means for abattoir workers' knowledge, attitude, and practices were 4.33, 4.43, and 4.30, respectively. For meat sellers, the means were 4.11, 4.66, and 3.65, while for meat consumers, they were 4.51, 4.64, and 4.11 respectively. The knowledge of abattoir workers on microbial contamination was relatively low while meat sellers had a poor knowledge on chemical and physical hazards to meat safety. Meat consumers had a poor understanding on how food borne diseases can transmit via healthy people. The attitudes of all three cohorts on meat safety assurance was satisfactory (>4.00) while all cohorts showed considerably lower means for meat safety practices. Abattoir workers had poor practices in wearing hygienic attire (boots, face masks) and cleaning clothes and equipment regularly. Meat sellers had poor practices in wearing uniforms, cleaning them, washing hands regularly, and using disinfectants on equipment. Meat consumers showed relatively better hygienic practices except the usage of same cooking utensils for meat and other food commodities. The major cause for such malpractices among all cohorts was the economic constraints. Thus, it is recommended to implement programs providing safety equipment and training, while also addressing knowledge and attitude gaps through public awareness and school education.

Keywords: Slaughterhouse, Meat Safety, Knowledge, Attitudes, Practices

Association between Iron Mobilization and the Progression of Chronic Kidney Disease in Dogs**

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Chronic Kidney Disease (CKD) is common in small animals, especially in canines. However, there is still limited information on the relationship between excess iron accumulation and the severity of CKD in dogs. This study aimed to fill this gap by using histopathological lesions and the degree of iron deposition to identify and describe the association between iron overload and its toxic effect in increasing the severity of CKD. Chronic Kidney Disease has multiple predisposing factors including glomerular disorders, infections, nephrotoxicity, and urinary obstructions. Iron overload is one of the major concerns in increasing the severity of CKD. This study offers a thorough examination of the toxic effect of iron in increasing the severity of CKD in dogs by combining histopathological lesions of cells and concentration of iron deposition in kidney and liver tissues. Prussian blue staining was used to measure the degree of iron accumulation along with Hematoxylin and Eosin stain. Iron deposition was predominantly found in the proximal and distal convoluted tubules, aligning with findings from human studies. However, a weak positive correlation was observed between iron deposition severity in the kidneys and liver. In conclusion, these results improve the knowledge of the above relationship and contribute to future directions related to management strategies that can potentially impact dogs' health.

Keywords: Chronic Kidney Disease, Iron Overload, Nephrotoxicity, Histopathology, Prussian Blue Staining

Occurrence of Gastrointestinal Parasites in Deer Species in National Zoological Gardens Pinnawala, and Trincomalee Area

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This study was carried out to determine the occurrence of gastrointestinal parasites in the wild deer population in the Trincomalee area of urban habitat and captive deer in National Zoological Gardens (NZG), Pinnawala. The deer population in NZG is regularly dewormed, and the wild population which was selected for convenient sampling is habituated in an urban area close to Trincomalee town. Thirty samples were collected from both locations. Samples collected from NZG included spotted deer, sambar deer, barking deer, and hog deer species, whereas the Trincomalee samples included only spotted deer faecal samples. Freshly voided samples were collected and stored in cool boxes in field situations until they were transferred to the laboratory and stored at 4°C. Salt floatation, McMaster counting technique, and sedimentation were performed to observe the helminth eggs and trematode eggs respectively. According to the findings of the study, an 86.67% occurrence rate was detected for helminth infestation among wild samples and a 56.67% occurrence rate showed helminth infestation among captive samples. The occurrence rates of Strongyle, Strongyloid, Toxocara, and Trichuris egg types are 60%, 13.33%, 10%, and 3.3% respectively for wild samples. But only Strongyle-type eggs (56.67%) were detected in samples from NZG. Even though Toxocara eggs were detected in this study, none of the previous studies mentioned Toxocara eggs in deer species. This could indicate contamination of faecal samples with faeces from other species, or these results could reflect passively ingested eggs passed in faeces. The reason for these findings is that we did not collect faecal samples per rectally. Further, 63.3% of samples contained trematode eggs in the wild population and 70% contained in NZGs. Eggs per gram count ranged between 50 to 200 in the wild deer population, which is a wide range compared to the NZG, which ranged between 50 and 100.

Keywords: Spotted Deer, Nematode Eggs, Trematode Eggs, Urban, Captive

Study of the Occurrence of Salmonellosis in the Small-Scale Broiler Farms in Nikaweratiya and Kotawehera Veterinary Ranges in Kurunegala District

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In Sri Lanka, the poultry industry is the most established among all livestock industries, and at present, Sri Lanka is self-sufficient in poultry meat production. Annual meat production in the country in the year 2022 is 228.53 ('000MT). However, many diseases and nutritionally related disorders affect the poultry industry. Salmonellosis with high morbidity and mortality remains a significant cause of economic loss in the poultry industry in Sri Lanka. *Salmonella* Pullorum and *Salmonella* Gallinarum are avian host-specific Salmonella that cause Pullorum disease and fowl typhoid, respectively. This study was carried out to understand the occurrence of Salmonellosis in small-scale broiler farms situated in Nikaweratiya and Kotawehera veterinary ranges in the Kurunegala district from 15th March to 10th April 2024. Definitive detection of these bacteria requires culture followed by biochemical analysis and serotyping. This study aimed to verify the presence of bacteria by culture and biochemical characterization. Samples (30 poultry droppings samples and 65 cloacal swabs) were collected from 30 broiler farms of different ages with a capacity between 500 and 2000 chickens per farm that are situated in two government veterinary ranges, Nikaweratiya and Kotawehera, in Kurunegala district. Isolation and identification of Salmonella were performed as described in standard methods. However, results revealed that all the collected samples were negative for Salmonella. Therefore, it indicates a 0% occurrence of *Salmonella* in the study population during the study period.

Keywords: Biochemical Tests, Broiler Farms, Poultry, Culture, Salmonellosis

Effect of Supplementing a Polyphenol-Rich Sugarcane Extract through Drinking Water on the Laying Hen Performance

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Polyphenols are a wide group of naturally occurring compounds found in plants and have the potential to safeguard living cells and have gained interest in the poultry industry for their potential to enhance the health and productivity of laying hens. The objective of this study was to evaluate whether the inclusion of a polyphenol-rich sugarcane extract (PRSE) in drinking water could improve the key performance indicators of commercial layers. A total of 120 Shaver Brown hens, aged 43 weeks, were randomly allocated to 12 litter-floor pens in an open-sided poultry house. The pens were divided into two treatment groups: one receiving 0% (control) and the other 0.05% PRSE in their drinking water throughout the study duration. The treatments were prepared by adding PRSE manually into the drinking water daily. The birds were given commercial layer feed and water ad-libitum throughout the study. Data were collected over a six-week period, and a randomized complete block design was used to analyze the data. The number of eggs produced, abnormal eggs, and mortality were recorded daily. Egg weights were measured at weeks 45, 47, and 49 by collecting all the eggs produced on the respective day from each pen. The results indicated that supplementing PRSE in the drinking water did not significantly impact weekly, bi-weekly or total hen-day egg production, hen-housed egg production and the egg weight, egg mass or feed conversion ratio. However, there was a trend toward significance in egg weight during the second week of the study period ($P = 0.06$). In conclusion, while the 0.05% PRSE supplementation did not lead to statistically significant improvements in laying hen performance, the potential benefits of polyphenols in poultry nutrition remain an area of interest.

Keywords: Laying Hen Performance, Polyphenol Compounds, Sugarcane

Bio Efficacy Test for Actellic 50EC (Pirimyphos-Methyl/500g/Iec) against *Alphitobius diaperinus*

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Litter beetle infestations, particularly by *Alphitobius diaperinus*, pose serious challenges to poultry farming by impacting animal health and farm economics. This study aimed to evaluate the efficacy of the insecticide Actellic 50EC in managing litter beetle populations under controlled laboratory and field conditions. In the laboratory experiments, petri dishes containing poultry litter were divided into control and treatment groups. The treatment group received Actellic 50EC at a concentration of 50 ml per 10 litres of water, with 130 ml of the solution applied per 100 square meters, while the control group received only water. Each group began with 90 beetles, and mortality and activity were observed over two weeks. The treatment group exhibited significantly higher mortality (90%) compared to the control group (27.7%), with 81 and 25 beetles dying, respectively. Field trials were conducted on a poultry farm with minimal mealworm infestations. Three groups, two treated with varying concentrations of Actellic 50EC and one control were studied. Beetle counts were recorded using quadrat sampling before and after treatment. Initial counts for the high-concentration group, low-concentration group, and control group were 3573, 2359, and 2572, respectively. After treatment, counts decreased to 318 and 528 in the high- and low-concentration groups, respectively, while the control group showed an increase to 4792. Mortality rates were significantly higher with the high-concentration treatment, highlighting its superior efficacy. Field trials were conducted on a poultry farm with minimal mealworm infestations. Three groups, two treated with varying concentrations of Actellic 50EC and one control were studied. Beetle counts were recorded using quadrat sampling before and after treatment. Initial counts for the high-concentration group, low-concentration group, and control group were 3573, 2359, and 2572, respectively. This study confirms that Actellic 50EC effectively reduces litter beetle populations both in controlled and field settings. Its consistent performance underscores its potential as a critical component of integrated pest management strategies, contributing to improved poultry health and productivity.

Keywords: Actellic 50EC, Beetle Mortality, Integrated Pest Management, Litter Beetle Infestations, Poultry Farming

Coprological Study on Gastrointestinal Parasitism of Wild Animals at Randenigala Wildlife Rehabilitation Unit, Sri Lanka

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Gastrointestinal parasites cause health problems and even death in captive animals, including raptors. The lack of data on the effect of gastrointestinal parasitism at wildlife rehabilitation centers pose significant challenges for veterinarians, wildlife rehabilitators, and conservationists working with captive animals. This study was carried out to determine the occurrence of gastrointestinal parasites in the wild animals that are being rehabilitated at Randenigala Wildlife Rehabilitation Unit. A total of ten fecal samples from raptors were collected along with nine fecal samples from other mammals at the rehabilitation unit. These fecal samples were subjected to qualitative and quantitative parasitological examinations to identify the presence of any parasitic eggs or larvae. Out of ten fecal samples from raptors, three samples were positive for parasitic eggs of nematodes (*Ascaridia spp., Capillaria spp., Strogyle spp.*) and protozoan oocysts (*Eimeria spp., Isospora spp.*). Out of nine fecal samples collected from other animals at the rehabilitation unit, five samples were positive for parasitic eggs, including parasitic eggs of nematodes (*Trichuris spp., Toxocara spp., strongyloides spp., strongyle spp.*) and Protozoan oocysts (*Cystoisospora spp.*). This study concludes that the occurrence of gastrointestinal parasitism in captive wild animals especially including raptors at the rehabilitation centers even though these animals do not show any obvious clinical signs suggesting sub-clinical infections. Therefore, prevalence and species-specific parasite spectrum are very important in providing specific treatment protocols and control measures against gastrointestinal parasitism in captive animals at rehabilitation centers for effective conservation and management of wildlife by using routine fecal analysis.

Keywords: Gastrointestinal Parasitism, Wildlife Rehabilitation Unit, Captive Wild Animals, Fecal Analysis

Designing Modified Horseshoes for the Medication Purpose

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The health and well-being of horses, particularly the condition of their hooves, are crucial aspects of equine care. Traditional methods of treating hoof ailments can be challenging, often requiring frequent handling, which causes discomfort to the animal and may delay the healing process. This research project aimed to design and modify horse hoof shoes specifically for efficient hoof medication. By incorporating an additional plate that securely holds medication, the design delivers targeted treatment directly to the affected hoof area, ensuring consistent application throughout the treatment period. The proposed shoe design includes a groove structure on the base of the hoof shoe to securely fix the removable medication plate, minimizing the need to frequently handle or disturb the horse during wound healing. This approach is expected to reduce the animal's stress and discomfort while accelerating the healing process by maintaining continuous contact with the treatment area. For this design, a 3D model based on standard hoof shoe measurements will first be created and modified to accommodate the medication plate. This model will be printed in plastic for testing and fit assessments, followed by the manufacturing of a durable metal version for real-world use. The medication-modified hoof shoe design holds the potential to revolutionize equine medical care by providing a practical, effective, and cost-efficient solution that enhances the quality of treatment. This method not only supports the well-being and faster recovery of horses with hoof-related conditions but also represents an advancement in sustainable practices within the equine industry by offering an alternative to costly, labour-intensive, traditional treatment methods.

Keywords: Hoof, Horse, Medication, Plate, Shoes

Morphological and Molecular Identification of Lice in Raptors at Two Rehabilitation Centers in Sri Lanka**

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Lice are parasitic insects that can impact the health and behavior of birds, like raptors, but there is still limited information on the diversity of lice in raptors in Sri Lanka. This study aimed to fill this gap by using both morphological and molecular techniques to identify and describe lice species found in seven different types of raptor species including the Brown Fish Owl (*Bubo zeylonensis*), Changeable Hawk Eagle (*Nisaetus cirrhosis*), Crested Serpent Eagle (*Spilornis cheela),* White-bellied Sea Eagle (*Haliaeetus leucoryphus*), Shikra (*Accipiter badius),* Serendib Scops Owl (*Otus thilohoffmanni*), and Brown Wood Owl (*Strix leptogrammica*) at Veterinary Teaching Hospital in Peradeniya and Randenigala Wildlife Rehabilitation Unit. From a total of 23 birds, three genera of chewing lice were identified: *Menopon spp., Strigiphilus spp. and Lipeurus spp.* Identification of molecular and morphological characteristics in lice revealed distinct genetic and morphological profiles from each other. Notably, *Strigiphilus* is recorded here for the first time in Sri Lanka. Molecular identification using the ITS2 gene verified these findings, with distinct bands corresponding to different genera. The study also highlighted host-specific patterns: *Menopon* was prevalent in Brown Fish Owls, *Strigiphilus* was exclusive to this species, and *Lipeurus* was found only in Changeable Hawk Eagles. Additionally, variations in body lengths among the lice specimens suggested possible host-specific adaptations. This research comprehensively examined lice diversity in Sri Lankan raptors, enhancing the understanding of lice-host relationships and contributing valuable insights for raptor health and conservation efforts. In conclusion, this study thoroughly examined lice diversity in raptors by combining morphological and molecular methods for accurate identification. The results improve the knowledge of lice-host relationships and contribute to understanding avian ectoparasites, which can potentially impact raptor health and conservation efforts.

Keywords: Insects, Lice, Morphological Techniques, Raptors, Molecular Techniques

Demographic Analysis of Buffaloes in Embilipitiya Veterinary Region

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Buffalo farming is one of the main livelihoods of farmers in the Embilipitiya veterinary range. However, the management practices of buffalo farming are understudied. This study aimed to investigate the current management practices of the Embilipitiya veterinary range. Effective buffalo management focuses on optimizing productivity, enhancing reproductive performance, and ensuring the animals' well-being. In the Embilipitiya veterinary region, buffalo farming is integral to agricultural and dairy production. This research investigated 10 buffalo farms including details about herd profiles, feeding management, housing management, production, cost and income, reproductive management, health, and diseases of buffaloes. The buffalo population varied from 20 to 60 animals in all the observed farms. All farms practice extensive management system. The freely available grazing lands in the area are used for grazing. The farmers do not practice supplementation of vitamins and minerals, and water is given only in the evening in most farms. The primary purpose of rearing is milk for curd production in the region due to its higher content of fat than cow milk. In 100% of farms, natural mating is practiced. The average milk production is less than 1 liter per day per animal due to a lack of nutrition. Calf diarrhea, pneumonia, and lameness are the major health concerns. The overall income from buffalo farming varied widely depending on the management practices and local market conditions. Educating farmers about proper management practices and the value of veterinary care, along with improved housing and nutrition was shown to enhance the overall productivity, reproductive performance, and the economy of the rural community.

Keywords: Animal Health Breeding Management, Curd Production, Reproductive Efficiency, Sustainable Farming

Investigating Gastrointestinal Helminths in Backyard Piggeries in the Puttalam District of Sri Lanka

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Backyard piggery in Sri Lanka is less popular but has the potential to grow and contribute to the national economy. However, one major challenge in backyard pig production is gastrointestinal (GI) helminths, which can negatively impact productivity. Since parasites in backyard piggeries have not been thoroughly studied in Sri Lanka, this study aimed to determine the prevalence and species of GI helminths in backyard piggeries in the Puttalam district. A total of 25 farms were investigated, with two pigs sampled from each farm, representing age groups of six weeks to six months, six months to one year, and one year to 1.5 years. Fifty freshly voided fecal samples were collected and analyzed using salt flotation and the McMaster technique to detect and quantify helminth eggs. Eggs were identified morphologically, and samples with high egg counts (Eggs Per Gram>500) were cultured. The Baermann technique was used to isolate L3 larvae, which were further examined morphometrically. Individual larval DNA extraction was performed for six selected L3 larvae, and PCR targeting the COX-1 gene was conducted. Egg identification revealed that 14 out of 25 (56%) farms had pigs infected with at least one type of GI helminth. Even on 9/22 (39.5%) farms where pigs had been dewormed, helminths were still present. The most common egg type was Strongyle (32%), followed by Ascaroid (6%), Trichuris (2%), and coccidial oocysts were present in 12% of the samples. Fecal culture yielded larvae with a mean length of 355.42 µm, but DNA from a single L3 larva was insufficient for PCR amplification. The study highlights gastrointestinal helminthiasis as a concern in pig production and raises concerns about anthelmintic resistance. The lack of detailed guidelines for the morphological identification of Strongyle larvae was a limitation of this research. Further studies are needed to assess both cross-sectional and seasonal prevalence to better understand the impact of helminths on backyard pig production.

Keywords: Backyard, Gastrointestinal, Helminths, Morphology, Piggery

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Lumpy Skin Disease in Cattle: The Prevalence in Jaffna District and Risk Factors Associated with Farm Level Outbreaks in Two Selected Veterinary Divisions**

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Lumpy Skin Disease (LSD), a highly contagious viral disease which primarily affects cattle is considered significant due to the high economic losses it can cause. Identifying the risk factors is essential to prevent the introduction and spread of this disease. The objective of this study was to identify the risk factors contributing to the transmission of LSD in the Tellippalai and Uduvil veterinary divisions of the Jaffna District. A questionnaire survey was designed to collect data on farm conditions and farming practices and data were collected through personal interviews with farmers. Associations between farm conditions, farming practices and the occurrence of LSD were analyzed using binomial logistic regression. The prevalence of LSD in the Jaffna district was 0.39% from January 2024 to April 2024 and the prevalence was high in Tellippalai, Uduvil and Nallur veterinary divisions and the values were 1.36%, 1.28% and 1.12% respectively. The results revealed that factors such as the grazing system (0.000) and the presence or absence of preventive measures at the farm entrance (0.000) were significantly associated with the occurrence of LSD. In contrast, factors such as veterinary division, management system, time of establishment of the farm, housing system, water source, breeding method, introduction of new animals within the last year, and usage of disinfectants for cleaning did not show significant associations ($p < 0.05$) with the occurrence of LSD. Based on these findings, sending animals for communal grazing may increase herd-to-herd transmission of LSD via insect vectors. Increased insect vector population following the rainy season and inadequate insect control measures in communal grazing lands could be responsible for the short-distance transmission of this disease. Additionally, disease preventive measures adopted by farmers at the farm entrance may help protect the herd from LSD. These findings underscore the importance of identifying risk factors to control the spread of contagious cattle diseases like LSD.

Keywords: Cattle, Communal Grazing, Insect Vectors, Lumpy Skin Disease, Risk Factors

Subclinical Mastitis in Dairy Goats: Prevalence, Threshold Somatic Cell Count and Effects on Milk**

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Subclinical mastitis (SCM) is a bacterial disease that leads to increased somatic cell counts and reduced milk quality in dairy goats. The aims of this study were to investigate the prevalence of SCM in Saanan goats in selected farms close to the University of Peradeniya, to establish a threshold somatic cell count, to identify the does affected with SCM based on the CMT scores and to compare the milk composition parameters between healthy and infected does. Samples were collected from 125 lactating dairy goats and milk samples were collected from both mastitis positive and healthy animals from which quality parameters were measured using lactoscan while bacterial isolation and enumeration were done following standard protocols. Data was analysed descriptively and the threshold somatic cell count was calculated using sensitivity, specificity and the Youden's index. The difference of means of each milk composition parameter of healthy and affected animals were compared using t-test. The overall prevalence of SCM in Saanen goats was 42.4%. *Staphylococcus aureus* was the most isolated bacteria whereas *E. coli* was poorly isolated. The highest Youden's index was obtained when the threshold somatic cell count was 500,000 cells/ml. Therefore, it was selected as the threshold to identify a SCM positive goat. There was no significant difference between the healthy and infected animals for any of the parameters checked. In conclusion, the prevalence of SCM is high in selected farms and the most common pathogen identified was *Staphylococcus aureus*. A somatic cell count of 500,000 cells/ml was set as the threshold level to identify the infected animals. Further studies are necessary to comment on the change of milk composition parameters in affected and healthy animals.

Keywords: Dairy Goats, Milk Quality Parameters, Prevalence, Subclinical mastitis, Threshold Somatic Cell Count

Designing and Development of an Abdominal Bandage for Horses after Colic Surgery

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This study focused on developing a cost-effective, functional bandage that enhances recovery by addressing the limitations of traditional abdominal bandages, which are commonly used to prevent complications such as incisional hernias, infections, and delayed wound healing. Our designed bandage combines cotton fabric for moisture absorption and an elastic band for adaptability. The elastic material allows for dynamic support and maintains compression even when the horse moves, while the cotton helps to absorb excess moisture to prevent skin allergies and infection. The bandage has double tightening methods to give strong support for various horse sizes and is easily usable for caretakers. The study also emphasized the bandage's cost-effectiveness, priced at seven thousand Sri Lankan rupees, which makes it a viable option for local equine practices in Sri Lanka. Further advantages of the new bandage design include enhanced compression, improved moisture management, and customizable fit, which collectively contribute to a safer and more efficient recovery process. The bandage is also reusable, easy to disinfect, and capable of supporting topical medication application, which further extends its therapeutic potential. Overall, the study concludes that this newly designed abdominal bandage offers significant improvements over conventional methods, providing effective support and reducing complications in equine postoperative care.

Keywords: Abdominal Bandage, Cost-Effective, Equine, Post Operative Care, Wound Healing

Detection of *Anaplasma platys* in Blood Samples Collected from Dogs in Kurunegala District Using PCR and iiPCR**

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Canine Infectious Cyclic Thrombocytopenia (CICT) is a tick-borne disease caused by *Anaplasma platys*, a Gram negative obligatory rickettsial organism which is of Veterinary importance. The disease is common around the globe, however, mainly reported in tropical countries. In Sri Lanka information on this disease is limited due to the availability of only few studies and the disease often go underdiagnosed or misinterpreted in clinical practice as Ehrlichial thrombocytopenia due to similar and nonspecific clinical signs. The primary purpose of this study was to determine the prevalence of *A. platys* among clinically healthy dogs in Kurunegala district with the secondary focus on studying the prevalence of the *Anaplasmataceae* family infections among clinically healthy dogs. *Anaplasma platys* prevalence was determined using PetNAD *A. platys* detection kit based on insulated isothermal PCR (iiPCR) technique whereas the presence of *Anaplasmataceae* family was detected using single step conventional PCR for 16s rRNA gene. In total 70 canine blood samples were collected covering 14 randomly selected veterinary ranges from 21 total veterinary ranges in the district. Initially, molecular detection of *Anaplasmataceae* family was performed and positive samples were screened later for *A. platys*. Of the 30 random samples tested, out of all 70 blood samples collected from the dogs in the Kurunegala district, 18 samples were found to contain the *Anaplasmataceae* family DNA, accounting for 60% total prevalence. These PCR products were observed either at 345 base pair size or 678 base pair size or both. According to iiPCR results, DNA of *A. platys* was detected in only one sample, accounting for the prevalence of 3.34%. The results indicate less prevalence of the pathogen *A. platys* and high prevalence of *Anaplasmataceae* family in the Kurunegala district, Sri Lanka, highlighting the importance of constant surveillance in diagnosing the CICT.

Keywords: *A. platys*, Canine Anaplasmosis, Canine Infectious Cyclic, Tick-borne Diseases, Thrombocytopenia

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Seropositivity of Leptospirosis among Feral Horses in Delft Island

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Leptospirosis, a widespread zoonotic disease caused by *Leptospira* spp., remains a significant public health concern, particularly in areas with high animal density. This study aimed to determine the seroprevalence of leptospirosis among feral horses in Delft Island, located in the Jaffna District of Sri Lanka. Serum samples were collected from 15 feral horses (pilot study) and the Microscopic Agglutination Test (MAT) was performed to detect anti-leptospiral antibodies. The results showed that eleven horses tested positive at a 1:100 dilution, indicating exposure to various *Leptospira* serogroups, including *Leptospira interrogans* serovars Canicola, Gripphotyphosa, Hardjo, Autumnalis, Shermani, Patoc, Wolfi, and Javanica. Among these, seven horses were seropositive to more than one serogroup, suggesting multiple exposures. At higher dilutions (1:200, 1:400 and 1:800), seropositivity remained high, with five, four and three horses testing positive for multiple serogroups respectively and suggesting a previous infection or vaccination. The study also identified two horses positive with a titre of 1:1600, suggesting recent infections, likely in the absence of vaccination -2/15 (13.33%). The predominant serogroups at this higher titre were *Leptospira* Canicola and Wolfi. These findings highlight the broad spectrum of serogroups circulating among the feral horse population, indicating exposure to a wide range of chronically infected individuals, either directly or indirectly. There is much consideration needed before rearing wild horses as domestic animals, because of the zoonotic threat to humans as well, as Delft Island is a small area with a high population and the stocking density of horses is also huge. Thus, the widespread occurrence of leptospirosis poses a significant risk. Further studies are needed to continue this project to a level at which more diagnosis and investigation can be done about leptospirosis.

Keywords: Delft Island, Feral Horses, Leptospirosis, MAT, Zoonotic Disease

Color Chart for the Measurement of Methemoglobin Levels in Field Cattle

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Nitrate poisoning is common in ruminants and typically results from excessive consumption of nitrates found in plants, water, or nitrate-containing fertilizers. Once ingested, nitrate is converted into nitrite, which is rapidly absorbed and leads to the formation of methemoglobin, a condition that inhibits oxygen transport and results in methemoglobinemia. In this study, a method was developed to assess methemoglobin levels in cattle under field conditions by evaluating the effectiveness of sodium nitrite in inducing the conversion of hemoglobin into methemoglobin. Fresh cattle blood samples were collected from the veterinary teaching farm at the University of Peradeniya and treated with varying concentrations of sodium nitrite. The percentage of methemoglobin was then determined spectrophotometrically using Evelyn and Malloy method. The associated red color values were analyzed using blood spot test and ImageJ1.37v software and obtained a color chart using Adobe Photoshop CS3 that ranged colors from red to dark brown according to the levels of methemoglobin. The results showed that cattle blood reached 100% methemoglobin levels at a concentration of 40 mM/L of sodium nitrite. The blood methemoglobin levels were estimated by obtaining a blood drop from cattle and compared with the developed color chart and was used to determine the correct dosages of antidote which is known as methylene blue. This study successfully developed a quick and efficient procedure for determining methemoglobin levels in field cattle. The technique will be useful during field applications in agricultural areas, or in veterinary clinics for the rapid diagnosis of methemoglobinemia in cattle that have been exposed to nitrate poisoning.

Keywords: Blood Spot Test, Color Value Analysis, Evelyn and Malloy Method, ImageJ Software, Methemoglobinemia

Assessing Acute Pain in Dogs: A Study Using the Colorado Pain Assessment Scale and the Analgesics Administered

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Evaluating acute pain in dogs is crucial for administering proper treatment and enhancing their well-being. However, accurate assessment of pain remains a significant challenge for veterinarians. This study was carried out in canine patients attending the Veterinary Teaching Hospital, University of Peradeniya (VTH) with conditions causing acute pain. The Colorado pain assessment scale was used to assess pain in 31 canine patients including all sex, breeds, and age groups, encompassing medical cases. Pain caused by surgery was not assessed. To accurately assess pain after surgery, it is important to include only patients who have not provided any analgesics. The study was aimed at assessing the pain-relieving medications used at the VTH for different types and degrees of pain after assessing the level of pain using the Colorado pain assessment scale. The non-steroidal anti-inflammatory analgesic (NSAID) meloxicam (09 patients; 29%) was the most frequently used analgesic in these 31 cases. For three (9.6%) cases, meloxicam was combined with the opioid tramadol (cases like road traffic accidents; RTA and otitis externa, Pain score range; 3-3.5). For five (16.1%) cases, only tramadol was given (cases like RTA, monkey bite, dog bite, Pain score range; 2-2.5). Meloxicam is an NSAID given orally at a dose rate of 0.2 mg/kg. For 3 cases, ketoprofen was given (9.6%) (Cases like RTA, torn in ear pinnae, Pain score range; 1.75-2). Gabapentin was the commonest analgesic given to neuropathic pain. For 5 (16.1%) cases, gabapentin was used as the sole analgesic. For two(6.5%) cases, gabapentin was given with the NSAID diclofenac sodium. For 4 (12.9%) cases, any analgesic was not provided. Male dogs were more commonly affected by acute pain than female dogs. Among the dogs injured by road traffic accidents, 58.33% were male and the rest were female. Crossbreed dogs were the most suffered dog breed by acute pain than other dog breeds. This study enabled the assessment of the acute pain of dogs attending the VTH and the usage of analgesics for a selected number of animals. Based on the findings, the most used analgesic types were NSAIDs (17 cases; 54.8%) Gabapentin, and tramadol.

Keywords: Acute,Analgesics,Assessment,Colorado, Pain

Evaluation of the Nutritional Composition in Different Stages of Black Soldier Fly Larvae

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The Black Soldier Fly Larvae (BSFL), *Hermetia illucens*, develops voraciously by consuming a wide range of organic waste and converting it into insect biomass rich in protein and fat. BSFL serves as a sustainable alternative source of protein and fat, holding significant potential for industries such as poultry, swine, and aquaculture. Additionally, BSFL can reduce industry-related environmental pollution by minimizing organic waste. Therefore, BSFL is beneficial in numerous ways. This study examined the fluctuations in the nutritional composition of BSFL between days 8 and 16 of development. The results indicate that crude protein levels gradually decrease over time, starting from a peak of 46.29% during days 8 to 10 of the development stage. Conversely, crude fat levels increase, reaching a peak of 37.68% during the development stage between days 14 and 16. The highest crude fibre content, 14.77%, was recorded between days 11 and 13, while the maximum total ash content of 8.67% was observed between days 8 and 10. These findings provide insights into the nutritional composition fluctuations during a specific stage of the BSFL life cycle and suggest optimal harvesting times based on the nutritional preferences. For maximum crude protein levels, it is not necessary to wait until the larvae are fully grown. However,to achieve the highest fat content, harvesting fully grown larvae is recommended. In conclusion, BSFL meal is a sustainable product rich in protein and fat, offering a viable alternative for protein and fat-rich diets.

Keywords: BSFL, Hermetia Illucens

Analysis of Knowledge, Attitudes and Practices (KAP) on Chicken Processing Plant Workers, Chicken Sellers and Chicken Consumers in the Area of Gampaha Municipal Council

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This study examines the knowledge, attitudes, and practices (KAP) related to meat safety among chicken processing plant workers, chicken sellers, and chicken consumers. The data were collected through face to face interviews of randomly selected 38 chicken processing plant workers, 19 chicken sellers and 72 chicken consumers in Gampaha municipal council area. The questionnaire assessed various sociodemographic factors and specific practices concerning meat safety. The findings revealed that chicken processing plant workers are predominantly male (81.58%) with a significant portion aged between 25-34 years. A majority has received some form of professional training (81.58%) and adheres to regular health check-ups, with 81.58% undergoing medical examinations every six months. However, practices such as not reporting illnesses or working while having skin diseases were observed, highlighting areas for improvement in workplace health protocols. Chicken sellers, similarly male-dominated (73.68%), exhibited varying levels of education, with a notable 52.63% having tertiary education. Professional training is less prevalent among chicken sellers (31.58%), and health certification is common (73.68%). Their practices indicate a reliance on customer safety measures, yet regular medical examinations are less frequent compared to chicken processing plant workers. Chicken consumers, predominantly Sinhala people (81.94%), exhibit preferences for purchasing meat based on freshness and cleanliness, while chicken being the most popular choice (68%). The majority of consumers have secondary or tertiary education, and their purchasing decisions are influenced by perceived meat quality and ease of access to retail outlets. The study highlights the critical need for enhanced training and stricter adherence to health and safety standards among chicken processing plant workers and chicken sellers. For consumers, the emphasis on freshness and cleanliness underscores the importance of maintaining high standards in meat handling and sales environments. These findings suggest that interventions in training, health certification, and public awareness campaigns could significantly improve meat safety practices across all groups involved.

Keywords: Knowledge, Attitudes and Practices (KAP), Sociodemographic Factors, Questionnaire, Public Awareness, Meat Safety

Detection of Antibodies Against Five Common Pathogens in Backyard Poultry in Hakmana, Kamburupitiya, Dikwella Veterinary Ranges

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Backyard poultry farms play a vital role in providing proteins to the diet and being a source of income for rural communities in a country. However, infectious diseases can cause significant economic losses to poultry farmers. Disease surveillance is an important aspect in controlling and preventing such diseases. Currently, there is no information on the presence and circulation of pathogens in backyard poultry farms in Matara district and little is known in relation to the potential risks of the spread of these pathogens to the commercial poultry sector. New Castle disease, Mycoplasmosis, Reo viral disease, Infectious Bronchitis and Infectious Bursal disease are some of the common diseases reported in poultry including backyard poultry. In order to detect the presence of these diseases in backyard poultry operations in Matara district, forty-nine blood samples were collected from unvaccinated birds in ten backyard farms in Hakmana, Kamburupitiya and Dikwella veterinary ranges. Serum was separated and tested for antibodies by ELISA test kits for the above-mentioned diseases. Antibodies were detected in 97.8% of birds for Infectious bursal Diseases, 91.8% for Mycoplasmosis, 85.7% for Reo Virus, 61.2% for the New Castle Disease and 38.8% for Infectious Bronchitis. Most birds had antibodies against more than three diseases that were tested. At least one bird had antibodies against all five diseases tested in all farms except for one farm where birds were positive for four diseases tested. These results show the presence and circulation of important pathogens in selected backyard poultry farms in Matara district. The findings provide important information which should be taken into consideration assessing the risk of pathogen transmission between backyard poultry farming and also in taking prevention measures. Even though the birds used for sampling in this study were not showing clinical disease, the presence of antibodies indicated the exposure to these pathogens suggesting suboptimal levels of performance of these backyard flocks. The results are crucial for implementing effective disease control measures and improving poultry health management strategies in the region.

Keywords: Backyard Poultry, ELISA, Matara District, Prevention

Molecular Detection of *Salmonella enteritidis* and *Salmonella typhimurium* in Selected Live Bird Markets and Broiler Farms in Western, Central and North Western Provinces in Sri Lanka

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Salmonellosis poses a significant global threat and economic loss to the poultry meat industry, prominently due to *Salmonella enteritidis* (SE) and *Salmonella typhimurium* (ST). Since conventional diagnosis techniques are robust and culturing and biochemical testing are challenging, molecular diagnostic techniques are pivotal. Therefore, this study aimed to facilitate rapid and precise diagnosis by amplification of specific Salmonella (S), ST, and SE genes using PCR; an already optimized protocol was followed. Positive controls comprising previously validated SE and ST DNA (Deoxyribonucleic Acid) samples ensure the protocol's accuracy. Samples were collected from live birds from poultry farms and live bird markets in the Central, Western, and North Western provinces. Cloacal swabs were collected from 5 randomly selected birds from each location. Sampling was done in 60 locations comprising layers (n=12) and broilers (n=48) in a total of 300 birds. Nucleic acid extraction was performed using a Bioflux kit, followed by conventional PCR (Polymerase Chain Reaction) with specific distinct solutions. Out of the total of 300 samples, 26.6% were positive for *Salmonella*, but none of the samples were positive for either SE or ST. In conclusion, this study marks the investigation of the prevalence of Salmonella in selected live bird markets and broiler farms in Western, Central, and North Western Provinces in Sri Lanka in 2024. This research addresses a critical gap in disease management, presenting a reliable tool for early *Salmonella* detection, contributing to the industry's resilience. This study indicates that other than ST and SE there are other *Salmonella* spp. serotypes. Therefore, future research should be directed towards identifying the prevalent *Salmonella* serotypes.

Keywords: Conventional PCR Assay, Molecular Detection, Prevalence, SE (*Salmonella enteritidis*), ST (*Salmonella typhimurium)*

The Effect of Sugarcane-Derived Polyphenols on the *in-vitro* Ruminal Digestibility of Hybrid Napier CO5 (*Pennisetum Glaucum* × *P. Purpureum Schumach*) and Rice Straw (*Oryza Sativum*)

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Identifying strategies to improve forage digestibility is crucial for low-cost dairy feeding programmes in regions with limited high-quality forages. This study aimed to evaluate the effects of the supplementary addition of sugarcane-derived polyphenols (SCDP) on the digestibility of locally available forages using an *in-vitro* ruminal fermentation technique. The experiment used Polygain™, a commercial sugarcane product, as the polyphenol source. A 2×3 factorial design included two SCDP levels (0% and 1% on a dry feed weight basis) and three feed types: Hybrid Napier CO5, a 50:50 mix of Hybrid Napier CO5 and rice straw, and rice straw alone. A 2×3 factorial ANOVA was used to assess the statistical significance of factor combinations on *in-vitro* ruminal gas production (GP), metabolizable energy (ME), and organic matter digestibility (OMD). Sugarcane-derived polyphenols, particularly at 1%, significantly improved GP, ME, and OMD across both high-quality (CO5) and low-quality (rice straw) forages. CO5 forage with 1% SCDP yielded the highest GP ($P = 0.006$), ME ($P = 0.011$), and OMD ($P = 0.006$), showing their potential to enhance ruminal digestibility and energy yield. Although the GP, ME, and OMD values for rice straw were lower than those for high-quality forages, the addition of 1% SCDP relatively improved these parameters compared to the 0% SCDP level, indicating that polyphenols can enhance the digestibility of low-quality forages ($P = 0.006$). Methane emission results showed numerical trends where the highest concentrations were observed with CO5 forage combined with 0% SCDP, followed by CO5 with 1% SCDP, and the lowest emissions were from the 50:50 Hybrid CO5 and rice straw combination with 0% SCDP. However, methane emission results were inconsistent, likely due to the lack of replicated data, making it difficult to draw definitive conclusions. Overall, the study suggested that SCDP hold promise for improving the ruminal digestibility of both high- and low-quality forages, making them a valuable tool in low-cost dairy cattle feeding programmes. Further research is needed to clarify the effects of methane emissions and to explore the broader implications of these findings.

Keywords: Dairy, Forage, Methane, Polyphenols, Sugarcane

A Preliminary Study on the Synchronization of Dairy Heifers in a Large-Scale Upcountry Dairy Farm

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Getting a heifer to calf at 27 months of age begins right from the day she is born. Every stage in the heifer-rearing process leading up to calving must be closely monitored to achieve the desired age at first calving. The farm aims to breed them between 15 and 18 months, making sure calving takes place between 25 and 27 months. The study was conducted on a farm in need of pregnant heifers to expand their milking herd for a newly built dairy project. There are many synchronization protocols available to synchronize heifers, each with varying success rates. Artificial insemination (AI) on synchronized heifers can be performed either based on observed estrous signs or at a fixed time. Timely ovulation in fixed-time AI (FTAI) can be achieved by using either Estradiol benzoate (OEB) or Gonadotropin-releasing hormone (GnRH). All heifers were rectally palpated and checked by ultrasound (US) scanning when necessary. Heifers that have attained an acceptable body weight and possess a reproductive tract of suitable size for their age were selected to be included in one of the synchronization protocols. The study was conducted in March 2023. Reproductive tract position (RTP) in the pelvic cavity was determined when heifers were rectally palpated. Body Condition Score (BCS) of all the treated heifers was also recorded. Heifer that had a Corpus Luteum (CL) was assigned to prostaglandin-based estrus synchronization and those having active ovaries were assigned to progesterone-based synchronization protocol (Progesterone + Estradiol benzoate). Animals injected with prostaglandin ($PGF_{2\alpha}$) were observed for heat signs and inseminated if they were in heat. Those who were not shown heat were injected with a second $PGF_{2\alpha}$ dose 14 days later and inseminated when they were in heat (n=47). Heifers that received intra-vaginal progesterone device (CuMate) at D0 were also injected with 2 mg of estradiol benzoate (n=24). The device was removed on D8 and injected 500 mcg of $PGF_{2\alpha}$. Two milligrams (2 mg) of estradiol benzoate were given on D9, and fixed-time artificial insemination was done on D10. The pregnancy was checked at 35 days post-insemination using ultrasound scanning. The results revealed that pregnancy rates in farm 1 and farm 2 for $PGF_{2\alpha}$ and progesterone treatments were 38.7%, 28.6%, 21.1%, and 66.7%, respectively. Based on these findings, it is evident that heifers can be successfully synchronized, leading to an acceptable conception rate after the synchronization process. The progesterone-based treatment protocol in farm 2 gave encouraging results and warranted further investigation. No significant associations were found between pregnancy status and synchronization protocols ($P = 0.100$) or between pregnancy status and RTP ($P = 0.171$).

Keywords: Artificial Insemination, Fixed-Time AI, Heifer, Synchronization

Feasibility of Implanting a Human Intrauterine Device into Monkeys to Control Their Population

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Human-monkey conflict in several areas of the country has grown into one of the most serious human-wildlife conflicts and is posing difficulties for both people and animals. It has impacts on agricultural production, assets, people, and monkey population. The scale of economic losses due to commercial and non-commercial crop damage and property damages caused by monkeys coupled with environmental implications following the deaths of monkeys make it an urgent issue needing permanent and sustainable answers. Several studies have been performed aiming to minimize this conflict, but a lasting, permanent, and sustainable solution is still needed. Community-based management (e.g., educational programs, awareness programs), habitat restoration (e.g., reforestation, wildlife corridors), non-lethal deterrents (e.g., noise-making, barriers), crop protection measures (e.g., fencing), and surgical methods (e.g., castration, ovariohysterectomy) have been extensively studied. Direct open surgical sterilization of males and females, translocation of monkeys from problem areas, and rigid endoscopic fimbriectomy are suggestions in this regard in the longer run with their own disadvantages. An integrated approach, including proper, responsible waste disposal, is anyway the centre for the success of most of these in the larger picture. As a potential permanent, low-cost solution, this study explored the feasibility of inserting human IUDs in monkeys using a controlled experiment. Initially, human IUDs, as they were, were inserted into captured female toque monkeys (*Macaca sinica*) that were in conflict under laboratory conditions. These 8 females were managed in the Veterinary Teaching Hospital. However, due to the larger size of these devices compared to the monkey's reproductive tract, along with high rates of uterine contractions and excessive secretions, all these IUDs were expelled. Therefore, the sizes of the female tracts were measured, and a suitable size for an IUD was decided. The current IUD thereafter was reduced in size in two stages, firstly from half of what was intended, and later the complete reduction in size was attempted. Subsequent to these size reductions, all 8 females were inserted with them, and X-rays were taken weekly to ensure the IUD retention. Two females with half the reduced size retained the partially modified IUDs, while the remainder six retained the latest modified (smallest) IUDs. These monkeys now have reached 4 months, and all of them have retained their IUDs according to X-ray evidence. No behavioural change in them had been observed after IUD insertion, according to daily observation.

Keywords: Human-Monkey Conflict, IUD (Intrauterine Device), Toque Monkeys (*Macaca sinica*)

A Survey on Factors Affecting Dead on Arrivals of Broiler Chickens to a Large-Scale Commercial Processing Plant in Sri Lanka

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Determining the causes behind the high level of DOA (dead on arrival) from poultry houses and other types of rejection conditions is essential to both animal welfare and reducing economic losses in the poultry industry. The present study assesses if transportation distance, duration, and stocking density affect the level of mortality pre- slaughter in broiler chickens. The data were obtained from multiple farms with varying distance, duration and stocking density of transport for the broiler chickens. In addition to simple descriptive statistics, regression analyses were done on a set of variables such as number of birds per crate, distance and time of transport and body weight of the chickens. Through the analysis it was possible to identify some predictors of DOA rates and poultry rejection. Our initial data suggested a strong, positive relationship between increasing transportation distance and DOA and strong relationship between mortality and transportation time. The most significant finding was stocking density that was strongly associated with increased DOA rates and other rejection conditions. Presumably, the greater the stocking density, the higher the stress, the lower the ventilation, and the greater the likelihood of physical injuries. Optimising stocking density reduces stress, ultimately improving welfare. Furthermore, body weight was analysed and found that heavier birds were relatively more likely to die due to transportation stress. These findings suggest that the body weight of chickens could be a useful management practice to mitigate negative travel outcomes. Key predictors identified in this study that influence broiler chickens' mortality and rejection during transportation are transportation distance, duration and stocking density. This research emphasises the need to consider areas for improvement in transportation practices to improve animal welfare and ameliorate the economic losses resulting from events during transportation. Recommendations for the broiler chicken industry are to minimise transportation distance and duration, optimise stocking densities and use strategies that are design for the body weight of broiler chickens to assist in alleviating their welfare and reduce mortality rates during transportation.

Keywords: Dead on Arrival, Mortality, Poultry Rejection, Stocking Density, Transportation Distance

In-vitro Antimicrobial Efficacy of Three Plant Extracts against Selected Fish Pathogenic Bacterial Species

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Antimicrobials are widely used in aquaculture both therapeutically and prophylactically. Overuse and abuse of antimicrobials could facilitate the development of antimicrobial resistance in aquatic bacteria. Incorporation of herbal material with antibacterial properties into fish feed is a promising solution to minimize the use of antimicrobials. This study was aimed to determine the antibacterial activity of locally available *Asparagus racemosus* (Shatavari) roots, *Moringa oleifera Lam* (Moringa) leaves, and *Cinnamomum verum* (Ceylon cinnamon) bark against Gram-positive and Gram-negative fish pathogenic bacteria. Three different concentrations of water extracts of fresh material, water and ether extracts of dry material of each plant were tested in vitro using agar-well diffusion method against field isolates of Aeromonas, Bacillus, Streptococcus and Pseudomonas from diseased fish. Tests were repeated thrice, and the mean zone of inhibition was calculated. Antimicrobial activity was determined based on the diameter of the inhibitory zone at the widest point. Compared to ether extracts, water extracts from fresh plant materials revealed great antibacterial activity. The water extract of fresh moringa leaves recorded the highest inhibitory activity against Aeromonas (26.0±0.5 mm), Bacillus (31.0±0.5 mm), and Streptococcus (32.0±0.5 mm). The water extract of fresh Shatavari root was active against Aeromonas (19.0±0.5 mm), Bacillus (17.0±0.5 mm), and Streptococcus (26.5±0.5 mm). Water extract of fresh cinnamon bark did not show any antibacterial activity against any bacterial strain tested. Ether and water extracts of dry powdered plant materials showed antibacterial activity only against Bacillus. Pseudomonas showed resistance to all water extracts of fresh plant materials. Antimicrobial activity was concentration-dependent. The findings suggest that these plant materials hold considerable potential for incorporation into fish feed as a therapeutic measure for managing bacterial diseases in aquaculture.

Keywords: Antimicrobsials, Fish, Shatavari, Moringa, Ceylon Cinnamon

Developing Black Soldier Fly Larvae as a Way To Manage Organic Waste at the University of Peradeniya

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This study examined the development of black soldier fly larvae (BSFL) using organic canteen waste at the University of Peradeniya, highlighting their potential for efficient and sustainable waste management. The research focuses on converting organic waste into high-nutritional animal feed, demonstrating the effectiveness of larvae in transforming waste into valuable resources. It details a comprehensive approach to breeding BSF, focusing on creating a controlled environment that maximizes production and minimizes environmental impact. The research includes the construction of a breeding house, ovi position structures, and a larval growth system, providing practical guidance for those interested in utilizing BSF for waste reduction and resource recovery. Two experimental setups were employed: (1) a controlled breeding house (50 cm x 50 cm x height =50cm) with ovi position plates and a waste collection container, and (2) an open system with ovi position plates and a waste collection container outside the breeding house. The breeding house was maintained with increased moisture content through water spraying and a small plant. Results indicated that BSF larvae efficiently convert digested waste into body mass. While the initial breeding house size proved ineffective, reducing it by half (50 cm x 50 cm x height =25cm) resulted in successful egg production. The open system also yielded eggs but required a longer time frame (30-40 days) compared to the controlled environment. A single gram of eggs yielded approximately 4 kg of maximum-sized larvae and one female can lay 50-100 eggs per each time. The complete BSF lifecycle took approximately 30-35 days and 15 kg of waste was required to growth of larval stage. This study concludes that rearing BSF is a valuable method for waste management and resource recovery. The efficient waste conversion capabilities of BSFL offer a sustainable alternative for producing high-quality animal feed. The study further highlights the effectiveness of a controlled breeding environment for optimizing BSFL production.

Keywords : Black Soldier Fly Larvae (BSFL), Controlled Breeding House, High Quality Animal Feed, Ovi Position Plates Waste Management

Investigation of Exposure to Pathogenic Leptospires Among Companion Dogs Vaccinated Against Leptospirosis Using Bacterial Isolation and Microscopic Agglutination Test**

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Companion dogs can become chronic carriers of *Leptospira* species once infected. They contribute to environmental contamination and enhance human leptospirosis and animal leptospirosis. According to literature from Sri Lanka, even dogs vaccinated against leptospirosis have been found to shed pathogenic *Leptospira* species through their urine. This study focused on isolating leptospires excreted in the urine of vaccinated companion dogs and detecting the infective serogroup of leptospires. The study involved collecting urine and serum samples from 21 dogs presented to the Veterinary Teaching Hospital at the University of Peradeniya due to various health concerns. All dogs were considered up-to-date with their leptospirosis vaccinations per World Small Animal Veterinary Association (WSAVA) guidelines. Urine samples were cultured in Ellinghausen McCullough Johnson Harris (EMJH) media and observed under the darkfield microscope weekly for the growth of spirochetes. DNA was extracted from the cultures where spirochetes were observed and subjected to the PCR targeting the *flaB* gene. Serum samples were subjected to microscopic agglutination test (MAT) consisting of 11 serogroups (Canicola, Shermanii, Wolfii, Patoc, Harjo, Javanica, Grippotyphosa, Bataviae, Tarrasovi, Pomona, Autumnalis) of pathogenic leptospires. Under the darkfield microscope, spirochete-like organisms were observed in three urine samples. PCR for the *flaB* gene of pathogenic *Leptospira* species tested negative for the same three isolates. Anti-leptospires agglutination antibodies were detected in 4/21, 2/21, and 2/21 samples against Canicola, and Autumnalis serogroups, respectively. A titer of 1:400 or higher was considered positive in this study. These findings suggest that companion dogs were exposed to a range of pathogenic leptospires other than vaccine serogroups. Further investigations should be conducted to assess commercially available vaccines' protective efficacy against canine leptospirosis in Sri Lanka. Also, regionally circulating *Leptospira* species or serogroups should be identified to understand disease epidemiology and transmission dynamics better.

Keywords: Canine Leptospirosis, Companion Dogs, Vaccination, Sri Lanka

Evaluation of Sperm Quality Following Cryopreservation and Long-term Storage of Cattle Semen**

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Bull semen cryopreservation is a vital technique in modern animal breeding, enabling the long-term storage and transportation of genetic material. It is important to evaluate semen quality from time to time in the process of long-term storage to ensure that optimum semen quality is maintained for a successful Artificial Insemination. This study aimed to evaluate the quality of semen following cryopreservation and long-term storage by accessing post-thawing motility, sperm membrane integrity, and live-to-dead ratio. Semen codes (bull numbers) 442, 443, and 445 from Friesian and 299 and 601 from Jersey were selected using records. Straws were manually selected by screening the bulk stock at the Central Artificial Insemination Station, Kundasale. Post-thawing motility test, HOS test, and live-to-dead ratio were performed. Initial motility and initial post-thawing motility were obtained from records and compared with the results of post-thawing motility after cryopreservation and long-term storage. Hyper Osmotic Swelling Test (HOS) positive percentage and live sperm percentage were compared with the industry standards. The results showed that the post-thawing motility after years of cryopreservation in all straws of all semen codes remained above 40%, the HOS positive percentages exceeded 58% in all samples in all semen codes and the live sperm cell percentage of almost all samples exceeded 50%, except for one sample each in semen code 445, 299 and 601. In conclusion, most of the semen straws have maintained optimum semen quality to perform successful AI after cryopreservation and long-term storage.

Keywords: Live-to-dead Ratio, Long-term Storage, Post-thawing, Motility, Semen Cryopreservation, Sperm Membrane Integrity

Assessment of the Nutritional Quality of Some Commercially Available Dry Dog Food Products in Sri Lanka

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This study evaluates the nutritional content of extruded dry dog food for adult dogs, with a focus on macronutrients protein, fat, and fibre and minerals including calcium (Ca), phosphorus (P), potassium (K), sodium (Na), magnesium (Mg), zinc (Zn), and copper (Cu). The research aims to assess these nutrient levels, compare them against established nutritional guidelines, and ensure that the Ca:P ratio meets dietary standards. The nutritional composition of macronutrients was determined through proximate analysis and Near-Infrared (NIR) spectroscopy, while mineral levels were measured using an atomic absorption spectrometer. The analysis revealed that all examined dog food met minimum recommended protein and fat levels, indicating general adherence to basic macronutrient requirements. However, not all dog food satisfied every guideline recommendation for essential minerals, with specific concerns regarding zinc and copper levels. In two cases, copper concentrations exceeded legal limits, while four varieties of food surpassed the legal threshold for zinc, three of these containing more than twice the recommended amount. Additionally, none of the varieties of dog food contained sufficient levels of calcium and phosphorus, and all exhibited an inappropriate Ca:P ratio, potentially posing risks for long-term canine health. These findings highlight the necessity for regular, detailed feed analyses in the pet food industry, particularly for elemental composition in raw ingredients before adding supplements, to prevent excess or deficiency in the final product. Monitoring the mineral composition of finished products can help ensure compliance with nutritional standards and safeguard animal health. This study highlights the importance of regular quality control practices to enhance the nutritional adequacy and safety of commercially available dog food.

Keywords: Guidelines, Macronutrients, Minerals, Nutritional Composition, Quality Control

Parasitic Dynamics of Integrated Farming Systems; Cattle and Goat in Walapane-Ragala Region in Nuwara Eliya District

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Gastrointestinal parasites generate significant productivity losses in cattle and goat husbandry globally. Similarly, in Sri Lanka, several productivity losses have been observed, primarily owing to gastrointestinal parasites. The parasite burden of cattle and goats varies based on their deworming history, age, gender, breed, and nutritional status. Integrated livestock farming is becoming popular in the country among farmer communities due to constant and continuous income. There are minimal studies conducted to see the gastro-intestinal parasite dynamics of these integrated livestock farms which rear many livestock species together. Therefore, the current study was designed to study the parasite dynamics of integrated livestock farms in Nuwara Eliya District, Walapane -Ragala region and identify the relationship between breed, age, and milk quantity of cattle with their parasite dynamics. In total, 30 cattle and 30 goat fecal samples were collected from the farms rearing the two species together. The results demonstrated that 66.67% of all tested cattle and 100% of all tested goats were infected with endoparasites, while both species carried strongyl eggs. However, according to the statistical analysis, the degree of gut parasitism in cattle was found to be independent of the age, breed or milk yield. Similarly, the degree of parasitism in goats was also found to be independent of age and breed. Further studies are needed to be performed to evaluate the relationship between the degree of parasitism with the above parameters with recruiting larger sample sizes.

Keywords: Gastrointestinal Parasites, Integrated Farming System, Parasitic Dynamics

Lumpy Skin Disease-Associated Histological Lesions Present in the Heart and Lungs in Cattle

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This research intends to study the lumpy skin disease-associated histological lesions present in the heart and lungs in lumpy skin disease-infected cattle. Lumpy skin disease is a viral disease caused by a lumpy skin disease virus which belongs to the family poxviridae. Lung, heart and skin samples were collected from 11 infected and five non-infected cattle from two abattoirs in Hambantota District. The major criteria used to clinically diagnose the disease were the fever, enlarged lymph nodes and typical skin lesions. All the collected samples were fixed in 10% formalin and processed by using the paraffin embedding technique, sectioned and then stained with Haematoxylin and Eosin. These prepared slides were examined microscopically. Lymphocytic dermatitis, vasculitis and ballooning degeneration of the epidermis were the most prominent histological lesions in the skin sections. Myocardial necrosis, lymphocytic aggregation and pericarditis showed in more than 80% of the heart sections. Pulmonary oedema, type 2 pneumocytic proliferation and lymphocytic aggregation showed in more than 80% of the lung sections. Based on the results of this study, it is presumptively diagnosed that the LSDV can affect the heart and lung causing viral myocarditis and inflammation of the alveoli. Further studies on the confirmation of LSDV might be useful for a better understanding of the pathogenesis of this viral disease.

Keywords: Lumpy Skin Disease, Cattle, Histopathology, Lesions, Hambantota District

Antimicrobial Sensitivity of Staphylococci Isolated from the External Ear Canal of Cats Presented to the Veterinary Teaching Hospital, University of Peradeniya

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Bacterial otitis externa (OE) is the most common ear condition in cats. This project was designed to characterize the antibiotic sensitivity of *Staphylococcus* isolates from the external ear canal of cats presented to the Veterinary Teaching Hospital, University of Peradeniya from May to July 2024. Sensitivity to methicillin and five other antimicrobials (co-trimoxazole, tetracycline, ciprofloxacin, chloramphenicol & gentamycin) were tested. Both external ear canals of 120 cats were sampled. Swabs were cultured on blood agar aerobically and bacterial isolates were identified using routine biochemical methods. Antibiotic sensitivity was determined using the disc diffusion method. The chi-square test with the Marascuilo procedure for comparing multiple proportions was used for data analysis. Most of the cats were crossbred (n=108), while the rest were Persian (n=12). The age range was from 2 months to 13 years. There were 64 males and 56 females. Forty-six of them were healthy, 28 had OE and 46 were presented with infections/conditions other than OE. A total of 145 bacterial isolates were obtained, representing 30%, 34.5% and 35.5% from the respective groups. Most isolates (n=135, 93%) were staphylococci, representing 39, 51 and 49 isolates from the respective groups. *Staphylococcus epidermidis* predominated in all groups (53%, 74% and 68% respectively) followed by *S. aureus* and uncharacterized coagulase-negative staphylococci. Of the 135 *Staphylococcus* isolates, 34 (25.1 %) were resistant to methicillin. Out of those 34 isolates, 10 were multidrug-resistant (MDR). The number of bacterial isolates and *Staphylococcus* spp. isolations obtained from cats with OE were significantly higher than healthy cats or cats with infections/conditions other than OE. No significant differences were observed regarding the methicillin resistance or MDR status between any groups.

Keywords: Multidrug Resistance, Otitis Externa, *Staphylococcus* Species

A Retrospective Study of the Occurrence of Suspected Cerebrospinal Nematodiasis Cases of Goats Presented to the Farm Animal Veterinary Teaching Hospital

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Cerebrospinal nematodiasis (CSN) is a neuropathological disease often causing life-long nurological complications in goats leading to productivity losses and recommendations for culling. Understanding the regional epidemiology of CSN is crucial for designing effective preventive and control programs. This retrospective study aimed to determine the temporal patterns of CSN occurrence in the Kandy district, using goats presented to the Farm Animal Veterinary Teaching Hospital of the University of Peradeniya as a representative cohort for the region. Clinical records of 5,254 goats (Mean age of 18 months and standard deviation of 13 months) available from 2016 to 2023 were used in the descriptive epidemiological analysis. The overall annual prevalence of suspected CSN cases was low, averaging 5.4% across the study years. Seasonal trends were evident, with two distinct periods of increased prevalence: February to May and July to October. The higher occurrence between February and May, peaking in March and April, coincided with the region's convectional rainfall episodes. The subsequent reduction in rainfall from May to July corresponded with a decrease in CSN cases. A secondary rise in CSN prevalence from July to October, although lower than the earlier peak, was observed alongside increased rainfall during these months. The findings suggest that rainfall patterns significantly influenced the temporal distribution of CSN, likely by affecting mosquito populations, the intermediate hosts for *Setaria digitata*. These insights emphasize the need for targeted disease prevention strategies, including strategic deworming and farmer education on mosquito control.

Keywords: Cerebrospinal Nematodiasis, Epidemiology, Goats, Rainfall, Sri Lanka

Antibiotic Susceptibility among *Escherichia Coli* Isolated form the Faeces of Wild Animal Undergoing Rehabilitation

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Escherichia coli is a commensal bacterium in human and wild animals. Veterinary teaching hospital University of Peradeniya was selected for this study. Fecal samples were collected from wild animals undergoing rehabilitation. Fifty-four (54) fecal samples were collected from 27 animals by using autoclave cotton swabs. All animals were already admitted for rehabilitation or treatment at the time of sampling. Each animal was sampled twice. Rectal swabs were spread on Mac Conkey agar and incubated at 37`C under aerobic condition for eighteen hours. Then three pink, non-mucoid, smooth, lactose fermented colonies were subcultured on Mac Conkey Agar and incubated for 18 hours. *E. coli* identity was confirmed with standard biochemical tests and positive sample frozen in brain heart infusion broth containing glycerol until antibiotic susceptibility test was performed. Rapid preliminary antimicrobial susceptibility testing was performed by plating the bacterial isolates on Muller Hinton agar containing antibiotics at EUCAST MIC breakpoints. Six antibiotic classes were used for this study including ampicillin(8mg/l), enrofloxacin(0.5mg/l), sulfamethoxazole and trimethoprim(8mg/l), co-amoxiclav(8mg/l) and oxytetracycline(0.5mg/l), according to the MIC breakpoint concentration given within parentheses. After 18 hours of incubation, if colonies present that antibiotic is resistance to *E.coli*. If colonies are absent that antibiotic is susceptible to *E.coli*.Out of the 162 isolates, 54 isolates were indole negative and not use for further analysis. Therefore, 108 isolates were used for the antibiotic sensitivity test. Highest prevalence of resistances was observed for cephalexin (80.56%) and ampicillin (78.70%). Lowest resistance was observed in Co-amoxiclav (25.93%). This study revealed that 75 isolates out of 108 have multi drug resistance. MDR rate is 69.44%. Highest combined resistance was observed for (AMP+CEP+COT+OTC) combination. The results revealed a concerning level of antibiotic resistance among the *E. coli* isolates from wild animals undergoing rehabilitation or prolonged treatment. Furthermore, the study highlighted a significant issue with multi-drug resistance (MDR) showing an MDR rate of 69.44%. The high rate of MDR highlights the urgent need for ongoing monitoring and the development of strategies to mitigate the spread of resistant bacteria in wild animal populations, which can have implications for both animal and human health.

Keywords: Antimicrobial resistance, Multi drug resistance

Macrophage- Mediated Collagenolysis as a Mode of Tumor Metastasis in Squamous Cell Carcinoma in Cats

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Feline Squamous cell carcinoma (SCC) is a malignant tumor arising from epidermal keratinocytes, predominantly affecting the skin of cats exposed to chronic ultraviolet radiation, particularly on sparsely haired or depigmented areas. Despite its prevalence, the exact mechanisms by which SCC is metastasized remain poorly understood. Macrophages, specifically tumour-associated macrophages (TAMs), are known to play a crucial role in the tumor microenvironment by facilitating tumor growth, angiogenesis, and metastasis. However, the precise role of TAMs in promoting metastasis of cutaneous SCC remains unclear. This study investigates the involvement of macrophages, particularly TAMs, in collagen degradation within SCC lesions in cats, with the goal of understanding their role in tumor invasion. To explore this, twelve skin biopsy samples (n=12) were collected from the ears and noses of cats diagnosed with SCC, constituting the test group. Six additional skin biopsies (n=6) from the ears and noses of apparently normal cats, obtained during routine necropsies, served as the control group. All samples were fixed in 10% neutral buffered formalin, processed, embedded in paraffin, sectioned at 3 μm, and stained with Hematoxylin and Eosin (H&E) for histopathology and Masson's Trichrome for evaluating collagen content and degradation (collagenolysis). Using ImageJ software, the extent of collagenolysis was measured on Masson's Trichrome-stained sections, while macrophage density in the collagenolytic areas was quantified under high-power fields. Statistical analysis with a sample *t*-test revealed that the test group exhibited a significantly greater area of collagenolysis ($P<0.05$) than normal tissue, and the number of macrophages within these regions was markedly higher in the test group ($P<0.05$). This increased macrophage density in collagenolytic zones suggested that TAMs may facilitate collagen breakdown, promoting tumor cell invasion and metastasis. These findings implicate TAM-induced collagenolysis as a potential pathway for metastasis in feline SCC and highlight the therapeutic potential of targeting TAMs to mitigate tumor spread. Further research into TAM activity in SCC could deepen our understanding of metastatic mechanisms, providing insights into novel approaches for controlling cutaneous tumor metastasis.

Keywords: Collagenolysis, Metastasis, Skin Biopsy, Squamous Cell Carcinoma (SCC), Tumor Associated Macrophages

Assessment of the Efficacy of Using Canine Plasma-coated and Albumin-coated Glass Slides for Urine Sediment Cytology of Dogs with Urinary Tract Diseases**

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Urine sediment cytology is an important part of a complete urinalysis. It is a convenient and economical method for diagnosing many urinary tract diseases in dogs. Although wet mount urine sediment analysis is useful as a primary diagnostic aid, it does not allow precise identification of cells and organisms. Cells and organisms present in urine can be more easily and accurately visualized in stained smears prepared from urine sediments. Poor cell retention and cell preservation have been identified as disadvantages of using naked glass slides for urine cytology. Although coated slides such as polylysine-coated slides are useful alternatives for naked sides to improve the cell yield and preservation of cells, high cost of them make it unfeasible for routine use. The current research investigated two alternative cost-effective slide coating methods; egg albumin and canine plasma, that can be used to improve urine sediment cytology using 30 samples. Both coating methods were statistically compared to naked glass slides with regard to the cellularity, clarity of the cell morphology and the degree of the background staining using Kruskal-Wallis H test. According to the results, both coating methods are statistically significantly superior to naked glass slides in terms of cell retention (albumin-coated H=3.9836, p=0.046, plasma-coated H=4.2536, p=0.039). A minimum background staining was present in plasma-coated slides which was not significantly different from the background staining of naked slides (H=0.6374, p=0.4). Albumin-coated slides produced a prominent background staining compared to naked slides (H=4.6274, p=0.03). Preservation of the cellular morphology was superior in plasma-coated slides than naked slides ((plasma-coated H=14.1019, p <0.001) and cellular preservation was not significantly different from naked slides in albumin-coated slides (H=1.0256, p=0.31).

Keywords: Albumin-coated Slides, Canine Plasma-coated Slides, Canine Urinary Tract Infections, Polylysine Slides, Urine Cytology

Hematological Analysis of Raptors from Randenigala Wildlife Rehabilitation Unit**

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Hematology is the study of blood and blood disorders. Haematological analysis is frequently used to diagnose diseases and determine therapeutic efficacy. The haematological characteristics of four raptor species crested serpent eagle (*Spilornis cheela*), white-bellied sea eagle (*Haliaeetus leucoryphus*), changeable hawk eagle (*Nisaetus cirrhatus*), and brown fish owl (*Ketupa zeylonensis*) that are being rehabilitated at the Randenigala Wildlife Rehabilitation Unit were analysed in this study. Fifteen blood samples were obtained from eagles and owls, and various parameters were examined, including RBC count, WBC count, haemoglobin concentration, haematocrit, differential count, platelet count, MCV, MCH, and MCHC. Additionally, cell morphology was also examined by light microscopy using peripheral blood smears stained with Leishman stain. Slides were inspected and captured under a camera-equipped microscope. Statistical parameters were calculated including mean, standard deviation and range of cell lengths and widths. One sample t-test was used to compare the sample mean to the known population mean. The results were compared among samples and to the established reference values. Haematology analysis revealed that most of the parameters were similar among the different raptor species with some notable differences. Morphological examination identified size of the cells, size, shape and colour of the granules and morphological variations among cells. There were notable differences between results of the study and the established reference ranges. Blood parasites were identified from six bird samples. Among these, four samples were from brown fish owls and two were from changeable hawk eagles. The results underscore the need for regular parasitological screenings, along with morphological and hematological monitoring, to guarantee the survival and effective recovery of these raptors.

Keywords: Blood Parameters, Cell Morphology, Haemoparasites, Hematology, Raptors

Management Practices of Medium and Large-scale Goat Farms in Kandy District and Pregnancy Rates of Goats Synchronized with CIDR or Sponge

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Goat farming in Sri Lanka has a greater potential for expansion, however written information about medium and large-scale goat farms in Kandy district is limited. The present study was conducted with the objective of characterization of goat management practices in the medium and large-scale farms in three selected veterinary regions in Kandy district and to analyse the efficiency of the use of intra-vaginal devices in goat synchronization in large scale goat farm in the upcountry. A questionnaire was administered in four goat farms in Galaha, Udunuwara and Gampola veterinary ranges. The questionnaire included the herd profile, types of breeds, housing systems, nutritional management, reproductive management, health management and production details. The four farms were intensively managed farms and natural breeding method is used to breed their animals. Saanen, Jamnapari, Alpine and their crosses are the main breeds. The dairy goats, heifers, kids and bucks were in the herd. Vitamin and mineral supplementation and TMR are fed in the visited farms. Weight of the mature animal is 35 kg approximately. All goats were managed using slatted houses. The daily milk production is 1.5-2 litres per animal. Pneumonia and the diarrhoea are the main health challenges. Seventy-Six clinically healthy goats were scanned and confirmed as non-pregnant for the study. Sponges (n=9) and CIDR (n = 67) were placed in goats. The devices were removed after 16 days, and 300 IU PMSG was administered, and artificial insemination (AI) was done after two days. After 35-45 days of AI pregnancy was checked using transrectal ultrasonography. The pregnancy rate of goats who were synchronized with CIDR and sponges were 44.6% and 25.0 % respectively. The pregnancy rate of the total synchronization programme is 40.8%.

Keywords: Controlled Internal Drug Release (CIDR), Efficiency, Estrus Synchronization, Goat Management, Sponges

Acknowledgements: University Research Grant (URG/2023/43/V)

Analysis of Knowledge, Attitudes, and Practices (KAP) Towards Meat Safety and Hygiene among Slaughterhouse Workers, Meat Sellers, and Meat Consumers in Kandy Municipal Council Area

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Meat safety is a critical global public health concern, as contamination with harmful pathogens or chemical residues can pose serious risks to consumer health. It has been identified that slaughterhouse workers, meat sellers, and consumers also have a significant role in ensuring the safety of meat. This study aimed to assess the knowledge, attitudes, and practices (KAP) of slaughterhouse workers, meat sellers, and consumers on meat: beef and mutton safety. A total of 10 slaughterhouse workers, 10 meat sellers, and 40 meat consumers in the Kandy Municipal Area were selected for the study. Separate questionnaires were used to assess the levels of knowledge, attitudes, and practices related to meat safety and hygiene in each group. Among the three cohorts, in particular, meat sellers exhibited the lowest levels of knowledge, attitudes, and practices concerning meat safety. These results highlight a pressing need for improvement in KAP related to meat safety across all three groups, with a special emphasis on enhancing practices among meat sellers. The study underscores the critical role of education and training in promoting safe meat handling practices among slaughterhouse workers, meat sellers, and consumers. Improving the understanding of proper handling, storage, and cooking techniques among stakeholders in the meat industry will immensely help in preventing contamination and ensuring the safety of meat products.

Keywords: Attitudes, Consumers, Knowledge , Meat Safety, Meat Sellers

Evaluation of Fungal Contamination of Poultry Feed in Ratnapura District**

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The poultry industry in Sri Lanka faces significant challenges due to feed insecurity and safety issues. The high cost of feed and frequent contamination of locally produced feed with mycotoxins or fungi are major concerns that can lead to a range of health problems in poultry, including immunosuppression, reduced growth rates, and decreased egg production. Common mycotoxin-producing fungi include *Aspergillus*, *Fusarium*, and *Penicillium* species, which can proliferate under favorable conditions such as high moisture and elevated temperature levels. Sri Lanka's warm and humid climate create an environment that is particularly conducive to fungal growth, making the regular monitoring of feed quality essential. Additionally, the poultry sector is a notable contributor to the national economy, highlighting the importance of maintaining high feed quality to ensure productivity. Therefore, it is crucial to frequently assess poultry feed for potential contamination. In response to these concerns, the current study was conducted to evaluate the fungal contamination of poultry feed in the Ratnapura district. Poultry feed samples were collected from 28 different locations across the district and were cultured on Sabouraud dextrose agar medium at 25℃. Fungal species were identified based on their distinct morphological features and microscopic characteristics. The results indicated the presence of *Aspergillus niger*, *Mucor spp.*, *Rhizopus spp*., *Penicillium spp*., *Fusarium spp*., and *Aspergillus parasiticus*. Furthermore, 52.94% of the samples showed bacterial contamination, indicating the use of substandard feed among small-scale poultry farmers. This warrants further evaluation of the feed for mycotoxins. Additionally, the enforcement of stricter regulations to ensure the quality of animal feed may be necessary to safeguard the poultry industry.

Keywords: Fungal culture, Fungi Genera, Poultry feed

Isolation, Characterization and Evaluation of Probiotic Properties of *Lactobacillus* species from Poultry**

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Probiotics which are live microorganisms used as food additives, beneficially affect the host animal by improving the microbial balance. This study aimed to isolate *Lactobacillus* strains from poultry and to assess their potential probiotic properties in an attempt to discover new probiotic strains as alternatives to expensive imported probiotics. Broiler chicken samples were collected from three poultry farms, with three randomly selected birds sampled from each farm. Gut contents and mucosal scrapings of each bird were cultured on Man, Rogosa & Sharpe agar aseptically to isolate *Lactobacillus* spp. Preliminary characterization as *Lactobacillus* spp. was done via Gram staining and catalase test and those isolates that were Gram-positive rods and catalase-negative were considered as presumptive *Lactobacillus*. Two *Lactobacillus* isolates were chosen from each farm to evaluate the probiotic properties such as antimicrobial effects against three species of poultry pathogens, bile acid tolerance and pH tolerance. Among six strains of *Lactobacillus* tested, one demonstrated both pH and bile tolerance while another strain showed inhibitory activity against *Staphylococcus*. The findings of this study suggest that although the poultry gut does contain *Lactobacillus* strains, only some possess the necessary properties qualifying them as potential probiotics. Selecting strains with different probiotic qualities and developing probiotic cocktails is a promising step towards achieving maximum probiotic potential. This could significantly reduce costs for farmers, improve poultry health, and offer a sustainable and economical solution to reliance on imported probiotics. Further *in-vitro* and *in-vivo* tests are recommended to explore the full potential and safety of these strains and their combined activity in probiotic cocktails.

Keywords: *Lactobacillus*, MRS agar, Poultry, Probiotics, Probiotic Properties

Gross and Histopathological Evaluation of a Leucocytozoonosis Outbreak in a Commercial Broiler Operation in Kurunegala District

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Leucocytozoonosis is a parasitic infection in poultry, caused by protozoa belonging to the genus Leucocytozoon. The disease is spread through the bites of black flies and biting midges, primarily impacting the blood and various tissues of the birds. It can cause severe symptoms such as anemia, weakness, and high death rates, especially in younger birds, making it a major concern for poultry health and industry productivity globally. The primary aim of this research was to identify the pathological changes associated with leucocytozoonosis infection in broiler chickens by examining both macroscopic (gross pathology) and microscopic (histopathologic) alterations. This study underscores the significance of pathological investigations in the diagnosis of leucocytozoonosis in chickens. Broiler birds with characteristic lesions were collected from a commercial farm in the Kurunegala district. A total of 30 deceased birds underwent prompt postmortem examination. Gross lesions typical of leucocytozoonosis, such as petechial hemorrhages in various organs (muscles, liver, kidneys, lungs, spleen, thymus, and Bursa of Fabricius), were documented. Tissue samples from affected organs were preserved in 10% buffered formalin, processed using paraffin embedding, and stained with Hematoxylin and Eosin. The slides were examined under a light microscope. At necropsy, birds showed diffuse petechial hemorrhages in muscles, congested livers, splenomegaly, necrotic patches on the heart, congested lungs, and swollen kidneys. Two birds had ruptured livers with blood clots and subcapsular hemorrhages. Microscopic examination with H&E staining revealed various stages of leucocytozoon infection in the examined organs, consistent with the gross findings. Research on leucocytozoonosis in poultry is crucial for advancing disease management by developing effective prevention and control measures, improving diagnostic techniques for earlier and more accurate detection, and improving vector control strategies to reduce disease spread. It also contributes to developing targeted treatments and vaccines, supporting more sustainable poultry farming practices and enhancing food security.

Keywords: Leucocytozoonosis, Black Flies, Biting Midges, Hematoxylin and Eosin (H&E) Staining, Food Security

Occurrence of Gastrointestinal Parasitic Infections in Captive Asian Elephants (*Elephas maximus maximus*) in Sri Lanka

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Gastrointestinal parasites in captive elephants in Sri Lanka constitute significant health challenges, impacting their overall well-being and effective management strategies. This study assessed gastrointestinal (GI) parasite infections in captive elephants across different settings in Sri Lanka. Samples (n=44) were collected during the Dalada perahera season from captive elephants (n=36) and elephants at Millenium elephant foundation (MEF) and Pinnawala (n=8). Freshly voided samples were stored in 4°C and salt floatation. McMaster counting for Eggs per gram (EPG) and sedimentation were performed to observe helminths and trematode eggs. Out of the 44 samples collected, 12 (27.3%) were infected with one or more GI parasites. Strongyle and *Anoplocephala* sp. infections were equally prevalent at 11.4%, which was higher than *Bivitellobilharzia nairi* (6.8%). Analysis of different settings revealed variability in prevalence rates: in temples and privately owned elephants, the prevalence of Gastrointestinal (GI) strongyles and *Anoplocephala* sp. were 3.7% and 7.4%, respectively. Conversely, in the Temple of Tooth Relic elephants, strongyles were the most common parasite at 33.3%, with *Anoplocephala* sp. and *Bivitellobilharzia nairi* each at 11.1%. In MEF elephants, both *Anoplocephala* sp. and *Bivitellobilharzia nairi* occurrence rate was 25%, with strongyles at 12.5%. These findings indicate differences in parasite occurrence between populations, in the Temple of the Tooth Relic shows a notably higher rate of Strongyle infections and MEF demonstrating a higher prevalence of *Anoplocephala* spp. and *Bivitellobilharzia nairi*. Despite varying EPG counts revealed by the McMaster counting technique, most infected elephants exhibited no clinical signs such as anorexia, anemia or mud and soil eating, highlighting the often-subclinical nature of GI parasitic infections across different environments. Due to immunological suppression brought on by stress, close quarters that allow for the spread of parasites, and artificial diets deficient in vital nutrients, parasites pose a serious threat to captive elephants. These findings emphasize variability in GI parasite prevalence among captive elephants depending on their environment and management practices, underscoring the need for targeted control strategies in different settings.

Keywords: Captive Elephants, Gastrointestinal Parasites, Millenium Elephant Foundation, Prevalence, Temple of the Tooth Relic

Haemoparasites of Inland Freshwater Food Fish from Mahaweli River Around Katugasthota Area

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Sri Lanka, being an island, fish and aquaculture industry is very well developed, and fish is considered one of the major protein sources for human consumption. Both inland aquaculture and shallow and deep-sea fishing is a common practice and many employment opportunities were also created around the fish industry as an income source for many poor communities. Inland fish and aquaculture production were reported at 116,890 Mt during 2022. Breeding *Oreochromis mossambicus* and introducing the fingerlings to the inland lakes were carried out by the Government of Sri Lanka, targeting the alleviation of poverty and improving protein consumption by the rural population. Since *Oreochromis mossambicus* is cultured commonly in the inland fresh water lakes, it is of utmost importance to know the debilitating diseases such as haemoparasitic diseases affecting these fish in the country. Thirty blood samples were collected from *Oreochromis mossambicus* caught from the Katugastota region around the Mahaweli river. The fish blood samples were collected either from heart puncture or by damaging the gill lamellae. The blood samples were used to prepare thin blood smears and stained with Leishman's stain. The smears were examined for the presence of haemoparasites. Out of the 30 fish blood samples, 15 were found to be positive for Babesiosoma like bodies and rosette shaped meronts of Babesiosoma. No other haemoparasites were detected in the smears. The prevalence of the Babesiosoma was detected as 50%. The study highlights the importance of detecting haemoparasites of *Oreochromis mossambicus* and the requirement of monitoring the production systems for the losses associated with Babesiosoma infections.

Keywords: Babesiosoma,Haemoparasites, *Oreochromis Mossambicus*, Prevalence

Study on the Relationship between the Success rate of Pregnancy, Milk Yield and the Oestrus Activity Level of Cows.

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Accurately identifying the oestrus of cows and performing insemination at the optimal time are crucial aspects of reproductive management in dairy farms. Modern farms have adopted advanced technologies with automatic activity monitors. These monitors not only help in detecting oestrus but also maintain detailed records for each cow. Insemination is scheduled based on the activity levels of the cows, with oestrus events signaled by the farm's established software. A total of 180 cows' data [cow number, age, days in milk, days since last heat, calving to conception interval, average daily milk yield, average body weight, body condition score (BCS), activity level on the day of artificial insemination (AI), milk yield on the day of AI, and the number of AI procedures performed] were collected from the commercial upcountry dairy farm. Statistical analysis done for collected data. The overall BCS of the cows, ranging from 2.5 to 3.5, is within an acceptable range. The average milk yield exceeds 30 liters per day. The average calving-to-conception interval for cows that conceived on the first AI is 132.9 ± 12.5 (n = 62) days. While the activity levels of cows pregnant from different AI attempts show no significant differences, those that did not conceive after the first and second AI tended to have lower activity levels. Upon further examination, it was observed that non-pregnant cows eventually conceived when their oestrus activity increased. This finding can be applied to the selection of semen for AI, allowing for the use of less expensive semen in cows with lower oestrus activity. While there was no significant positive relationship between activity levels and pregnancy success in the cows, a significant inverse relationship was observed between milk yield on the day of AI and pregnancy success.

Keywords: Activity Level, Artificial Insemination, Automatic Activity Monitor, High-Yielding Cows, Oestrus Detection

Molecular Detection of *Mycoplasma gallisepticum* Using SYBR Green Based Quantitative PCR Assay in Selected Live Bird Markets and Poultry Farms Located in Western, Central and North Western Provinces in Sri Lanka

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Mycoplasma gallisepticum (MG) is one of the key avian pathogens that exclusively infects the poultry industry globally. Infected chickens exhibit a wide range of respiratory symptoms and experience considerable economic losses due to poor productivity, reduced egg production, carcass condemnation, and decreased feed efficiency. MG can spread horizontally through direct contact between vulnerable and sick birds, respiratory droplets, contaminated equipment, and human handlers. Rapid and accurate diagnostic methods are essential for preventing and controlling Mycoplasmosis more effectively. This study aimed to develop and optimize a convenient and rapid SYBR Green-based quantitative PCR (qPCR) assay for accurate and efficient detection of MG in poultry. Previously published primers targeting the 16S rRNA gene were utilized to detect the presence of *Mycoplasma spp.* Additionally, species-specific primers targeting the mgc2 gene were used to detect MG. Melt curve analysis was deployed to assess the specificity and accuracy of the developed assay. The melting temperature of the amplicon for Mycoplasma gallisepticum was determined to be 77.5°C and was detected as a single melt peak without cross-reaction with other non-target pathogenic agents. The developed assay was used to detect the prevalence of DNA originating from MG in selected poultry live markets located in the Central, Western, and Northwestern provinces of Sri Lanka. Sixty tracheal swab samples were collected from live bird markets, one swab was taken from randomly selected 5 birds in each location. An analysis of 300 birds in live bird markets revealed a 36.66% (110/300) prevalence level of *Mycoplasma spp*. across the study areas. Among the positive samples, MG prevalence was 81.81% (90/110), indicating that MG infections were common in the selected live bird markets. The developed assay can be utilized for the rapid detection of Mycoplasmosis in poultry, which could assist in controlling the disease at early stages. The reported prevalence of Mycoplasmosis in selected live bird markets in Sri Lanka warrants further studies and regulations to control the disease.

Keywords: Poultry Respiratory Diseases, *Mycoplasma gallisepticum* (MG), Molecular Detection, SYBR Green, Quantitative PCR

Study on the Effect of Vitamin E Supplemented to Bull Semen Extender

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Artificial insemination (AI), is broadly used worldwide. Bull semen cryopreservation is an important process in animal breeding and artificial insemination. The semen extenders are used for semen preservation by adding various types of substances. This study was conducted to investigate the use of Vitamin E as an antioxidant during semen cryopreservation and assessing the sperm viability and motility over time. The objective in this study is to assess the effect of vitamin E on motility, and viability of Friesian and Jersey bull semen at the cryopreservation process. Two semen samples were obtained from a Jersey and a Friesian bulls. The semen samples were analyzed before processing and were divided into five equal sub-samples. Four concentrations of Vitamin E (0.5mg/ml, 1.0mg/ml, 1.5mg/ml, 2.0mg/ml) containing semen extenders and a control extenders were prepared. Then the semen sub-samples were mixed with the extenders, filled in to mini straws and kept at 4 ^{0}C for 4 hours in cold hanging cabinet. Those straws were transferred into digital cooler and kept at -142 ^{0}C for 10 minutes. Finally, straws were dipped in N2(l) and kept at –196^{0}C. Post thawing sperm motility, live: dead ratio and fertility were observed using direct microscopic evaluation, Nigrosine-Eosin staining and HOS test respectively. These observations were done in 24 hours, 3, 7, 14 and 28 days post-cryopreservation. Results were analyzed using two-way ANOVA. The supplementation of 0.5mg/ml Vitamin E has given a significantly higher post thawing motility (63.5%) compared to the rest, while being the lowest in the control group (50.5%). Jersey bull had the higher post thawing motility of 60.8% compared to Friesian bull with 51.2%. The motility decreased gradually, and after 7 days, none of the samples differed significantly in percentages of live sperms. Sample with 2.0mg/ml had the lowest motility (48.4%) and fertility (42.6%). There was no significant difference in live sperm percentages at different time intervals. The study showed that adding Vitamin E to the extender has a significant effect on semen cryopreservation. Addition of 0.5mg/ml vitamin E at the preparation of tris buffer egg yolk extender could be recommended for the cryopreservation of bull semen.

Keywords: Artificial Insemination, Cryopreservation, Semen, Vitamin E, Extender

Survey on Owners' Perception on Vaccination and Deworming of Cats in Kandy and Colombo, Sri Lanka

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In feline health management, provision of preventive health care by vaccination and deworming is crucial for maintaining the well-being of domestic cats. Vaccination protects cats from a range of infectious diseases, while deworming prevents parasitic infestations that can lead to significant health issues. Despite the established benefits of these practices, extent to which cat owners in Sri Lanka adhere to recommended vaccination and deworming protocols is currently unknown. Therefore, this survey was conducted to study the above objective, through interviews conducted (face-to-face and/or over the phone) with cat owners based in Kandy and Colombo, Sri Lanka. Permission was granted by the Head of the Department, Veterinary Teaching Hospital, University of Peradeniya and by the Managing Director, Rover Veterinary Hospital, Battaramulla. Questions on general information of cats, information to assess the vaccination and deworming status and knowledge and perception about those procedures were asked. Total of 150 questionnaires were analysed using IBM SPSS statistics software 29.0.2.0. and percentages and frequencies were obtained. According to the survey results, majority of cats (66%, n=99/150) were vaccinated against Rabies. But only 32% (n=48/150) were vaccinated with both Anti Rabies Vaccine and Tri-cat vaccines. Out of 150, 34% of the cats were not vaccinated at all. Majority of the respondents stated that the reason for not vaccinating their cats was the high veterinary cost, vaccine cost, lack of veterinary advice and unawareness. Majority of the respondents knew (60%, n=90/150) that re-vaccination against Rabies should be done annually but majority of the respondents have a limited knowledge about revaccination of Tri-cat vaccine. Highest percentage of cat owners had sought vaccination and deworming advice from a veterinarian. Out of 150, 63% (n=55) were not dewormed due to the lack of veterinary advice and awareness. In conclusion, knowledge of cat owners about deworming and vaccination is not at a satisfactory level. Majority of cats have the risk of getting infectious diseases and parasitic infestations. Veterinarians have the responsibility to educate cat owners on the importance of proper vaccination and deworming of cats. Further research should be designed and carried out to explore the feline health and welfare in Sri Lanka to fill the void of the knowledge.

Keywords: Anti Rabies Vaccine, Deworming, Vaccination, Feline Health Management, Tri-cat Vaccine

Laboratory Confirmation of Newcastle Disease in Poultry Using M Gene Targeting Conventional One-Step RT-PCR

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Many different types of birds, both domesticated and wild, are susceptible to Newcastle Disease (ND) which is a highly infectious viral disease. The virus that causes ND is the Newcastle disease virus (NDV), which is a member of the genus Avulavirus in the family Paramyxoviridae. ND exhibits a broad species tropism, affecting a wide array of avian species with varying degrees of susceptibility and clinical manifestations. Domestic poultry, especially chickens, are highly susceptible to NDV. Turkeys are also vulnerable to NDV but generally less affected than chicken. The clinical manifestations of ND are diverse and might include asymptomatic infections as well as severe respiratory, neurological, and gastrointestinal problems. These symptoms frequently lead to a high mortality rate. NDV strains vary in their pathogenicity and are classified into three main pathotypes based on their virulence in poultry: velogenic, mesogenic, and lentogenic. The severity of the disease depends on the virulence of the virus strain involved, the species and age of the birds affected, and the environmental conditions. ND has a significant economic impact on the poultry industry due to high mortality, reduced productivity, and trade restrictions. Prevention and control strategies for ND include strict biosecurity measures, vaccination, rapid diagnosis and prompt reporting of outbreaks. Effective biosecurity measures are crucial for preventing the spread of ND within poultry populations. These measures include strict control over the movement of birds, equipment, and personnel to prevent the introduction of the virus into uninfected areas. Diagnosing ND involve a combination of clinical observation and laboratory and molecular tests. These include virus isolation, hemagglutination inhibition (HI) test, Enzyme-Linked Immunosorbent Assay (ELISA), and Reverse Transcription Polymerase Chain Reaction (RT-PCR). RT-PCR offers several advantages in the diagnosis of ND, making it one of the preferred methods for detecting this disease. In this study, 12 birds were sampled in April 2024. ND viral RNA was detected in four of the twelve (33%) suspicious cases. Our results revealed that NDV is still prevalent in Sri Lankan chicken causing significant economic losses in both broiler and layer industries.

Keywords: Avian Newcastle Disease, M Gene, Reverse Transcription Polymerase Chain Reaction

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